**Supplementary Information**

**Hyperphalangy in a new sinemydid turtle from the Early Cretaceous Jehol Biota**

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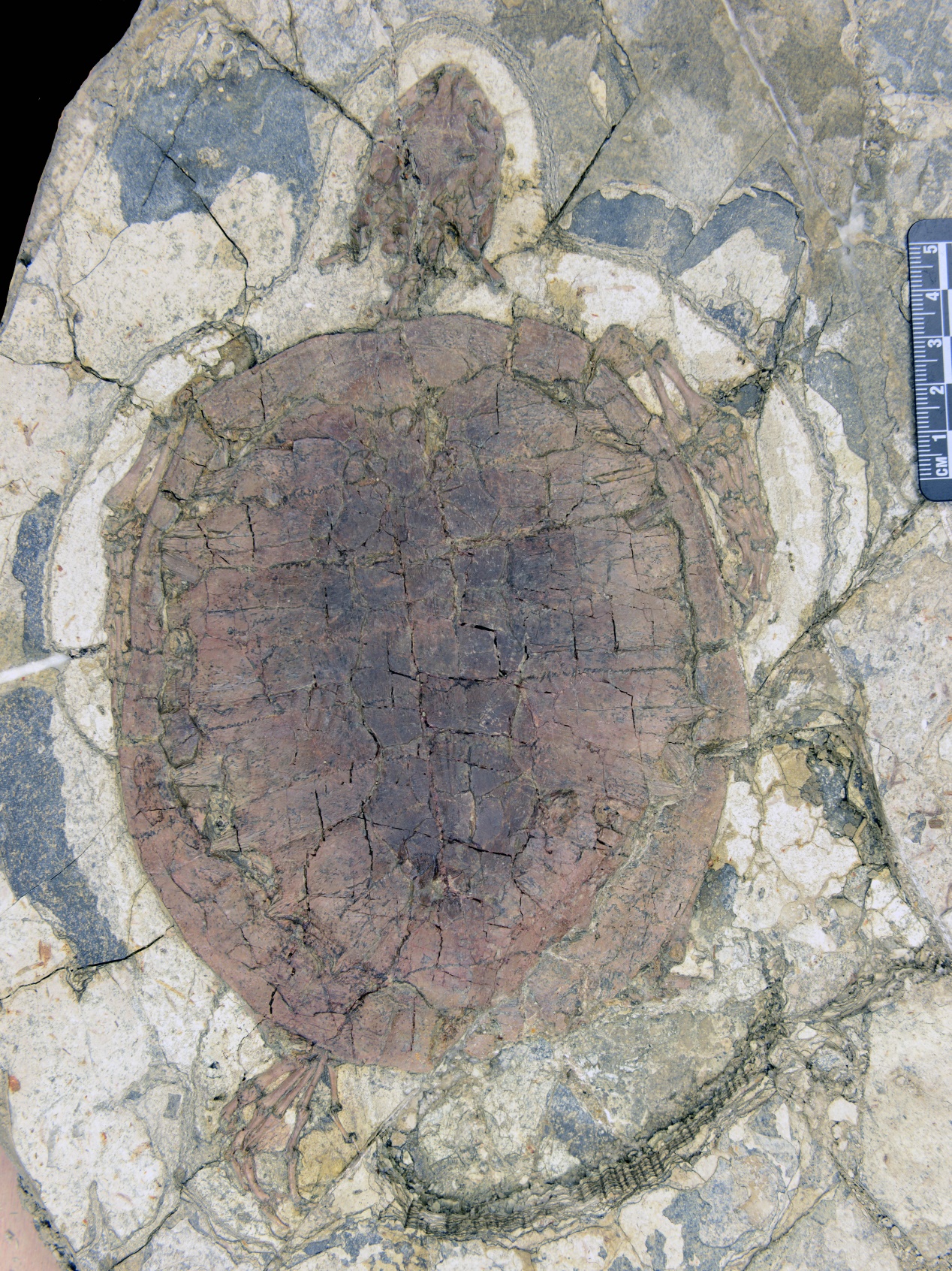
**Including:**

**Supplementary Figures.**

**Supplementary Data.**

**Supplementary Figures.**

**Figure S1. PMOL-AR00190 of *Jeholochelys lingyuanensis* gen. et sp. nov.**

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**Figure S2. PMOL-AR00214 of *Jeholochelys lingyuanensis* gen. et sp. nov.**

**Figure S3. PMOL-AR00217 of *Jeholochelys lingyuanensis* gen. et sp. nov.**

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**Figure S4. PMOL-AR00222 of *Jeholochelys lingyuanensis* gen. et sp. nov.**

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**Figure S5. SDUST-V1004 of *Liaochelys jianchangensis* Zhou, 2010a.**

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**Figure S6. SDUST-V1005 of *Liaochelys jianchangensis* Zhou, 2010a.**

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**Figure S7. SDUST-V1020 of *Ordosemys liaoxiensis* (Ji, 1995).**

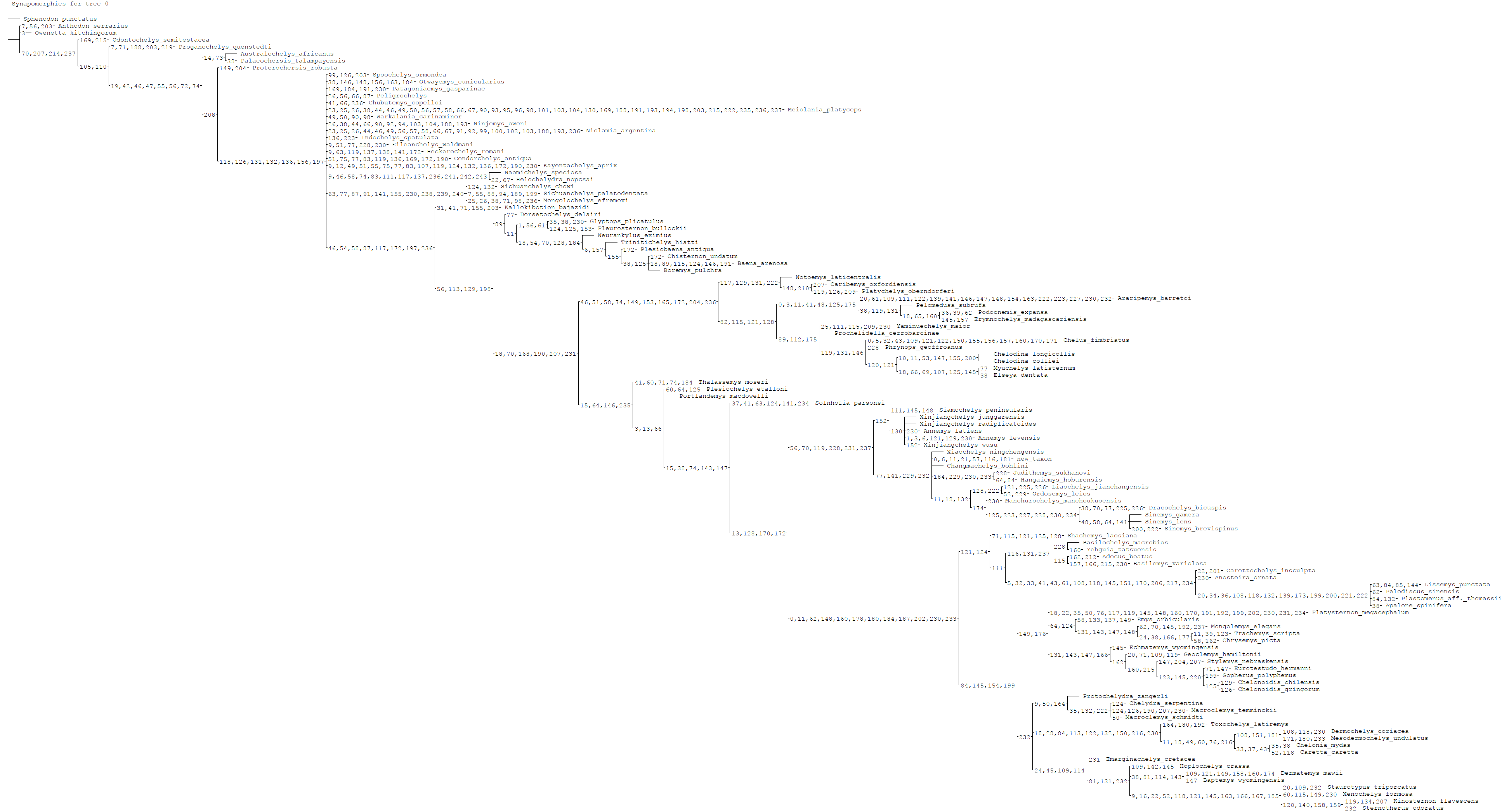
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**Supplementary Data.**

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**Strict consensus tree**

**Synapomorphies of strict consensus tree**



#NEXUS

[written Sat May 19 17:11:03 CST 2018 by Mesquite version 3.5 (build 888) at DESKTOP-DBPU9LT/192.168.0.106]

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Sphenodon\_punctatus Owenetta\_kitchingorum Anthodon\_serrarius Odontochelys\_semitestacea Proganochelys\_quenstedti Proterochersis\_robusta Palaeochersis\_talampayensis Australochelys\_africanus Kayentachelys\_aprix Condorchelys\_antiqua Heckerochelys\_romani Eileanchelys\_waldmani Indochelys\_spatulata Niolamia\_argentina Ninjemys\_oweni Warkalania\_carinaminor Meiolania\_platyceps Chubutemys\_copelloi Peligrochelys Patagoniaemys\_gasparinae Otwayemys\_cunicularius Platychelys\_oberndorferi Caribemys\_oxfordiensis Notoemys\_laticentralis Prochelidella\_cerrobarcinae Elseya\_dentata Myuchelys\_latisternum Chelodina\_colliei Chelodina\_longicollis Phrynops\_geoffroanus Chelus\_fimbriatus Yaminuechelys\_maior Araripemys\_barretoi Erymnochelys\_madagascariensis Pelomedusa\_subrufa Podocnemis\_expansa Dorsetochelys\_delairi Pleurosternon\_bullockii Glyptops\_plicatulus Neurankylus\_eximius Trinitichelys\_hiatti Plesiobaena\_antiqua Boremys\_pulchra Baena\_arenosa Chisternon\_undatum Portlandemys\_macdowelli Plesiochelys\_etalloni Solnhofia\_parsonsi Thalassemys\_moseri Toxochelys\_latiremys Caretta\_caretta Chelonia\_mydas Mesodermochelys\_undulatus Dermochelys\_coriacea Macroclemys\_schmidti Macroclemys\_temminckii Protochelydra\_zangerli Chelydra\_serpentina Platysternon\_megacephalum Mongolemys\_elegans Gopherus\_polyphemus Eurotestudo\_hermanni Chelonoidis\_gringorum Chelonoidis\_chilensis Stylemys\_nebraskensis Chrysemys\_picta Trachemys\_scripta Emys\_orbicularis Geoclemys\_hamiltonii Echmatemys\_wyomingensis Emarginachelys\_cretacea Baptemys\_wyomingensis Dermatemys\_mawii Xenochelys\_formosa Staurotypus\_triporcatus Sternotherus\_odoratus Kinosternon\_flavescens Basilemys\_variolosa Yehguia\_tatsuensis Adocus\_beatus Hoplochelys\_crassa Apalone\_spinifera Plastomenus\_aff.\_thomassii Pelodiscus\_sinensis Lissemys\_punctata Shachemys\_laosiana Anosteira\_ornata Carettochelys\_insculpta Xinjiangchelys\_wusu Annemys\_levensis Annemys\_latiens Xinjiangchelys\_radiplicatoides Xinjiangchelys\_junggarensis Hangaiemys\_hoburensis Changmachelys\_bohlini Judithemys\_sukhanovi Dracochelys\_bicuspis Ordosemys\_leios Sinemys\_brevispinus Sinemys\_lens Sinemys\_gamera Liaochelys\_jianchangensis new\_taxon Basilochelys\_macrobios Xiaochelys\_ningchengensis\_ Kallokibotion\_bajazidi Mongolochelys\_efremovi Sichuanchelys\_palatodentata Sichuanchelys\_chowi Helochelydra\_nopcsai Naomichelys\_speciosa Spoochelys\_ormondea Siamochelys\_peninsularis Manchurochelys\_manchoukuoensis

;

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CHARSTATELABELS

1 Nasal\_A / present absent,

2 Nasal\_B / nasals\_contact\_another\_medially\_along\_their\_entire\_length medial\_contact\_of\_nasals\_partially\_or\_fully\_hindered\_by\_long\_anterior\_fl,

3 Nasal\_C / dorsal\_exposure\_of\_nasal\_large greately\_reduced\_relative\_to\_that\_of\_all\_other\_elements,

4 Prefrontal\_A / medial\_contact\_on\_dorsal\_skull\_roof\_absent medial\_contact\_on\_dorsal\_skull\_roof\_present,

5 Prefrontal\_B / 'prefrontal-vomer contact present' 'prefrontal-vomer contact absent',

6 Prefrontal\_C / 'prefrontal-palatine contact present' 'prefrontal-palatine contact absent',

7 Prefrontal\_D / prefrontal\_exposure\_large reduced absent\_or\_near\_absent,

8 Prefrontal\_E / prefrontal\_heavily\_sculptured\_present absent,

9 Lacrimal\_A / present absent,

10 Frontal\_A / frontal\_contribution\_to\_orbit\_absent present,

11 'Frontal B\*' / not\_fused fused,

12 Parietal\_A / 'parietal-squamosal contact present' absent,

13 Parietal\_B / 'parietal contact with pt, epipt, and/or palatine absent' present,

14 Parietal\_C / length\_of\_anterior\_extension\_of\_the\_lateral\_braincase\_wall\_inter elongated 'short, enclosing the foramen nervi trigemini',

15 Parietal\_D / overhanging\_process\_of\_the\_skull\_roof\_absent present,

16 Parietal\_E / processus\_inferior\_parietalis\_forming\_posterior\_margin\_for\_nerv\_trigemini\_absent ...\_present,

17 'Parietal F\*' / not\_contribute\_to\_the\_processus\_trochlearis\_oticum contributes\_to\_the\_processus\_trochlearis\_oticum,

18 'Parietal G\*' / 'forming part of the foramen stapedio-temporalis' not\_forming,

19 'Parietal H\*' / 'absent or weak, foramen stapedio-temporale concealed in dorsal view' 'moderate, f.s.t. but not entire processes trochlearis exposed in dorsal view' 'strong, entire processus trochlearis exposed in dorsal view',

20 Jugal\_A / 'jugal-squamosal contact present' absent,

21 Jugal\_B / jugal\_participation\_to\_upper\_temporal\_rim\_absent present,

22 Quadratojugal\_A / present 'absent, due to the presence of a deep lower temporal emargination',

23 Quadratojugal\_B / 'quadratojugal-maxilla contact absent' present,

24 Quadratojugal\_C / 'quadratojugal-squamosal contact below cavum tympani absent' present,

25 Squamosal\_A / 'squamosal-postorbital contact present' absent,

26 Squamosal\_B / 'squamosal-supraoccipital contact absent' present,

27 'Squamosal C\*' / posterolateral\_protuberances\_developing\_horns\_absent small\_protuberances big\_protuberances\_developed\_as\_horns,

28 'Squamosal D\*' / long\_posterior\_process\_protruding\_beyond\_condylus\_occipitalis\_absent present,

29 'Squamosal E\* ' / 'Qu-Sq contact tightly sutured' wide\_open,

30 Postorbital\_A / 'postorbital-palatine contact absent' 'present, foramen palatinum posterius situated posterior to the orbit',

31 Supratemporal\_A / present absent,

32 Premaxilla\_A / external\_nares\_divided united,

33 Premaxilla\_B / fusion\_of\_premaxilla\_absent present,

34 Premaxilla\_C / foramen\_praepalatinum\_present 'absent, premaxillae well-ossified' 'absent, foramen intermaxillaris present',

35 Premaxilla\_D / exclusion\_of\_premaxilla\_from\_the\_apertura\_narium\_externa\_absent present,

36 Premaxilla\_E / 'distinct, medial premaxillary hook along the labial margin absent' present,

37 'Maxilla A\*' / do\_not\_contact\_each\_other\_in\_ventral\_view contacts\_each\_other\_in\_ventral\_view,

38 'Maxilla C\* ' / 'Secondary palate formed by premaxilla, maxilla, and vomer, palatines not contacting in midline absent' 'formed by premaxilla, maxilla, and vomer, palatines not contacting in midline present',

39 'Maxilla D\* ' / Triturating\_surface\_with\_only\_labial\_ridge\_present labial\_and\_lingual\_ridge\_present 'labial, lingual and accesory ridges present',

40 'Maxilla E\* ' / Accesory\_ridge\_on\_maxilla\_present\_all\_along\_the\_triturating\_surface accessory\_ridge\_only\_in\_some\_sectors\_of\_the\_triturating\_surface,

41 Vomer\_A / paired single 'single, greatly reduced',

42 Vomer\_B / 'vomer-pterygoid contact in palatal view present' 'absent, medial contact of palatines present',

43 Vomer\_C / vomerine\_and\_palatine\_teeth\_present absent,

44 Vomer\_D / 'vomer-premaxilla contact present' absent,

45 'Vomer E\* ' / Narrow\_and\_tall\_ventral\_crest\_on\_vomer\_absent present\_all\_along\_the\_vomer,

46 Palatine\_A / palatine\_contribution\_to\_anterior\_extension\_of\_lat\_braincase\_absent 'present, well-developed',

47 Quadrate\_A / flooring\_of\_the\_cranioquadrate\_space\_absent 'by pt, but pt does not cover the prootic' by\_pt by\_qu\_and\_pro,

48 'Quadrate B + C' / 'development of the c.t. shallow, but not developed antpost' 'shallow, but anteroposteriorly developed' deep\_and\_anteroposteriorly\_developed,

49 Quadrate\_D / precolumellar\_fossa\_absent large\_and\_deep,

50 Antrum\_postoticum\_A / antrum\_postoticum\_absent incipient fully\_developed,

51 'Quadrate F: incisura columella auris' / 'present, but qu and the op for an angle of 90 degrees in lat view' 'present, but qu and the op for an angle less 90 degrees in lat view' 'present and closed, but only enclosing the stapes' 'present and closed, enclosing stapes and the Eustachian tube' 'partially closed, allowing see the columella auris in posterior view',

52 Quadrate\_G / processus\_trochlearis\_oticum\_absent present,

53 'Quadrate H\* ' / Processus\_trochlearis\_oticum\_formed\_by\_a\_great\_contribution\_of\_quadrate small\_contribution\_of\_the\_quadrate,

54 'Quadrate I\*' / 'Quadrate-basisphenoid contact absent' present,

55 Epipterygoid\_A / 'present, rod-like' 'present, laminar' absent,

56 Pterygoid\_A / pterygoid\_teeth\_present absent,

57 Pterygoid\_B / basipt\_process\_present\_and\_movable\_articulation basipt\_process\_present\_and\_sutured\_articulation basipt\_process\_absent\_and\_sutured\_articulation,

58 Pterygoid\_C / triangular\_in\_shape reduced\_to\_an\_interpterygoid\_slit reduced\_to\_a\_paired\_foramen\_caroticum\_laterale,

59 Pterygoid\_D / 'pterygoid-basioccipital contact absent' present,

60 Pterygoid\_E / processus\_trochlearis\_pterygoidei\_absent present,

61 Pterygoid\_F / foramen\_palatinum\_posterius\_present 'present, but open laterally' absent,

62 Pterygoid\_G / medial\_contact\_of\_pterygoids\_present absent,

63 Pterygoid\_H / pterygoid\_contribution\_to\_foramen\_palatinum\_posterius\_present absent,

64 Pterygoid\_I / vertical\_flange\_on\_lateral\_process\_absent vertical\_falnge\_on\_lateral\_process\_present,

65 'Pterygoid J\*' / not\_reaching\_the\_exoccipitals reaching\_the\_exoccipitals,

66 'Pterygoid K\*' / Fossa\_podocnemidoidea\_absent present,

67 Supraoccipital\_A / crista\_occipitalis\_poorly\_developed protruding\_significantly\_posterior\_to\_the\_foramen\_magnum,

68 Supraoccipital\_B / large\_supraoccipital\_exposure\_to\_dorsal\_skull\_roof\_absent present,

69 'Supraoccipital C\*' / horizontal\_ventral\_crest\_in\_the\_supraoccipital\_absent\_or\_poorly\_developed\_anteriorly horizontal\_ventral\_crest\_present\_along\_all\_the\_crista\_supraoccipitalis,

70 Exoccipital\_A / medial\_contact\_of\_exoccipitals\_dorsal\_to\_foramen\_magnum\_absent present,

71 Basioccipital\_A / with\_two\_or\_one\_ventral\_basioccipital\_tubercle tubercle\_absent,

72 'Prootic A\*' / dorsal\_exposure\_large dorsal\_exposure\_reduced\_or\_absent,

73 Opisthotic\_A / loosely\_articulated tightly\_sutured,

74 Opisthotic\_B / depressions\_for\_musculature\_absent present,

75 Opisthotic\_C / ventral\_ridge\_on\_opisthotic\_absent 'present, with an incipient enclosed middle ear region' 'present, but modified with a enclosed middle ear region',

76 'Opisthotic D: processus interfenestralis' / 'present, robust, not reaching the floor of cavum a-j' 'present, robust, reaching the floor of cavum a-j' 'present, small, reaching the floor of cavum a-j',

77 Basisphenoid\_A / rostrum\_basisphenoidale\_flat 'rod-like, thick, and rounded',

78 Basisphenoid\_B / paired\_pits\_on\_ventral\_surface\_absent present,

79 'Basisphenoid C\*' / 'reduced to a v-shaped basisphenoid trapped between the pterygoids and the basioccipital absent' 'reduced to a v-shaped basisphenoid trapped between the pterygoids and the basioccipital present',

80 Hyomandibular\_nerve\_A / ': path of hyomandibular branch facial nerve through cranio-quadrate space parallel to vena capitis lateralis' independent\_to\_vena\_capitis\_lateralis,

81 Stapedial\_artery\_A / posterior\_to\_fenestra\_ovalis\_between\_paraoccipital\_process\_and\_qu anterior\_to...,

82 Stapedial\_artery\_B / relatively\_large significantly\_reduced\_in\_size absent,

83 'Stapedial artery C\* ' / 'Foramen stapedio-temporalis located in the dorsal part of the otic region and points dorsally' located\_in\_the\_anterior\_wall\_of\_the\_otic\_region\_and\_points\_anteriorly,

84 'Recessus scalae tympani A\*' / 'almost inexistent, not surrounded by bone' well\_developed,

85 'Foramen jugulare posterius A\*' / separated\_from\_fenestra\_postotica coalescent\_with\_fenestra\_postotica,

86 'Foramen jugulare posterius B\*' / separated\_from\_fenestra\_postotica\_by\_pterygoid separated\_by\_opisthotic\_and\_or\_exoccipital,

87 'Foramen nervi hypoglossi (XII)\*' / not\_covered\_ventrally\_by\_an\_extension\_of\_the\_pterygoid\_and\_the\_basioccipital covered\_ventrally\_by\_an\_extension\_of\_the\_pterygoid\_and\_the\_basioccipital covered\_ventrally\_by\_an\_extension\_of\_the\_bo,

88 'Canalis caroticum F\* ' / Arteria\_palatina\_enters\_the\_skull\_through\_the\_interpterygoid\_vacuity\_or\_intrapterygoid\_slit through\_foramen\_posterius\_canalis\_carotici\_palatinum\_or\_split\_of\_branches\_enclosed\_in\_skull,

89 Fenestra\_perilymphatica\_A / large relatively\_small,

90 'Cranial scutes A\*' / present absent,

91 'Cranial scute B\*' / Scute\_D\_meeting\_in\_midline\_no yes,

92 'Cranial scute C\*' / Scute\_X\_much\_smaller\_than\_D\_scute\_no yes,

93 'Cranial scute D\*' / X\_scute\_partially\_separates\_G\_scales\_no yes,

94 'Cranial scute E\*' / 'Scutes A, B, and C forming a continuous posterolateral shelf yes' no,

95 'Cranial scute F\*' / D\_scute\_high low,

96 'Cranial scute G\*' / B\_scute\_a\_recurved\_horn\_no yes,

97 'Cranial scute H\*' / B\_scute\_in\_cross\_section\_triangular round,

98 'Cranial scute I\*' / Scute\_B\_and\_D\_in\_contact\_yes no,

99 'Cranial scute J\*' / A\_scute\_small\_and\_not\_forming\_a\_large\_shelf\_no yes,

100 'Cranial scute K\*' / A\_scute\_small\_A\_scute\_very\_large A\_scute\_comparable\_in\_size\_to\_B\_scute,

101 'Cranial scute L\*' / Y\_and\_Z\_scutes\_relatively\_larges\_mall large,

102 'Cranial scute M\*' / Y\_scute\_pentagonal\_pointing\_posteriorly\_and\_separating\_the\_medial\_contact\_of\_G\_scutes rectangular\_not\_separating\_the\_medial\_contact\_of\_G\_scutes,

103 'Cranial scute N\*' / H\_scute\_present absent,

104 'Cranial scute O\*' / Scale\_F\_formed\_by\_several\_scales Scale\_F\_formed\_by\_only\_one\_scale,

105 'Cranial scale P\*' / Scale\_J\_formed\_by\_several\_scales Scale\_J\_formed\_by\_only\_one\_scale,

106 Teeth\_A / 'teeth present in premaxilla, maxilla, and dentary' 'teeth absent in premaxilla, maxilla, and dentary',

107 Upper\_temporal\_fenestra\_A / present absent,

108 Dentary\_A / medial\_contact\_of\_dentaries\_fused sutured\_only,

109 Carapace\_A / carapacial\_scutes\_present partially\_present absent,

110 Carapace\_B / tricarinate\_carapace\_absent 'present, but only slightly' present\_and\_pronounced,

111 Carapace\_C / absent present,

112 'Carapace D \*' / Sculpturing\_of\_the\_shell\_absent present,

113 'Carapace E\*' / Sculpturing\_of\_the\_shell\_like\_in\_Hydromedusa like\_in\_Pleurosternon like\_in\_trionychians,

114 Nuchal\_A / cervical\_articulates\_with\_nuchal\_along\_a\_blunt\_facet articulation\_absent cervical\_articulates\_with\_nuchal\_along\_a\_raised\_pedestal,

115 Nuchal\_B / elongate\_costiform\_process\_of\_nuchal\_absent 'present, process crosses peripheral I to contact pe II ' 'present, contacts pe III',

116 'Nuchal C\*' / wider\_than\_long longer\_than\_wide\_or\_as\_long\_as\_wide,

117 Neural\_A / 'neural formula 6>4<6<6<6<6 absent' present,

118 'Neural B\*' / 'irregular in shape, wider than long' 'regular, often hexagonal, longer than wide',

119 Peripheral\_A / more\_than\_11\_pairs 11\_pairs 10\_pairs less\_than\_10\_pairs,

120 'Musk ducts A\*' / absent present,

121 Costal\_A / medial\_contact\_of\_costal\_I\_absent present,

122 Costal\_B / medial\_contact\_of\_posterior\_costals\_absent medial\_contact\_of\_up\_to\_three\_posterior\_costals\_present medial\_contact\_of\_all\_costals\_present,

123 Costal\_C / 'absent, costals fully or almost fully ossified, fontanelles abs or red' present,

124 'Costal D\*' / absence\_of\_alternative\_short\_and\_long\_ends\_in\_the\_lateral\_part\_of\_the\_costals presence,

125 'Suprapygal A\*' / none one\_element two\_elements more\_than\_2\_elements,

126 Cervical\_A / 'cervicals absent, carapacial scutes otherwise present' one\_cervical\_present more\_than\_one\_cervical\_present,

127 Supramarginal\_A / complete\_row\_present partial\_row\_present absent,

128 Vertebral\_A / 4 5,

129 Vertebral\_B / 'vertebral II-IV broader than pleurals' 'vertebrals II-IV narrower or as narrow as pleurals',

130 Vertebral\_C / sulcus\_between\_V\_3\_and\_4\_on\_neural\_VI on\_neural\_V,

131 'Marginal A\*' / marginal\_scales\_overlap\_onto\_costals\_absent present,

132 Plastron\_A / connection\_between\_carapace\_and\_plastron\_osseous ligamentous,

133 Plastron\_B / central\_plastral\_fontanella\_absent present,

134 Plastron\_C / plastral\_kinesis\_absent present,

135 'Plastral kinesis A\*' / anterior anterior\_and\_posterior,

136 'Plastral kinesis B\*' / between\_hyo\_and\_hypoplastron 'between hyo and epi-entoplastron',

137 Entoplastron\_A / anterior\_entoplastral\_process\_present absent,

138 Entoplastron\_B / size\_of\_posterior\_entoplastral\_process\_long short,

139 Entoplastron\_C / distinct\_posterolateral\_entoplastral\_process\_present absent,

140 Entoplastron\_D / 'entoplastron V-shaped absent' present,

141 Entoplastron\_E / present absent,

142 Epiplastron\_A / epiplastra\_and\_entoplastron\_narrow\_and\_elongate\_absent present,

143 'Epiplastron B\*' / thick\_anterior\_border thick\_anterior\_border\_absent,

144 Hyoplastron\_A / axillary\_buttresses\_contact\_peripherals\_only peripherals\_and\_first\_costal,

145 'Hyo-hypoplastron A\*' / not\_fused fused,

146 'Hyoplastron B\*' / Axillary\_buttress\_terminates\_on\_peripheral\_2\_or\_1 terminates\_on\_peripheral\_3 terminates\_on\_peripheral\_4,

147 Mesoplastron\_A / 1\_or\_2\_pairs\_of\_meso\_with\_medial\_contact 1\_reduced\_pair absent,

148 Hypoplastron\_A / inguinal\_buttresses\_contact\_peripherals\_only peripheral\_and\_costal\_V 'peripherals, costal V, and costal VI',

149 'Hypoplastron B\*' / Inguinal\_buttress\_terminates\_on\_peripheral\_8 7 6,

150 Xiphiplastron\_A / distinct\_anal\_notch\_absent present,

151 Xiphiplastron\_B / xiphiplastra\_narrow\_absent present,

152 Plastral\_scutes\_A / present absent,

153 Plastral\_scutes\_B / pronounced\_midline\_plastral\_sulcus\_sinuous\_absent present,

154 Gular\_A / one\_pair only\_one\_scute,

155 Extragular\_A / present absent,

156 Extragular\_B / medial\_contact\_of\_extragulars\_absent 'present, contacting one another anterior to gulars' 'present, contacting one another posterior to gulars',

157 Extragular\_C / anterior\_plastral\_tuberosities\_present absent,

158 'Extragular D\*' / Only\_in\_the\_epiplastra Reach\_the\_entoplastron,

159 Intergular\_A / absent present,

160 Humeral\_A / 1\_pair 2\_pair\_subdivided\_by\_a\_plastral\_hinge,

161 'Humeral B\*' / 'Humero-pectoral sulcus only in the hyoplastra' 'humero-pectoral sulcus crossing the entoplastron',

162 Pectoral\_A / present absent,

163 'Pectoral B\*' / 'antero-posteriorly developed' 'very short antero-posteriorly',

164 Abdominal\_A / 'present, with medial contact' 'present, medial contact absent' absent,

165 Anal\_A / only\_cover\_parts\_of\_the\_xiphiplastra anteromedially\_overlap\_onto\_hypoplastra,

166 Inframarginal\_A / present absent,

167 'Inframarginal B\*' / 3\_or\_more 2,

168 'Inframarginal C\*' / axillar\_and\_inguinal\_not\_in\_contact axillar\_and\_inguinal\_in\_contact,

169 Cervical\_rib\_A / present absent,

170 Cervical\_vertebra\_A / position\_of\_transverse\_processes\_middle\_of\_the\_centrum anterior\_end\_of\_the\_centrum,

171 Cervical\_vertebra\_B / ventral\_keels\_absent\_or\_slightly\_developed\_in\_all\_vertebrae ventral\_keels\_more\_developed\_on\_posterior\_vertebrae,

172 Cervical\_vertebra\_C / 'cervical centrum 8<7 absent' present,

173 Cervical\_articulation\_A / not\_formed formed,

174 Cervical\_articulation\_H / '8(dorsal' '8)dorsal' 'none, vertebrae only meet at zygapophyses',

175 'Cervical vertebra E\*' / Biconvex\_cervical\_vertebra\_in\_the\_middle\_of\_the\_neck\_absent present,

176 'Cervical vertebra F\*' / Biconvex\_cervical\_vertebra\_in\_the\_middle\_of\_the\_neck\_2nd 3rd 4th 5th,

177 'Cervical vertebra G\*' / Biconcave\_cervical\_vertebra\_absent present,

178 'Cervical articulation I\*' / double\_articulation\_between\_5th\_and\_6th\_absent present,

179 'Cervical articulation J\*' / double\_articulation\_between\_6th\_and\_7th\_absent present,

180 'Cervical articulation K\*' / 'Central articulation cervical 6-7 concave-convex' platicoelous,

181 'Cervical articulation L\*' / double\_articulation\_between\_7th\_and\_8th\_absent present,

182 'Cervical vertebra H\*' / total\_height\_of\_centra\_and\_neural\_arch\_longer\_than\_the\_anteroposterior\_length\_of\_the\_cervical\_centra\_ total\_height\_of\_centra\_and\_neural\_arch\_much\_shorter\_than\_the\_anteroposterior\_length\_of\_the\_cervical\_centra\_,

183 'Cervical vertebra I\*' / neural\_arch\_on\_8th\_cervical\_not\_modified 'neural arch on 8th cervical modified with the postzygapophyses articular surface greatly expanded AND/OR pointing posteroventrally ',

184 'Cervical vertebra J\*' / postzygapophyses\_not\_united\_in\_midline postzygapophyses\_united\_in\_midline,

185 Dorsal\_rib\_A / 'length first thoracic rib long, extends full legth of first costal and may contact peripherals' 'intermediate, in contact with axillary buttresses' intermediate\_to\_short,

186 Dorsal\_rib\_B / 'contact dorsal rib 9-10 with costals present' absent,

187 Dorsal\_rib\_C / 'dorsal rib X long, contacting peripherals' dorsal\_rib\_X\_short,

188 Dorsal\_vertebra\_A / anterior\_articulation\_of\_first\_dorsal\_centrum\_faces\_at\_most\_slightly\_anteroventrally faces\_strongly\_anteroventrally,

189 Caudal\_A / tail\_club\_present absent,

190 Caudal\_B / all\_centra\_amphicoelous formed\_centra,

191 'Caudal C\*' / anterior\_caudal\_vertebrae\_amphicoelous anterior\_caudal\_vertebrae\_procoelous\_or\_platycoelous anterior\_caudal\_vertebrae\_opisthocoelous,

192 'Caudal D\*' / posterior\_caudal\_vertebrae\_amphicoelous posterior\_caudal\_vertebrae\_procoelous\_or\_platycoelous posterior\_caudal\_vertebrae\_opisthocoelous,

193 Chevron\_A / present\_on\_nearly\_all\_caudals absent\_or\_poorly\_developed\_along\_posterior\_caudals,

194 'Tail ring A\*' / absent present,

195 'Tail ring B\*' / closed\_ventrally open\_ventrally,

196 'Tail club A\*' / with\_three\_spikes with\_two\_pairs\_of\_spikes\_,

197 Pectoral\_girdle\_A / 'horizontal plate with a dorsal process, not triradiate' trirradiate,

198 Cleithrum\_A / present\_and\_in\_contact\_with\_the\_carapace 'present, osseous contact with carapace absent' absent,

199 'Scapula A\*' / lamina\_between\_the\_dorsal\_process\_of\_the\_scapula\_and\_the\_acromion\_well\_developed 'lamina between the dorsal process of the scapula and the acromion reduced: Kallokibotion' lamina\_between\_the\_dorsal\_process\_of\_the\_scapula\_and\_the\_acromion\_absent,

200 'Humerus A\*' / Ectepicondylar\_foramen\_in\_a\_channel only\_a\_groove,

201 'Humerus B\*' / shoulder\_present 'shoulder absent: pleurodires',

202 'Humerus C\*' / lateral\_process\_in\_the\_proximal\_end\_of\_the\_humerus 'displaced from the proximal end, located in the shaft of the humerus',

203 'Humerus D\*' / lateral\_process\_seen\_in\_dorsal\_view lateral\_process\_not\_seen\_in\_dorsal\_view,

204 'Humerus E\*' / length\_of\_the\_humerus\_two\_times\_or\_less\_than\_the\_width\_of\_the\_proximal\_end length\_of\_the\_humerus\_more\_than\_two\_times\_the\_width\_of\_the\_proximal\_end,

205 Pelvis\_A / 'pelvis-shell attachment by ligaments' ischium\_attached\_to\_plastron\_by\_a\_broad\_suture ischium\_attached\_to\_plastron\_by\_its\_medial\_surface,

206 'Pelvis B\*' / Thyroid\_fenestra\_coalescent two\_separated\_fenestra\_completely\_or\_partially\_separated,

207 'Pubis A\*' / 'lateral process small, poorly developed, columnar' lateral\_process\_well\_developed\_and\_flat,

208 'Pubis B\*' / Epipubis\_process\_osseous\_or\_calcified cartilaginous\_or\_absent,

209 Ilium\_A / elongated\_iliac\_neck\_absent present,

210 Ilium\_B / iliac\_scar\_extends\_from\_costals\_onto\_the\_peripherals\_and\_pygal positioned\_on\_costals\_only,

211 Ilium\_C / shape\_of\_articular\_site\_narrow\_and\_pointed\_posteriorly oval,

212 Ilium\_D / posterior\_notch\_in\_acetabulum\_absent present,

213 'Illium E\*' / thelial\_process\_absent present,

214 'Ischium A\*' / with\_lateral\_processes\_absent with\_lateral\_processes\_present,

215 Hypoischium\_A / present absent,

216 Manus\_A / most\_digits\_with\_two\_shortened\_phalanges most\_digits\_with\_three\_elongate\_phalanges,

217 Manus\_B / paddles\_absent short\_paddles\_present elongate\_paddles\_present,

218 Manus\_C / flippers\_absent short\_flippers\_present elongate\_flippers\_present,

219 Pes\_A / claw\_on\_5th\_digit\_present absent,

220 Pes\_B / metatarsal\_V\_functions\_as\_true\_metatarsal metatarsal\_V\_functions\_as\_a\_tarsal,

221 'Pes C\*' / 5\_digits 4\_digits,

222 'Manus and Pes B\*' / 'Hyperphalangy manus digits 4 and 5, pes digit 4 no' yes,

223 Posterior\_plastral\_fontanelle / 'posterior plastral fontanella between the xiphiplastra and/or the hypoplastra: absent in adult stage' retained\_in\_adults,

224 Neural\_number / less\_than\_9\_elements 9\_elements,

225 Plastron\_lobe / posterior\_lobe\_of\_plastron\_\_relatively\_wide\_and\_short\_ posterior\_lobe\_of\_plastron\_elongated\_and\_narrow\_coupled\_with\_widely\_spaced\_plastral\_buttresses.\_,

226 Shape\_of\_costal\_3 / costal\_3\_tapering\_towards\_the\_lateral\_side\_of\_the\_shell\_or\_with\_parallel\_anterior\_and\_posterior\_borders costal\_3\_broadens\_towards\_the\_lateral\_side\_of\_the\_shell,

227 Costal\_rib / distal\_portion\_of\_costal\_ribs\_not\_visible\_within\_the\_costal distal\_portion\_of\_costal\_rib\_visible\_on\_the\_surface\_of\_the\_costal,

228 First\_vertebral / vertebral\_1\_does\_not\_enter\_anterior\_margin\_of\_carapace enters\_anterior\_margin,

229 Peripheral\_gutter / peripheral\_gutter\_absent\_or\_only\_anteriorly\_developed peripheral\_gutter\_extensively\_developed\_along\_anterior\_and\_bridge\_peripherals,

230 Costal\_rib\_distal\_end / 'distal end of dorsal rib not visible or only within costo-peripheral fontanelles on the dorsal face of the carapace' 'costo-peripheral fontanelles absent, distal end of posterior dorsal ribs visible or distal end of posterior costals narrow and surrounded by the peripheral',

231 Nuchal\_emargination / absent\_or\_indistinct 'present, excludes peripheral 1' deep\_and\_involves\_peripheral\_1 'broad, involved peripheral II',

232 Tail\_length / tail\_as\_long\_as\_carapace tail\_clearly\_shorter\_than\_carapace,

233 Cruciform\_plastron / absent present,

234 Articulation\_of\_posterior\_cervical\_centra / circular\_or\_subcircular\_outline greatly\_flattened\_outline,

235 Nuchal\_posterior\_edge / less\_than\_3\_times\_longer\_than\_the\_lateral\_edge more\_than\_3\_times\_longer,

236 Carotid\_canal\_entry / fpcci\_is\_not\_at\_back\_of\_skull fpcci\_located\_at\_back\_of\_skull\_in\_pterygoid,

237 Pterygoid\_extension / \_pterygoid\_not\_extending\_to\_posterior\_end\_of\_skull\_and\_covering\_prootic pterygoid\_extending\_to\_posterior\_end\_of\_skull\_and\_covering\_prootic,

238 Carotid\_canal\_split / not\_enclosed\_in\_bone not\_enclosed\_but\_carotid\_canal\_is\_covered\_ventrally\_from\_the\_posterior\_end\_of\_the\_skull enclosed\_but\_carotid\_canal\_is\_not\_covered\_ventrally\_from\_posterior\_edge\_of\_skull,

239 Antrum\_postoticum / region\_of\_antrum\_postoticum\_enlarged\_and\_laterally\_enclosed 'region of antrum postoticum enlarged, but not enclosed laterally',

240 'Jugal/quadrate contact' / jugal\_clearly\_not\_in\_contact\_with\_quadrate jugal\_nearly\_or\_clearly\_in\_contact\_with\_quadrate,

241 Parabasisphenoid\_decorated\_by\_ridges / absent present,

242 Entoplastral\_scute / absent present,

243 Secondary\_pair\_of\_basioccipital\_tubercles\_formed\_by\_pterygoid / absent present,

244 Shell\_covered\_by\_highly\_distinct\_turbercles / absent present ;

MATRIX

Sphenodon\_punctatus 0000100101000-0----0-00-000-10100-00?---0000000----0-001000000000-00-010000-100-???0--01?1---------------000--0---------------------------------------------------------010-0--------0-0----100000--0--??0?1-1-10--0011000010----------0-0-00{2 3}-0?-0-

Owenetta\_kitchingorum 000100010102?-0--?0000000000?0000000?---0000?0000000-0?000000000?-00-?-?0000000????0--01?1---------------010--0---------------------------------------------------------0??-?--------?-0----1???00--0--??0?1-???0--00?1???????---------0-0-00{2 3}-0?-0-

Anthodon\_serrarius 0000??0000020-0--?0000000000000000000---0000000000-0-?00100000000-00001?0000000????0--01?1---------------010--0---------------------------------------------------------?????--------?-0----100000--0--01--0-1-10--00?1?00????---------?-0-00{2 3}-0?-0-

Odontochelys\_semitestacea 0000??01?000??0?-?0?00??0?000?00??00?0--??0???0000?0-0?00000?0??0000-?0???????0????0-????????????????????010--0-----00-------------100--0??000?-0-0--00?????????????????000?0--------?00----100000--0-0??0010100?--???0100???100001?---000-000-?0000

Proganochelys\_quenstedti 0000?00000000-0--?000000000000000000001-000000000000-0?0000000000000-001000000000?00--0000011110-011100001100010-00??000000??-000-?000--000000?00?00?0000000010000000???01000--------0000000000000-00000000001000--00?000000000?0000001000?000-00000

Proterochersis\_robusta ????????????????????????????????????????????????????????????????????????????????????????????????????????????0010-?????00??0??-110??000--001000?00?00?100000000000000000-?????????????????????????????0??????1?0?1??00?????????00000000??0???0?-??0?0

Palaeochersis\_talampayensis 0000?00100000-1--?010000000000000?00?00-0?1?00110000-0?1100000000000-00?1110?00????0--00?????????????????1100010-?0????0??0??-?????000--001000?00?00?0000???0???????0???11000--------00000?0100000--0000?00121000???0?0000???000000000000??000-00000

Australochelys\_africanus ???????10??0??1--?0?00?00?000??0??00?01-?0??0?110000-0??1000000?000?-???1110?00????0--00?????????????????11????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????000-?0???

Kayentachelys\_aprix 0010001111000-0--?010000000000?10?00001-101000120110-000100000000000-0001011010?1000--0000???????????????1110010-00000(0 1)100001121000100--001000?000000000000010000000000-0?0?0--------??000001?0000--11?0?00?01001--00?1?00????00000000200?0000?00000

Condorchelys\_antiqua ??????????????0?-?0???????000?????????????????120?10-0?11000?0?000??-?0?1011?10????0--00??????????????????1?0010-????0?1?0002???00??10--00100??????????0???????0?0??????010?0?-??----0?0?0??1?00?0--1??0000?0100????0?1????????0?00000?00??000???0?0

Heckerochelys\_romani 0??00???1100??0?-?01????0??0???1????????1?1???12??1??0?11000?0?1000?-???10120?0????11-00????????????????????0010-00000?10?0021?10?0110--110001?000000000000010000000000-????0--------??????0?????0--?1??????0????--???1???????000000000?0?0000??0000

Eileanchelys\_waldmani 00000?111100??0?-10100000?0000?1000000??1?100?1202?0-0?1??00????000?-?001012?10??0011-0??????????????????1100?10-??0001?0000212100???0--1??000??0?0??000?00???00?0???0???????????????????????????????1????????????????????????000000102?0?0000?00000

Indochelys\_spatulata ????????????????????????????????????????????????????????????????????????????????????????????????????????????0010-??000??00002?2100???0--0??000??0?0??000????1?????????????????????????????????????????????????????????????????010000000?0?0??????0?0

Niolamia\_argentina 000000011000??0?010100010120?0110?00001-1010102200?100(0 1)1211000?000110000101??001??01??00?00000(0 1)00(0 1)000(0 1)1101100?10-???????????????????????????????????????????????????????????????????????????0????101????????????????????????????????????0??01?0?0?0?

Ninjemys\_oweni 0???????1?????0???0?0?????20???1??00?0211?101??2????????????0?????1?0????????????????????011000000011001111?????????????????????????????????????????????????????????????????????????????????0????101??????????????????????????????????????????0?0?0?

Warkalania\_carinaminor ??????????????????0????????????????????????????20031?????????????????????????????????????011101--011??????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????0?????

Meiolania\_platyceps 0000000110001-000101000101200011000000211010102200310001211000(0 1)000110000101200011001(0 1)?00001111111011110111100010-000??10000??1210?1110--101000?0?1?0000000001000????????010011120000000000?0012201111100000001001--00??000??001?0?000000000111000000

Chubutemys\_copelloi ???0000110001100??0?000?00?00?11?????0??11100?120211?0?112000000001?-?0?1012000????11-0??????????????????11?0?1?????????0????????????????????????????????????????????????????1?????????0???0????????1???????????????????????????00000?0?0?0010000000

Peligrochelys ???0?????00?????01????????1?0?????????1-???????20?1100(0 1)?220?????0?1???001012?00110011-01?0???????????000011????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????0?0??????

Patagoniaemys\_gasparinae ????????????????????????????????????????????????????????????????????????????????????????????????????????????0010-000?0??0?00?1?10??110--???????0???0???0???????0?00?????010?1112100000?01??0112100--????????0?0?1--00?1???????????????20?0???0??????

Otwayemys\_cunicularius ??????????????????(0 1)???????????????????0-?????????2?1????????????????-?????????????0????????????????????????0001???0????00?00??2?0??110--1???0???0?202000000000000001?00-00??11??10???0001??0?12?0?????????????????????????????0?0?0??0??0????????0?0

Platychelys\_oberndorferi ????????????????????????????????????????????????????????????????????????????????????????????????????????????0010-100001100001111000010--111000?10111110001001100000001--110?11???----1?00010?????0--????????11?110000?????????100000000?0?0??????0?0

Caribemys\_oxfordiensis ????????????????????????????????????????????????????????????????????????????????????????????????????????????001??10000?0??00??2????010--11?000?101111?00010011000000?1--1???1????----??0?0???????0--?????0?11100?10?0???????????000??0??0????????0?0

Notoemys\_laticentralis ????????????????-?????????000?????????????????3202?0-0??2?0?????00???0101?02?00?10011-01????????????????????0010-100001000002121000010--11?000?1011?010001001?00000001--110?1?-------1?0201??????0--?????0011????11?0??????1??100000000?0?00020?0000

Prochelidella\_cerrobarcinae ????????????????????????????????????????????????????????????????????????????????????????????????????????????0010-??1011001001121110100--1110001?0?1??10001001000000001--????????????????????????????????????????????0?????????000000001?000??????0?0

Elseya\_dentata 0110111111001100-?0101--1000011100001020101100320230-021220100000010-0101002000110111-?101---------------110001??10?0-1?1200?0211-0000--111000?10021010001001?00?00001--10?011131000010?201011??10--122??0??1???11100?110011??0-000000010000020-0000

Myuchelys\_latisternum 0110111111001100-10101--100001110000100-101100320230-021220100000010-0101002010110111-0101---------------110001??1010-1?120010211-0000--111000110021110001001000000001--10001113100001002010111110--122?00011001111000110011??0-000000010000020-0000

Chelodina\_colliei 0110111111111100-12101--100001110000100-101?00320230-12122010000000001101002000110111-2101---------------11100110101001?120011211-0000--111000110120110001011000000001--10001113100001012010111110--1221100110011110001100110?00000000010000020-0000

Chelodina\_longicollis 0110111111111100-12101--100001110000100-101100320230-12122010000000001101002000110111-2101---------------111001101010-11120011211-0000--111000110120110001011000000001--10001113100001012010111110--122110011001111000110011000-000000010000020-0000

Phrynops\_geoffroanus 0110111111001100-12101--100001110000100-101100320230-02122010000000001101002000110111-2101---------------1110010-101011101001121110000--111000110121010001001000000001--10001113100001002010111110--1221000110011110001100110000000010010000020-0000

Chelus\_fimbriatus 1--0101111001100-12101--100001111000000-101000320230-02122010000000001101002000110111-2101---------------1110210-101001100101121110000--111000110121111001020100100001--10111113100001012010111110--1221000110011110001100110000000000010000020-0000

Yaminuechelys\_maior 0?1?????1100??0?-?2??????1000?1????0?0?????????????0-???22?????000000?1?100??00????11-?1?1---------------11100110100011?01001121110110--111000110111010001001000000001--100?11131000010120101????0--1?2??0??1????01???1???????000000002?0000020-0???

Araripemys\_barretoi 1--1??011101110?-1211000100001110000?00-?11???3212?0-0212201010000???0101002??0??0111-01?????????????????11102112101011001101021110110--1111011101201100011---00000101--100?1110000001012??0111110--1221?0011?????????110011001100010031100002000000

Erymnochelys\_madagascariensis 1--1110111011100-?01000010000111000000202111-0321230-121220100000110001?1002000110?11-?100---------------1100010-101011101001021110000--111000110011010001001100100001--1000111000000100201011??10--12???0??100111100?110011??0000000001000002000000

Pelomedusa\_subrufa 1--1110111011100-121000010000111000000202111-0321230-(0 1)2122010000001000101002000110111-0100---------------1100010-101011101001021110000--111000110111010001001000000001--10001110000001002010111110--122100011001111000110011000000000001000002000000

Podocnemis\_expansa 1--1110111011100-10100001000011100001021211100321230-12122010010011000101002000110111-2100---------------1100010-101011101001021110000--111000110111010001001000100001--10001110000001002010111110--122110011001111000110011000000000001000002000000

Dorsetochelys\_delairi 0010001111001?0???01000000000?110?00000-10100?220211?011221000010000-00?1012?10?10?11-01?1---------------11?????????????????????????????????????????????????????????????????????????????????????????????????????????????????????000?????0??010000???

Pleurosternon\_bullockii 0110??1111011100??01000000000?110000??0-1?10?0220211?01112?00101?0?0?0??1012000?10?????111---------------11?00111?00011?00001021011000--1??000??01010000010010000000000-00??0--------??000??????????????????0???1--00?????????000000000?0?0010000000

Glyptops\_plicatulus 01100?11110?11?0??0100?0??00??110?01?01-1?1??0220211?01112100101000?-?0?1022000010011-21?1---------------11000111100011?00002121011000--1110001101010000000010000000000-?0000--------??0001010???0--112000010???1--00?1???????000000001?0?0010000000

Neurankylus\_eximius ???0??11?10?11?00?1??????000?01???????????????220?1100212210?0??000000101?22000010011-?11????????????????11?00111100011?00002121111000--111000?10?01??00000010000000000-????????????????101?????????????????0????--???????????000000000?0?0010000000

Trinitichelys\_hiatti 0010002111011100??110000000000110000?00-101?002202110?21221000010000001?1022000010011-0111---------------1100011110?01??0?0??12111?000--111000?10?01??00000011000000?00-??000--------?????10????????????????0?????????????????00000000??0??010000000

Plesiobaena\_antiqua 00100021110111000?110000000000110000000-1010002202110021221000010000001?1022000010011-?111---------------11000111100011?0000?121110000--111000?10?01?00000021?000000100-000011????????0?101010??00--????????0???1--0??110011??0000000000000010000000

Boremys\_pulchra 00100021110111000?110000000000110000????101?0022021100212210001?00000010102200001001???111---------------11000111100011?00002221110000--111000?10?01??0000021?000000?00-01000--------???1010112100--?2??????0????--???????????0000000000000010000000

Baena\_arenosa ???00021110011000?010000000000110000001-1010002202110021221000010000-01?1022000010?11-?110???????????????11000111101011?00001221110000--111000?10111?000000211000000100-?10?0--------0001010112200--1220000101001--0011???????00000000??0??010000000

Chisternon\_undatum 0010002111001100??110000000000110000001-1010002202110021221000110000001?1022000010011-0111---------------110001??100011?0000?2211-?000--111000?10?01?00000021100000010???0001112?0000??0101011??00-???2?000101001--0011???????000000000?0?0010000000

Portlandemys\_macdowelli 00110001110?10010?1??????00000110000001-10100022021100112210000110???0101012000010011-0100???????????????110????????????????????????????????????????????????????????????????????????????????????????????????????????????????????0??????????113000???

Plesiochelys\_etalloni 00110001110(0 1)10010?1100000000?0110000001-1010002202110011221010010010001010120000100????100???????????????1100010?100011?00002221010(0 1)(0 1)0--111000?10?210000(0 1)00010000000(0 1)00-????????????????0010????????1????0010???1--0??110011??000000001?0?(0 1)113000000

Solnhofia\_parsonsi 00110001110(0 1)10000?110000?00000110000-10-1110-0220211001122100000101000101022000010011-0100???????????????1100010-??0011?0000312101?110--???001?0002000000??????000?00???110?0--------?????1?10??????1?2??0010?0??--???110011000000000?11001113000000

Thalassemys\_moseri 00100011110011010?110000000000110000001-1110002202110011221010-?100000111022000010011-0100???????????????11?001??10001??0?0???2?0???10--???????1?02????00??????0?0?0????11??0--------0?01???????????????????????????????????????0000001?0?0113000000

Toxochelys\_latiremys 1011000111011?0001110000000010110000000-10100022021100?122100001101000101022001010011-01??---------------1100010-200011000102121110110--11100110022010100???1??0???010??11?1111200??0?1??01011??00--1???????00???--0??111011??(0 1)0000000(1 2)111(0 1)113000000

Caretta\_caretta 1--100011(0 1)00120001010000000010110100-10-1011002201111011221020-1101000101022101010011-0?00---------------1100010-200010000102121110110--111001100220?010001---10?00000??11111112000111102011111110--122111-100111--000112011001000000021111113000000

Chelonia\_mydas 1--1?0011100120001010000000010110101-1201011002201110011221020-1101000101022101010011-0100---------------1100010-200011000102121110110--111001100220?010001---10?0?000??11111112000111102011111110--122111-100111--0001120110?100000002111?113000000

Mesodermochelys\_undulatus ??????????????????????????????????????????????????????????????????10???????????????????????????????????????01010-200011000101?2???-110--111001?00?20?011----------------11101112000000102010111110--122111-101111--0001?20????100000?021100???000000

Dermochelys\_coriacea 1--1010110000-00-1000000000010110000001-101000220110-021221020-0001000101022100010011-0101---------------110201-?20-0-300-1---2----11-??111001?0??20?011----------------111111120001101020-0111110--122111-101111--000112011??1-000--?01110113000000

Macroclemys\_schmidti 1??1??011001110?0121000000000?110?01000-10100?2202410011221000?110100010102??00?10010101?0???????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????????0?????1?3000?0?

Macroclemys\_temminckii 1--100011001110001210000000000110001000-101000220221001122100?1110100010102200001001010100???????????????1100010-120001000001111110110--1110011002201000001-1-00?001100-11111112001011102011112200--1221000100001--0011100111?1000000020111113000000

Protochelydra\_zangerli 1--10?0110?11100???100000000?0110000????101???220?21???12210001???10?0??10???0?010??????0????????????????11???1???????????0???????0100--111001?0??20?0000?1-1-00?0?110???????????????????????????????2??????0???1--0??????????00000000?????113000?0?

Chelydra\_serpentina 1--10001100111000?210000000000110001000-101000220221001122100011101000101022000010010??100???????????????1100010-120001000003121110110--111001?002201000001-1-0010?1100-11111112001011102011111200--1221000100011--00?110011??1000000000111113000000

Platysternon\_megacephalum 1--100011001110001010010000000110001000-10100022022100112210001110100010102210001001010101---------------1100010-100001100002121110100--1110001002202100001-1-000000000-11011112101011102011111200--1220000100011--0011100110?0000000020011113000000

Mongolemys\_elegans 1--(0 1)000111011100??21000000000011000000001010002202110011221000010010??00102200001001??0101---------------1100010-10?0?10000??121110000--111000?100210100001-1-00?000000-????1112101011102?111?1100--12??????0???1--0??1100????0000000001010111000000

Gopherus\_polyphemus 1--100011101110011210000100000110000002010101022022100112210001100100010102200001001010101---------------1100010-101001000012121110000--1110000100210100001-1-000010001011111112101011102011111110--1220001101011--001100011100000000001010113000000

Eurotestudo\_hermanni 1--10001110111001?210000100000110000002010101022022100112210001100100011102200001001010101---------------1100010-101001000012121110000--1110000100200100001-1-000010001011111112101011102011111110--1221001101011--001100011100000000001010113000000

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Trachemys\_scripta 1--100011100110011210000100000110000002110100022021100112210001100100011102200001001010101---------------1100010-101011000011121110000--1110001101210100001-1-000000001011?---12111011102011--??-0----21001101011--0011-----000000000001010113000000

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Lissemys\_punctata 1--101011101110011211000100100111210100-11110122022110112210011010101010102200001001001101---------------11020112100013001-00------110--11110-101-20-0-1----1-----------1101120-00101110201-11--10--1221101100111--0101101110110000--001-11113000-00

Shachemys\_laosiana 1--1??011101??0?11(1 2)??????00???11??????????????2????????12210001??0????1110???00?1?0????1?????????????????11?0010-??10-1?(0 1)20010210-0100--111000?000201000000010001000000-????????????????????1?????????????????????????????????000000000?0??113???0?0

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Xinjiangchelys\_wusu 0110?0111100??0?01210000000000110?000-??1?1?0?22021100?112000001101000001022?00?100?1-01?0011?????0??00??1100010-??001110(0 1)002121111100--1?10001000200000000010000000100-0(0 1)????-------1?0???????????????0?001?????--????100110000000010100?0111000000

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Annemys\_latiens 01?0??11110?110001210?0??0????11?????????????02???1100111200?0???0?0???0102??00?100??-?1?????????????????11?0010-100011?0(0 1)0021211(0 1)1100--1110001000200000100010000000100-???????????????????????????????000010????--???????????000000102?0?0111???0?0

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Mongolochelys\_efremovi 0(0 1)10001110001000010100000110001100000021101000120211000112000001000000011012?10?10011-010000001--011-00001100010-000001?000021210-0110--1010011000000000000110000000000-00001111100000000000111200--111000010?0?1--00?1100?1001(0 1)000000300?0010111000

Sichuanchelys\_palatodentata 011000101000?{0 1}0?01010000000000110000001-10100?12021100?012000001000000001012?10?10011-011000?00???0??00??1100010-?0001{0 1}?0000??2101?110--1?1001100{0 1}0000000001100000000????00??????????0?0????10--00--1?11?0010????--??11?0?????100000?03?0?0000111000

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[6] 7 Proterochersis\_robusta,

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[33] 34 Thalassemys\_moseri,

[34] 35 Santanachelys\_gaffneyi,

[35] 36 Judithemys\_sukhanovi,

[36] 37 Dracochelys\_bicuspis,

[37] 38 Sinemys\_lens,

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[43] 44 Dermochelys\_coriacea,

[44] 45 Platysternon\_megacephalum,

[45] 46 Protochelydra\_zangerli,

[46] 47 Chelydra\_serpentina,

[47] 48 Macroclemys\_schmidti,

[48] 49 Macroclemys\_temminckii,

[49] 50 Emys\_orbicularis,

[50] 51 Geoclemys\_hamiltonii,

[51] 52 Echmatemys\_wyomingensis,

[52] 53 Mongolemys\_elegans,

[53] 54 Stylemys\_nebraskensis,

[54] 55 Eurotestudo\_hermanni,

[55] 56 Gopherus\_polyphemus,

[56] 57 Chelonoidis\_gringorum,

[57] 58 Chelonoidis\_chilensis,

[58] 59 Chrysemys\_picta,

[59] 60 Trachemys\_scripta,

[60] 61 Emarginachelys\_cretacea,

[61] 62 Baptemys\_wyomingensis,

[62] 63 Dermatemys\_mawii,

[63] 64 Hoplochelys\_crassa,

[64] 65 Xenochelys\_formosa,

[65] 66 Staurotypus\_triporcatus,

[66] 67 Sternotherus\_odoratus,

[67] 68 Kinosternon\_flavescens,

[68] 69 Shachemys\_laosiana,

[69] 70 Adocus\_beatus,

[70] 71 Basilemys\_variolosa,

[71] 72 Yehguia\_tatsuensis,

[72] 73 Plastomenus\_aff.\_thomassii,

[73] 74 Lissemys\_punctata,

[74] 75 Apalone\_spinifera,

[75] 76 Pelodiscus\_sinensis,

[76] 77 Anosteira\_ornata,

[77] 78 Carettochelys\_insculpta,

[78] 79 Portlandemys\_macdowelli,

[79] 80 Plesiochelys\_etalloni,

[80] 81 Neurankylus\_eximius,

[81] 82 Trinitichelys\_hiatti,

[82] 83 Plesiobaena\_antiqua,

[83] 84 Baena\_arenosa,

[84] 85 Boremys\_pulchra,

[85] 86 Chisternon\_undatum,

[86] 87 Pleurosternon\_bullockii,

[87] 88 Glyptops\_plicatulus,

[88] 89 Dinochelys\_whitei,

[89] 90 Chubutemys\_copelloi,

[90] 91 Niolamia\_argentina,

[91] 92 Ninjemys\_oweni,

[92] 93 Warkalania\_carinaminor,

[93] 94 Meiolania\_platyceps,

[94] 95 Patagoniaemys\_gasparinae,

[95] 96 Otwayemys\_cunicularius,

[96] 97 Kallokibotion\_bajazidi,

[97] 98 Mongolochelys\_efremovi,

[98] 99 Peligrochelys,

[99] 100 Palaeochersis\_talampayensis,

[100] 101 Australochelys\_africanus;

TREE Strict\_Consensus\_tree = (1,(2,(3,(4,(5,(6,((100,101),(7,(8,9,10,(11,(12,((90,((98,99),((95,(96,97)),(91,(92,(93,94)))))),(13,(14,((87,(88,89)),(15,((81,(82,(83,(84,85,86)))),((79,80),(((16,(17,18)),((27,(28,(29,30))),((25,26),(19,((20,21),(22,(23,24))))))),(31,(32,36,(33,(34,35)),(37,(38,39)),((40,((41,42),(43,44))),(45,((46,(47,48,49)),((50,(51,52,((59,60),(53,(54,(55,56,(57,58))))))),((61,((62,63),(64,(65,66,(67,68))))),((69,(70,(71,72))),(77,78,(73,74,75,76)))))))))))))))))))))))))))));

TREE tnt\_1 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_2 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_3 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_4 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_5 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_6 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_7 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_8 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_9 = (1,(2,(3,(4,(5,(6,((7,((8,10),(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_10 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_11 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_12 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_13 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_14 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_15 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(75,(76,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_16 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_17 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_18 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_19 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_20 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_21 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_22 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_23 = (1,(2,(3,(4,(5,(6,((7,((8,9),(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_24 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_25 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_26 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_27 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_28 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_29 = (1,(2,(3,(4,(5,(6,((7,((8,9),(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_30 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_31 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_32 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_33 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_34 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_35 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_36 = (1,(2,(3,(4,(5,(6,((7,((8,9),(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_37 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_38 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_39 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_40 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_41 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_42 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_43 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_44 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_45 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_46 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_47 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_48 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_49 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_50 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_51 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_52 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_53 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_54 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_55 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_56 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_57 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_58 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_59 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_60 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(55,(56,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_61 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(75,(76,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_62 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_63 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_64 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(75,(76,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_65 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_66 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_67 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_68 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_69 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(76,(75,73)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_70 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_71 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_72 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_73 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_74 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_75 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_76 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_77 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_78 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(76,(75,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_79 = (1,(2,(3,(4,(5,(6,((7,((8,9),(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_80 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_81 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_82 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_83 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_84 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_85 = (1,(2,(3,(4,(5,(6,((7,((8,10),(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_86 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_87 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_88 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_89 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_90 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_91 = (1,(2,(3,(4,(5,(6,((7,((9,(8,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_92 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_93 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_94 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_95 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_96 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_97 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_98 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_99 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_100 = (1,(2,(3,(4,(5,(6,((7,((8,10),(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(51,(52,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_101 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(52,(51,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_102 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((73,(74,(75,76))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_103 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_104 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),((32,(36,(37,(38,39)))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78)))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_105 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_106 = (1,(2,(3,(4,(5,(6,((7,((8,(9,10)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_107 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_108 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_109 = (1,(2,(3,(4,(5,(6,((7,((10,(8,9)),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(47,(48,49))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),(((75,76),(73,74)),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))),(100,101))))))));

TREE tnt\_110 = (1,(2,(3,(4,(5,(6,((7,(10,((8,9),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_111 = (1,(2,(3,(4,(5,(6,((7,(8,((9,10),(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,((33,(34,35)),(((32,36),(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78)))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_112 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(((53,(54,(56,(55,(57,58))))),(59,60)),(51,52))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((75,(76,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_113 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_114 = (1,(2,(3,(4,(5,(6,((7,((8,9),(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_115 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_116 = (1,(2,(3,(4,(5,(6,((7,((8,9),(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(73,(75,76)))))))))))))))),(79,80)),(81,(82,(83,(84,(85,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99))))))))),(100,101))))))));

TREE tnt\_117 = (1,(2,(3,(4,(5,(6,((7,(10,(8,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_118 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_119 = (1,(2,(3,(4,(5,(6,((7,(8,(10,(9,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(48,(49,47))),((50,(52,(51,((53,(54,((56,55),(57,58)))),(59,60))))),((61,((62,63),(64,((65,66),(67,68))))),((69,(70,(71,72))),(78,(77,(74,(75,(73,76)))))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

TREE tnt\_120 = (1,(2,(3,(4,(5,(6,((7,(8,(9,(10,(11,(12,((13,(14,((15,(((((16,(17,18)),(((19,((20,21),(22,(23,24)))),(25,26)),(27,(28,(29,30))))),(31,(32,((33,(34,35)),((36,(37,(38,39))),((40,((41,42),(43,44))),(45,((46,(49,(48,47))),((50,(51,(52,((53,(54,(55,(56,(57,58))))),(59,60))))),((61,((62,63),(64,(65,(66,(67,68)))))),((69,(70,(71,72))),((76,(75,(73,74))),(77,78))))))))))))),(79,80)),(81,(82,(83,(85,(84,86))))))),(87,(88,89))))),(90,(((91,(92,(93,94))),(95,(96,97))),(98,99)))))))))),(100,101))))))));

END;

BEGIN CODONS;

CODESET \* UNTITLED = universal: 1- 244;

END;

BEGIN LABELS;

TAXAGROUPLABEL Meiolaniidae;

TAXAGROUPLABEL Chelidae;

TAXAGROUPLABEL Pelomedusoides;

TAXAGROUPLABEL Glyptopsidae;

TAXAGROUPLABEL Baenidae;

TAXAGROUPLABEL Plesiochelyidae;

TAXAGROUPLABEL Chelonioidea\_sl;

TAXAGROUPLABEL Chelydridae\_sl;

TAXAGROUPLABEL Testudinidae;

TAXAGROUPLABEL Emydidae;

TAXAGROUPLABEL Geoemydidae;

TAXAGROUPLABEL Kinosternidae\_sl;

TAXAGROUPLABEL Adocidae;

TAXAGROUPLABEL Trionychidae;

TAXAGROUPLABEL Carettochelyidae\_sl;

TAXAGROUPLABEL Xinjiangchelyidae;

TAXAGROUPLABEL 'Sinemydae-Macrobaenidae';

TAXAGROUPLABEL 'Sterli''s';

TAXAGROUPLABEL 'Joyce''s';

TAXAGROUPLABEL Gaffney\_1996;

TAXAGROUPLABEL Sterli\_and\_de\_la\_Fuente;

TAXAGROUPLABEL outgroups;

TAXAGROUPLABEL Testudinata;

TAXAGROUPLABEL stem\_turtles;

TAXAGROUPLABEL Pleurodira;

TAXAGROUPLABEL Cryptodira;

TAXAGROUPLABEL score!;

CHARGROUPLABEL 'Joyce (2007)';

CHARGROUPLABEL 'Bona and de la Fuente (2005)';

CHARGROUPLABEL 'Meylan and Gaffney (1989)';

CHARGROUPLABEL New;

CHARGROUPLABEL 'Kear and Lee (2006)';

CHARGROUPLABEL 'Gaffney (1996)';

CHARGROUPLABEL 'Gaffney (1992)';

CHARGROUPLABEL 'Meylan (1987)';

CHARGROUPLABEL 'Hirayama et al. (2001)';

CHARGROUPLABEL 'Hirayama et al. (2000)';

CHARGROUPLABEL 'Hutchison (1991)';

CHARGROUPLABEL 'Iverson (1991)';

CHARGROUPLABEL 'Gaffney et al. (2007)';

CHARGROUPLABEL 'Gaffney (1990)';

CHARGROUPLABEL 'Gaffney (1983)';

CHARGROUPLABEL skull;

CHARGROUPLABEL mandibule;

CHARGROUPLABEL postcranium;

END;

BEGIN SETS;

TAXPARTITION \* UNTITLED (TAXA = Untitled\_Taxa) = Meiolaniidae : 14- 17, Chelidae : 25- 32, Pelomedusoides : 33- 36, Glyptopsidae : 37- 39, Baenidae : 40- 45, Plesiochelyidae : 46- 49, Chelonioidea\_sl : 50- 54, Chelydridae\_sl : 55- 58, Testudinidae : 60- 64, Emydidae : 66- 68, Geoemydidae : 69, Kinosternidae\_sl : 74- 77, Adocidae : 78- 80, Trionychidae : 82- 85, Carettochelyidae\_sl : 87- 88, Xinjiangchelyidae : 93, 'Sinemydae-Macrobaenidae' : 94 96- 97 100;

TAXPARTITION phylogeny (TAXA = Untitled\_Taxa) = 'Sterli''s' : 1- 3 10- 11 14 18 27- 29 31 64 67 113, 'Joyce''s' : 5- 9 17 22- 24 26 30 34- 54 56- 61 66 69 71- 73 75- 76 78 80- 82 85 88 93- 94 96- 97 100 106- 107, Gaffney\_1996 : 15- 16, Sterli\_and\_de\_la\_Fuente : 20- 21;

TAXPARTITION Families (TAXA = Untitled\_Taxa) = Meiolaniidae : 14- 17, Chelidae : 25- 32, Pelomedusoides : 33- 36, Glyptopsidae : 37- 39, Baenidae : 40- 45, Plesiochelyidae : 46- 49, Chelonioidea\_sl : 50- 54, Chelydridae\_sl : 55- 58, Testudinidae : 60- 61 63- 64, Emydidae : 66- 67, Geoemydidae : 69, Kinosternidae\_sl : 74- 77, Adocidae : 78- 80, Trionychidae : 82- 85, Carettochelyidae\_sl : 87- 88, Xinjiangchelyidae : 93, 'Sinemydae-Macrobaenidae' : 94 96- 97 100;

TAXPARTITION Testudinata (TAXA = Untitled\_Taxa) = outgroups : 1- 3 113, Testudinata : 4- 12 14- 18 20- 61 63- 67 69- 85 87- 88 93- 94 96- 97 100 106- 107;

TAXPARTITION 'stem-pleuro-crypto' (TAXA = Untitled\_Taxa) = stem\_turtles : 4- 12 14- 17 20- 21 106- 107, Pleurodira : 22- 36, Cryptodira : 50- 61 63- 67 69- 85 87- 88 93- 94 96- 97 100;

TAXPARTITION Partition (TAXA = Untitled\_Taxa) = Meiolaniidae : 14- 17, Chelidae : 25- 32, Pelomedusoides : 33- 36, Glyptopsidae : 37- 39, Baenidae : 40- 45, Plesiochelyidae : 46- 49, Chelonioidea\_sl : 50- 54, Chelydridae\_sl : 55- 58, Testudinidae : 60- 61 63- 64, Emydidae : 66- 67, Geoemydidae : 69, Kinosternidae\_sl : 74- 77, Adocidae : 78- 80, Trionychidae : 82- 85, Carettochelyidae\_sl : 87- 88, Xinjiangchelyidae : 93, 'Sinemydae-Macrobaenidae' : 94 96- 97 100;

TAXPARTITION 'exclude-score' (TAXA = Untitled\_Taxa) = score! : 1- 4 12 25 33 63 65 113;

CHARPARTITION \* UNTITLED = 'Joyce (2007)' : 1- 10 12- 16 20- 26 30- 36 41- 44 46- 52 55- 64 67- 68 70- 71 73- 78 80- 82 89 106- 111 114- 115 117 119 121- 123 126- 130 132- 134 137- 142 144-147\3 148 150- 157 159- 160 162 164- 166 169- 174 185- 190 193 197- 198 205 209- 212 215- 220, 'Bona and de la Fuente (2005)' : 11 54 184, 'Meylan and Gaffney (1989)' : 17 131, New : 18 28- 29 37- 39 45 65- 66 69-72\3 79 83- 85 87 98 102- 105 112- 113 116 118 120 124 135- 136 145 158-161\3 163 167 175- 177 180 182- 183 191- 192 195- 196 199-202\3 203- 204 207- 208 221, 'Kear and Lee (2006)' : 19, 'Gaffney (1996)' : 27 91- 92 94- 96 99- 101 181 194, 'Gaffney (1992)' : 40 93 97, 'Meylan (1987)' : 53 86 200 213- 214 222, 'Hirayama et al. (2001)' : 90 206, 'Hirayama et al. (2000)' : 125 143 179, 'Hutchison (1991)' : 146, 'Iverson (1991)' : 149 168, 'Gaffney et al. (2007)' : 178, 'Gaffney (1990)' : 201;

CHARPARTITION phylogeny = 'Joyce (2007)' : 1- 10 12- 16 20- 26 30- 36 41- 44 46- 52 55- 64 67- 68 70- 71 73- 78 80- 82 89 106- 111 114- 115 117 119 121- 123 126- 130 132- 134 137- 142 144-147\3 148 150- 157 159- 160 162 164- 166 169- 174 185- 190 193 197- 198 205 209- 212 215- 220, 'Bona and de la Fuente (2005)' : 11 54 184, 'Meylan and Gaffney (1989)' : 17 131, New : 18 28- 29 37- 39 45 65- 66 69-72\3 79 83- 85 87 98 102- 103 112- 113 116 118 120 124 135- 136 145 158-161\3 163 167 175- 177 180 182- 183 191- 192 195- 196 199-202\3 203- 204 207- 208 221, 'Kear and Lee (2006)' : 19, 'Gaffney (1996)' : 27 91- 92 94- 96 99- 101 181 194, 'Gaffney (1992)' : 40 93 97, 'Meylan (1987)' : 53 86 200 213- 214 222, 'Hirayama et al. (2001)' : 90 206, 'Hirayama et al. (2000)' : 125 143 179, 'Hutchison (1991)' : 146, 'Iverson (1991)' : 149 168, 'Gaffney et al. (2007)' : 178, 'Gaffney (1990)' : 201;

CHARPARTITION 'cranium-postcranium' = skull : 1- 103 106- 107, mandibule : 108, postcranium : 109- 222;

END;

BEGIN ASSUMPTIONS;

TYPESET \* UNTITLED = unord: 1- 6 8- 18 20- 26 28- 38 40 42- 47 49 51- 56 58- 74 77- 81 83- 87 89- 108 111- 113 115- 118 120- 121 123- 124 128- 145 148 150- 163 165- 175 177- 197 200- 216 219- 230 232- 244, ord: 7 19 27 39 41 48 50 57 75- 76 82 88 109- 110 114 119-125\3 126- 127 146- 147 149 164 176 198- 199 217- 218 231;

EXSET \* UNTITLED = ;

END;

BEGIN MESQUITECHARMODELS;

ProbModelSet \* UNTITLED = 'Mk1 (est.)': 1- 143 145- 147 149- 153 155- 159 161- 164 166- 172 177- 181 186- 191 193 198- 199 206 215- 216 218 220- 244;

END;

Begin MESQUITE;

MESQUITESCRIPTVERSION 2;

TITLE AUTO;

tell ProjectCoordinator;

timeSaved 1526721063793;

getEmployee #mesquite.minimal.ManageTaxa.ManageTaxa;

tell It;

setID 0 5376187594245270751;

tell It;

setDefaultOrder 0 2 3 84 4 5 6 7 8 9 10 86 158 13 231 232 14 30 140 16 83 18 19 20 93 21 22 23 24 25 26 91 88 27 28 29 31 32 33 35 36 37 38 39 40 41 42 43 44 52 53 54 55 56 238 58 57 59 60 61 62 157 216 63 236 64 65 161 66 235 67 68 69 154 71 72 73 75 183 76 70 79 233 220 80 159 81 82 101 102 103 104 46 47 111 48 49 110 106 50 107 108 109 105 112 17 15 115 116 117 118 119 1 113;

attachments ;

endTell;

setID 1 6340754446151219931;

setID 2 8376767731966258259;

endTell;

getEmployee #mesquite.charMatrices.ManageCharacters.ManageCharacters;

tell It;

setID 0 1104077935316279450;

tell It;

setDefaultOrder 0 1 2 3 4 5 6 7 8 9 409 10 11 12 14 15 206 211 386 16 17 18 19 20 21 22 304 203 338 23 24 25 26 27 28 29 326 172 301 314 30 31 32 33 390 34 35 36 37 38 39 40 199 409 41 42 43 51 45 46 47 48 49 50 194 221 52 53 201 54 55 208 56 57 58 59 60 61 185 62 63 64 420 422 210 351 205 413 68 312 228 229 313 230 231 232 461 310 234 235 236 462 309 291 292 71 72 69 73 74 75 383 423 76 77 331 78 318 79 414 81 82 83 181 165 84 85 86 87 88 168 89 90 91 377 404 92 93 94 95 96 97 192 98 329 376 99 100 381 101 102 103 104 105 106 107 108 178 109 110 179 111 465 112 113 114 167 463 115 116 117 118 119 126 414 415 416 418 155 336 156 159 162 176 127 129 130 131 133 134 157 158 132 306 307 310 135 137 222 221 223 424 224 315 142 214 197 215 143 144 145 146 163 219 148 149 150 151 152 153 188 353 240 241 242 243 244 246 247 248 259 256 257 258 260 261 262 263 249 250 252 272 254 255;

attachments ;

endTell;

mqVersion 350;

checksumv 0 3 350518384 null getNumChars 244 numChars 244 getNumTaxa 114 numTaxa 114 short true bits 2305843009213693983 states 31 sumSquaresStatesOnly 55804.0 sumSquares -9.223372036854776E19 longCompressibleToShort false usingShortMatrix true NumFiles 1 NumMatrices 1;

mqVersion;

endTell;

getWindow;

tell It;

suppress;

setResourcesState false false 7;

setPopoutState 400;

setExplanationSize 0;

setAnnotationSize 0;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1920 961;

setLocation -8 0;

setFont SanSerif;

setFontSize 10;

getToolPalette;

tell It;

endTell;

desuppress;

endTell;

getEmployee #mesquite.minimal.ManageTaxa.ManageTaxa;

tell It;

showTaxa #5376187594245270751 #mesquite.lists.TaxonList.TaxonList;

tell It;

setTaxa #5376187594245270751;

getWindow;

tell It;

useTargetValue off;

setTargetValue ;

newAssistant #mesquite.lists.TaxonListCurrPartition.TaxonListCurrPartition;

newAssistant #mesquite.lists.DefaultTaxaOrder.DefaultTaxaOrder;

getTable;

tell It;

columnWidth 1 161;

endTell;

setExplanationSize 30;

setAnnotationSize 20;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1913 889;

setLocation -8 0;

setFont SanSerif;

setFontSize 10;

getToolPalette;

tell It;

setTool mesquite.lists.TaxonList.TaxonListWindow.arrow;

endTell;

endTell;

showWindow;

getEmployee #mesquite.lists.ColorTaxon.ColorTaxon;

tell It;

setColor Red;

removeColor off;

endTell;

getEmployee #mesquite.lists.TaxonListAnnotPanel.TaxonListAnnotPanel;

tell It;

togglePanel off;

endTell;

endTell;

endTell;

getEmployee #mesquite.trees.ManageTrees.ManageTrees;

tell It;

getTreeBlock 0;

tell It;

setSelected 1;

attachments ;

endTell;

showTrees 0 #mesquite.lists.TreesList.TreesList;

tell It;

setTreeBlock 1;

getWindow;

tell It;

useTargetValue off;

setTargetValue ;

newAssistant #mesquite.lists.NumForTreeList.NumForTreeList;

tell It;

suppress;

setValueTask #mesquite.trees.NumberOfTaxa.NumberOfTaxa;

desuppress;

endTell;

newAssistant #mesquite.lists.TreeListRooted.TreeListRooted;

newAssistant #mesquite.lists.TreeListPolys.TreeListPolys;

newAssistant #mesquite.lists.TreeListPolyAssumption.TreeListPolyAssumption;

setExplanationSize 30;

setAnnotationSize 20;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1913 889;

setLocation -8 0;

setFont SanSerif;

setFontSize 10;

getToolPalette;

tell It;

setTool mesquite.lists.TreesList.TreesListWindow.ibeam;

endTell;

endTell;

showWindow;

endTell;

endTell;

getEmployee #mesquite.trees.BasicTreeWindowCoord.BasicTreeWindowCoord;

tell It;

makeTreeWindow #8376767731966258259 #mesquite.trees.BasicTreeWindowMaker.BasicTreeWindowMaker;

tell It;

suppressEPCResponse;

setTreeSource #mesquite.trees.StoredTrees.StoredTrees;

tell It;

setTaxa #8376767731966258259;

setTreeBlock 1;

setTreeBlockID 01624961b33c1;

toggleUseWeights off;

endTell;

setAssignedID 730.1310057232862.1821540146855595573;

getTreeWindow;

tell It;

setExplanationSize 30;

setAnnotationSize 20;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1913 889;

setLocation -8 0;

setFont SanSerif;

setFontSize 10;

getToolPalette;

tell It;

setTool mesquite.trees.BasicTreeWindowMaker.BasicTreeWindow.arrow;

endTell;

getTreeDrawCoordinator #mesquite.trees.BasicTreeDrawCoordinator.BasicTreeDrawCoordinator;

tell It;

suppress;

setTreeDrawer #mesquite.trees.SquareTree.SquareTree;

tell It;

setNodeLocs #mesquite.trees.NodeLocsStandard.NodeLocsStandard;

tell It;

branchLengthsToggle off;

toggleScale on;

toggleBroadScale off;

toggleCenter on;

toggleEven on;

setFixedTaxonDistance 0;

endTell;

setEdgeWidth 6;

orientUp;

setCornerMode Right\_Angle 50;

endTell;

setBackground White;

setBranchColor Black;

showNodeNumbers off;

showBranchColors on;

labelBranchLengths off;

centerBrLenLabels on;

showBrLensUnspecified on;

showBrLenLabelsOnTerminals on;

setBrLenLabelColor 0 0 255;

setNumBrLenDecimals 6;

desuppress;

getEmployee #mesquite.trees.BasicDrawTaxonNames.BasicDrawTaxonNames;

tell It;

setColor Black;

toggleColorPartition on;

toggleColorAssigned off;

toggleShadePartition off;

toggleShowFootnotes on;

toggleNodeLabels on;

toggleCenterNodeNames off;

toggleShowNames on;

namesAngle ?;

endTell;

endTell;

setTreeNumber 1;

setTree '(1,(2,(3,(4,(5,((100,101),(7,(8,9,10,((((11,77),(61,62)),64),(((((12,73),(69,(70,(71,72)))),65),((37,57),(38,39))),((90,((98,99),((95,(96,97)),(91,(92,(93,94)))))),(13,(14,((87,(88,89)),(((15,43),40),(((81,(82,(83,(84,85,86)))),(20,21)),(((((79,80),48),46),(16,(17,18))),(31,(32,36,(27,(52,(53,(54,(33,(34,35)))))),(6,(((28,(29,30)),((19,22),((25,26),(23,24)))),((78,(74,(75,76))),(((((59,60),50),45),(51,(56,(55,58)))),(((41,42),44),((63,(66,(67,68))),(47,49))))))))))))))))))))))))));';

setDrawingSizeMode 0;

toggleLegendFloat on;

scale 0;

toggleTextOnTree off;

togglePrintName on;

showWindow;

endTell;

desuppressEPCResponse;

getEmployee #mesquite.trees.ColorBranches.ColorBranches;

tell It;

setColor Red;

removeColor off;

endTell;

getEmployee #mesquite.ornamental.BranchNotes.BranchNotes;

tell It;

setAlwaysOn off;

endTell;

getEmployee #mesquite.ornamental.ColorTreeByPartition.ColorTreeByPartition;

tell It;

colorByPartition off;

endTell;

getEmployee #mesquite.ornamental.DrawTreeAssocDoubles.DrawTreeAssocDoubles;

tell It;

setOn on;

toggleShow consensusFrequency;

toggleShow posteriorProbability;

toggleShow bootstrapFrequency;

toggleShow consensusFrequency;

toggleShow posteriorProbability;

toggleShow bootstrapFrequency;

setDigits 4;

setThreshold ?;

writeAsPercentage off;

toggleCentred on;

toggleHorizontal on;

toggleWhiteEdges on;

toggleShowOnTerminals on;

setFontSize 10;

setOffset 0 0;

endTell;

getEmployee #mesquite.ornamental.DrawTreeAssocStrings.DrawTreeAssocStrings;

tell It;

setOn on;

toggleCentred on;

toggleHorizontal on;

setFontSize 10;

setOffset 0 0;

toggleShowOnTerminals on;

endTell;

getEmployee #mesquite.trees.TreeInfoValues.TreeInfoValues;

tell It;

panelOpen false;

endTell;

endTell;

endTell;

getEmployee #mesquite.charMatrices.BasicDataWindowCoord.BasicDataWindowCoord;

tell It;

showDataWindow #1104077935316279450 #mesquite.charMatrices.BasicDataWindowMaker.BasicDataWindowMaker;

tell It;

getWindow;

tell It;

getTable;

tell It;

rowNamesWidth 212;

endTell;

setExplanationSize 30;

setAnnotationSize 40;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1913 869;

setLocation -8 0;

setFont SanSerif;

setFontSize 12;

getToolPalette;

tell It;

setTool mesquite.charMatrices.BasicDataWindowMaker.BasicDataWindow.ibeam;

endTell;

setActive;

setTool mesquite.charMatrices.BasicDataWindowMaker.BasicDataWindow.ibeam;

colorCells #mesquite.charMatrices.ColorByState.ColorByState;

tell It;

setStateLimit 9;

toggleUniformMaximum on;

endTell;

colorRowNames #mesquite.charMatrices.TaxonGroupColor.TaxonGroupColor;

colorColumnNames #mesquite.charMatrices.ColorByFootnote.ColorByFootnote;

colorText #mesquite.charMatrices.NoColor.NoColor;

setBackground White;

toggleShowNames off;

toggleShowTaxonNames on;

toggleTight off;

toggleThinRows off;

toggleShowChanges on;

toggleSeparateLines off;

toggleShowStates on;

toggleAutoWCharNames on;

toggleAutoTaxonNames off;

toggleShowDefaultCharNames off;

toggleConstrainCW on;

setColumnWidth 16;

toggleBirdsEye off;

toggleShowPaleGrid off;

toggleShowPaleCellColors off;

toggleShowPaleExcluded off;

togglePaleInapplicable off;

toggleShowBoldCellText off;

toggleAllowAutosize on;

toggleColorsPanel off;

toggleDiagonal on;

setDiagonalHeight 80;

toggleLinkedScrolling on;

toggleScrollLinkedTables off;

endTell;

showWindow;

getEmployee #mesquite.charMatrices.AlterData.AlterData;

tell It;

toggleBySubmenus off;

endTell;

getEmployee #mesquite.charMatrices.ColorCells.ColorCells;

tell It;

setColor Orange;

removeColor off;

endTell;

getEmployee #mesquite.categ.StateNamesEditor.StateNamesEditor;

tell It;

makeWindow;

tell It;

getTable;

tell It;

rowNamesWidth 255;

endTell;

setExplanationSize 30;

setAnnotationSize 20;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1913 889;

setLocation -8 0;

setFont SanSerif;

setFontSize 10;

getToolPalette;

tell It;

setTool mesquite.categ.StateNamesEditor.StateNamesWindow.ibeam;

endTell;

rowsAreCharacters on;

toggleConstrainChar on;

toggleConstrainCharNum 3;

togglePanel off;

toggleSummaryPanel off;

endTell;

showWindow;

endTell;

getEmployee #mesquite.categ.StateNamesStrip.StateNamesStrip;

tell It;

showStrip off;

endTell;

getEmployee #mesquite.charMatrices.AnnotPanel.AnnotPanel;

tell It;

togglePanel off;

endTell;

getEmployee #mesquite.charMatrices.CharReferenceStrip.CharReferenceStrip;

tell It;

showStrip off;

endTell;

getEmployee #mesquite.charMatrices.QuickKeySelector.QuickKeySelector;

tell It;

autotabOff;

endTell;

getEmployee #mesquite.charMatrices.SelSummaryStrip.SelSummaryStrip;

tell It;

showStrip off;

endTell;

getEmployee #mesquite.categ.SmallStateNamesEditor.SmallStateNamesEditor;

tell It;

panelOpen true;

endTell;

endTell;

endTell;

getEmployee #mesquite.charMatrices.ManageCharacters.ManageCharacters;

tell It;

showCharacters #1104077935316279450 #mesquite.lists.CharacterList.CharacterList;

tell It;

setData 0;

getWindow;

tell It;

useTargetValue off;

setTargetValue ;

newAssistant #mesquite.lists.DefaultCharOrder.DefaultCharOrder;

newAssistant #mesquite.lists.CharListInclusion.CharListInclusion;

newAssistant #mesquite.lists.CharListPartition.CharListPartition;

newAssistant #mesquite.charMatrices.SortsInCharList.SortsInCharList;

newAssistant #mesquite.parsimony.CharListParsModels.CharListParsModels;

getTable;

tell It;

columnWidth 1 70;

columnWidth 2 145;

columnWidth 4 100;

endTell;

setExplanationSize 30;

setAnnotationSize 20;

setFontIncAnnot 0;

setFontIncExp 0;

setSize 1913 889;

setLocation -8 0;

setFont SanSerif;

setFontSize 10;

getToolPalette;

tell It;

setTool mesquite.lists.CharacterList.CharacterListWindow.ibeam;

endTell;

endTell;

showWindow;

getEmployee #mesquite.lists.CharListAnnotPanel.CharListAnnotPanel;

tell It;

togglePanel off;

endTell;

endTell;

endTell;

endTell;

end;