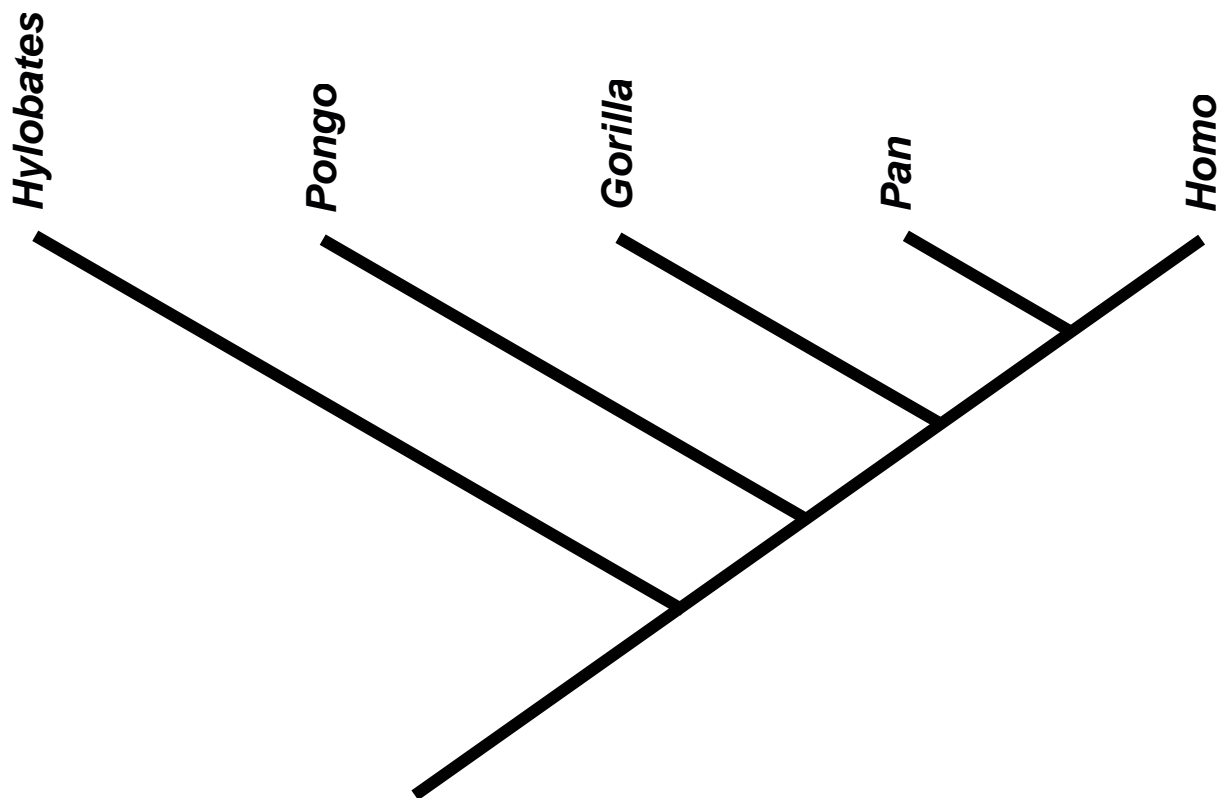


A Final Problem Set, to Eradicate Systematic Errors

1. Please recode the character states in the matrix that is presented below so that plesiomorphic character states are coded as 0s and apomorphic character states are coded as 1s, using the taxon *Ohgee species* as the only outgroup.

<i>O. species</i>	@	\$	^	*
<i>A. species</i>	#	%	&	*
<i>A. notherspecies</i>	@	%	&	*
<i>A. fourthspecies</i>	#	%	^	+

2. A cladogram for the great apes is presented below.



- Please identify each taxon (e.g., provide a common name).
- Please identify the sister group to the species for which you are a member.
- A matrix containing character states for 5 among the 19 characters (*i.e.*, characters 1, 9, 12, 15, and 19) that were used to construct the cladogram is presented on the next page. Please determine where on the cladogram character states for each character would 'map' and classify each character state (*i.e.*, as plesiomorphic, autapomorphic, synapomorphic, homoplasious).

	1	9	12	15	19
outgroup	0	0	0	0	0
<i>Hylobates</i>	0	1	1	0	1
<i>Pongo</i>	0	1	0	0	1
<i>Gorilla</i>	0	1	0	1	1
<i>Pan</i>	0	1	0	0	0
<i>Homo</i>	0	1	1	0	1

d. Please determine the number for the fewest synapomorphies that are required to construct the cladogram.

e. Please calculate the probability for the cladogram.

3. A matrix containing taxon identifiers and character states is presented below.

OG	0	0	0	0	0	0	0	0	0	0
A	1	1	1	0	1	0	0	0	0	0
B	1	1	0	0	1	0	0	0	0	0
C	1	1	0	1	0	0	0	0	1	0
D	1	1	0	1	1	0	1	0	0	1
E	1	0	0	1	0	0	1	1	0	1
F	1	0	0	1	0	1	1	0	0	1

a. Please construct a cladogram on the basis of the matrix, using the taxon OG as the only outgroup.

b. Please predict the consequences were character 2 omitted from the analysis; were only character 3 omitted from the analysis; were only character 10 omitted from the analysis.

c. Please calculate the probability for the cladogram.

4. A matrix containing taxon identifiers and character states is presented below.

OG	0	0	0	0	0	0	0	0	0	0
G	1	0	1	0	1	1	0	0	0	0
H	1	0	1	0	1	0	1	0	0	0
I	1	1	1	0	0	0	0	0	0	1
J	1	1	0	1	0	0	0	1	0	0
K	1	1	0	1	0	0	1	0	1	0

a. Please construct a cladogram on the basis of the matrix, using the taxon OG as the only outgroup.

b. Please calculate the probability for the cladogram.