

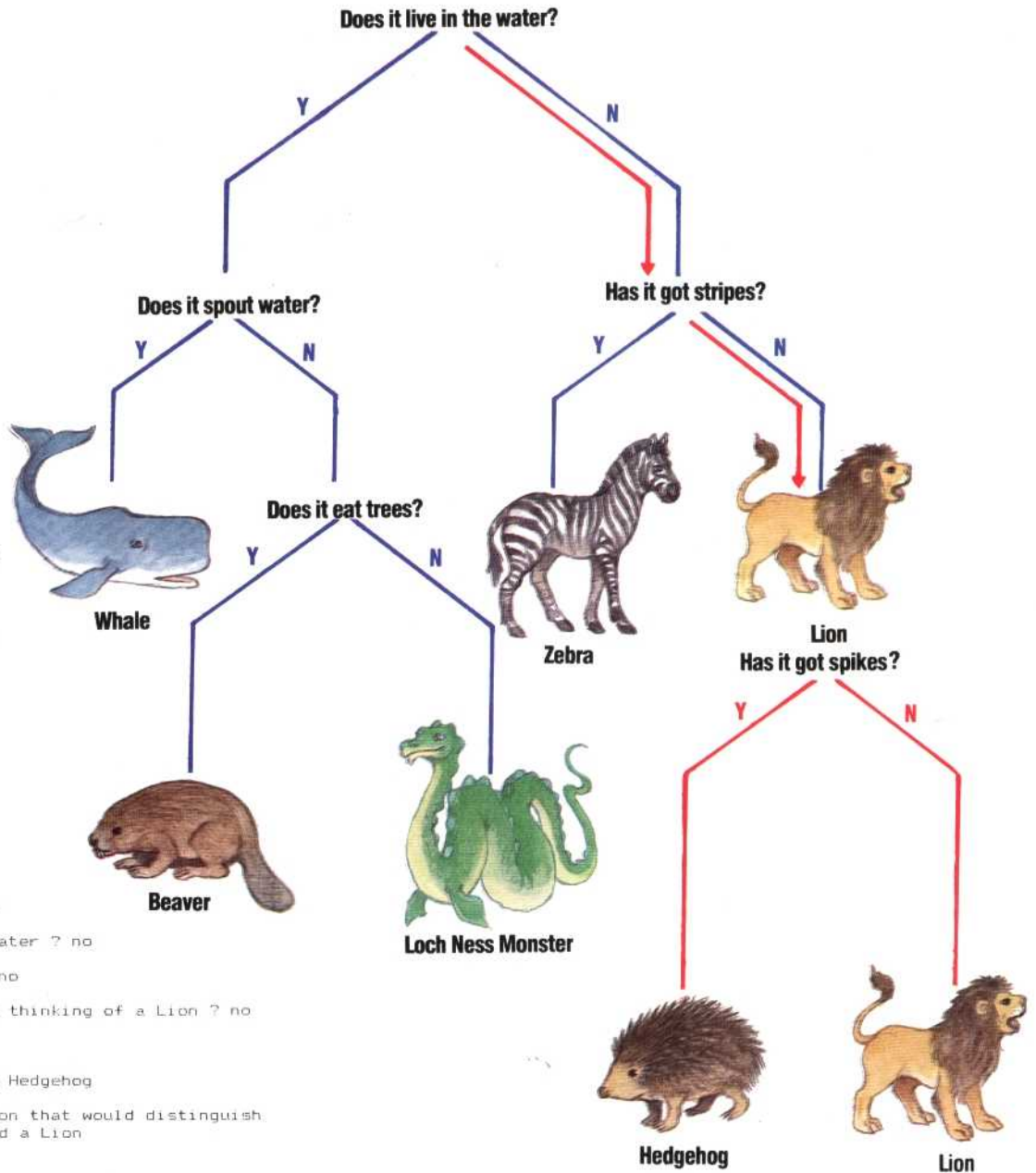


Learning Tree

This diagram shows the Animals tree after several games have been played. Five different animals have been learnt, with four questions to distinguish between them. From the sample run given (shown in red), you can see how the computer uses the tree to respond to the player's answers in the next game.

This time, the player is thinking of a hedgehog and the computer has to learn this new animal when it discovers that the player is not thinking of a lion. The computer then asks for a way to distinguish between a hedgehog and a lion so that it can learn the new animal.

Once you have your own version of the program running, see if you can include a camel



Sample Run

```
Care for a game ? yes
Does it live in the water ? no
Has it got stripes ? no
Is the animal you are thinking of a Lion ? no
I give up!!!
What is your animal ? Hedgehog
Please enter a question that would distinguish
between a Hedgehog and a Lion
? Has it got spikes
For a Lion the answer would be ? no
I now know 6 different Animals !
Care for a game ?
```

```
10 REM Animals game
20 REM
30 REM ** Set up
40 N=100: REM Max no of animals
50 DIM Y(N),N(N),T$(N)
60 C=3:FOR I=1 TO 3:READ Y(I),N(I),T$(I):NEXT I
70 PRINT :PRINT "A N I M A L S ":PRINT
80 GOTO 190
90 REM ** Answer YES or NO
100 PRINT:PRINT D$;" ":INPUT A$
110 IF A$="y" OR A$="Y" OR A$="YES" OR A$="yes" THEN A=1:RETURN
120 IF A$="n" OR A$="N" OR A$="NO" OR A$="no" THEN A=0:RETURN
130 PRINT:PRINT"Please answer YES or NO":GOTO 100
140 REM ** Add A or AN to animal name
150 I$=LEFT$(A$,1):P$=" a "
160 IF I$="A" OR I$="E" OR I$="I" OR I$="O" OR I$="U" OR I$="a" OR I$="e" OR I$="i" OR I$="o" OR I$="u" THEN P$=" an "
170 A$=P$+A$:RETURN
180 REM ** Start a new game
190 D$="Care for a game":GOSUB 100
200 IF A=0 THEN PRINT:PRINT "BYE!":END
210 P=1
220 REM ** Play game
230 IF Y(P)=0 AND N(P)=0 THEN THEN 290
240 O$=T$(P):GOSUB 100
250 IF A=1 THEN P=Y(P)
```

```
260 IF A=0 THEN P=N(P)
270 GOTO 230
280 REM ** Make a guess at the animal
290 A$=T$(P):GOSUB 150:T$=A$
300 O$="Is the animal you are thinking of"+A$:GOSUB 100
310 IF A=1 THEN PRINT:PRINT"I got it!!!":GOTO 430
320 REM ** Learn a new animal
330 PRINT:PRINT"I give up!!!":PRINT "What is your animal ":INPUT N$
340 A$=N$:GOSUB 150
350 PRINT:PRINT "Please enter a question that would distinguish" :PRINT
T "between"; A$;" and";T$:INPUT D$
360 O$="For"+T$+" the answer would be":GOSUB 100
370 A$=T$(P):T$(P)=D$:T$(C+1)=A$:T$(C+2)=N$
380 IF A=1 THEN Y(P)=C+1:N(P)=C+2
390 IF A=0 THEN Y(P)=C+2:N(P)=C+1
400 Y(C+1)=0:N(C+1)=0:Y(C+2)=0:N(C+2)=0
410 C=C+2
420 REM ** End game & loop for another go
430 A=INT(C/2)+1
440 PRINT:PRINT"I now know ";A;" different Animals !"
450 GOTO 190
460 REM ** Initial Data
470 DATA 2,3,"Does it live in the water"
480 DATA 0,0,"Whale"
490 DATA 0,0,"Lion"
```