CISC 235 Assignment 2

Part 2:

```
When n = 100, Average Height of Tree: 13.28
When n = 200, Average Height of Tree: 15.76
When n = 300, Average Height of Tree: 17.30
When n = 400, Average Height of Tree: 18.46
When n = 500, Average Height of Tree: 19.38
When n = 600, Average Height of Tree: 20.00
When n = 700, Average Height of Tree: 20.66
When n = 800, Average Height of Tree: 21.16
When n = 900, Average Height of Tree: 21.60
When n = 1000, Average Height of Tree: 22.22
```

Figure 1: Output from code in Part 1.

Part 3:

Consider the following hypotheses:
H1: The average height of a random binary search tree on n values can be approximated by
c * n where c is a constant.

H2: The average height of a random binary search tree on n values can be approximated by
c * log(n) where c is a constant.

Which of these two hypotheses is most strongly supported by your experimental data?
Using the average height of the trees (h) obtained from the output of the code represented in **Figure 1**, it can be seen in **Table 1**, that the constant values obtained when dividing h by log(n) are more dispersed than those obtained when dividing h by n. Therefore, hypothesis one is more strongly supported by the experimental data.

Table 1: Constant values obtained from each equation.

C = h/n	C = h/log(n)
0.1328	6.64
0.0788	6.849107
0.057667	6.983913
0.04615	7.094379
0.03876	7.180517
0.033333	7.199032
0.029514	7.261613
0.02645	7.288785
0.024	7.311519
0.02222	7.406667