Exercise 1.4.9: Give a formula to predict the running time of a program for a problem of size N when doubling experiments have shown that the doubling factor is 2b and the running time for problems of size N_0 is T.

Solution: Example below: Recall $log_2 N$ is usually used anytime when search interval is halving or doubling by 2. If going down by number n, then becomes $log_n N$

- $T(2) = T(1) * 2^b$
- $T(4) = T(2) * 2^b$
- $T(8) = T(4) * 2^b$
- $T(16) = T(8) * 2^b$ OR $T(16) = T(1) * 2^b * 2^b * 2^b * 2^b$
- $T(N) = T(N/2) * 2^b$
- Therefore, $T(N) = T * 2^{blogN}$