



Objective:

- Learn to calculate the Time equation.
- Some questions related to performance analysis and measurement.

Task - 1:

Study the maximum subsequence sum problem given in R3-reference book (Mark Allen Weiss) in section 2.4.3.

You may come across some programming competition problems in which you may crack the problem using maximum subsequence sum problem.

Task - 2:

Part-A: An algorithm takes 0.5ms for input size 100. How large a problem can be solved in 1 min if the running time is the following:

- a) Linear
- b) Quadratic
- c) Cubic

Part-B: An algorithm takes 0.5ms for input size 100. How long will it take for input size 500 if the running time is the following.

- a) Linear
- b) Quadratic
- c) Cubic

Part-C: Consider an algorithm with time equation $T(N) = N^3$, is able to compute a problem size $N = 100$ on our system in 10 seconds. Answer the following:

- C.1. How long will it take for our system to compute a problem size $N = 300$?
- C.2. If we execute the algorithm on a system which is 100 times faster than our system, how large of a problem size can we compute in 60 seconds?
- C.3. How much faster than our system will a computer have to be in order to compute a problem size $N = 10000000$ in a time span of 1 hour?