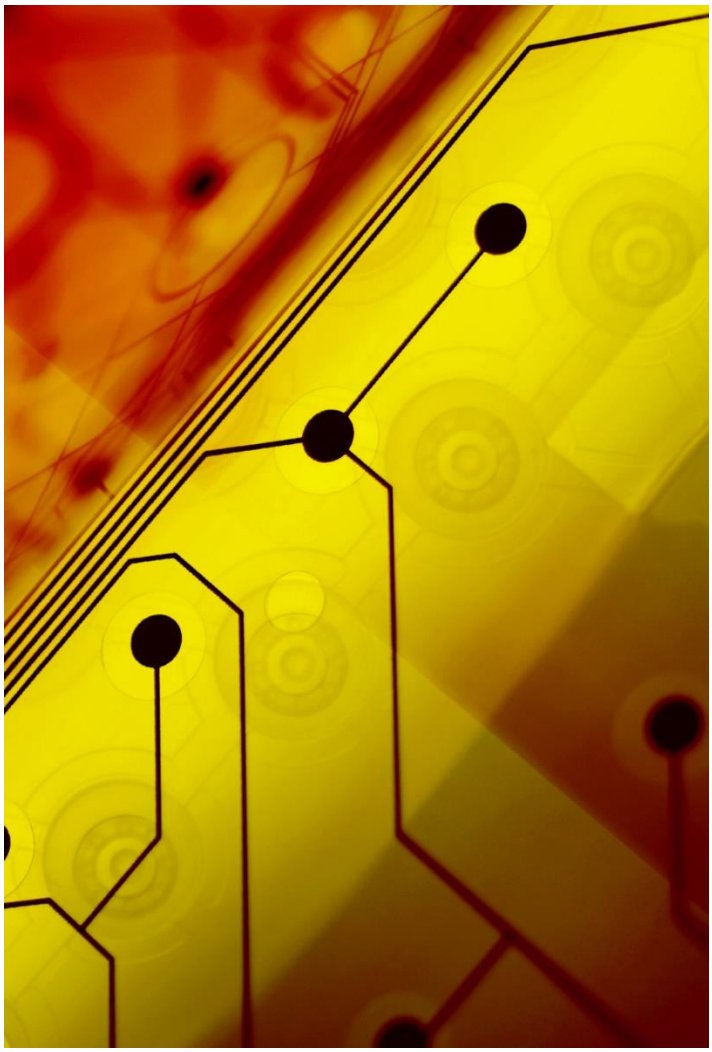

Competitive Programming

IET SMP

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17IT124

7/18/2018

Acknowledgement

I am highly indebted to Naveen and Abhishek for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

I would like to express my gratitude towards my peers in this mentorship who actively participated in contests and gave good competition, thus helping me to improve my skills and sharpen my knowledge in competitive programming.

I feel I will be a better competitive programmer because of this mentorship.

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Problem Definition

Competitive programming is solving well-defined problems by writing computer programs under specified limits. Where you are presented with one or more problems. The problem statement contains variables, and you must be able to answer the problem if given any possible combination of values of the variables. The problem will be well-defined: you will be informed the exact constraints of all variables, any necessary assumptions, etc.You write computer programs that solve the problems. Note that the "computer program" here is a very simple command-line program; no fancy GUI or web app etc. The command-line program reads the values of the variables from the standard input, and must write the answer to the standard output. Your program must run and produce the answer within a specified time and memory limit. Also, you must write the programs in a specified set of allowed programming languages.

Sessions

In this mentorship, we had sessions for the following topics:

- Introduction to competitive programming and STL in C++
- Game theory
- Maths for CP and linear data structure
- Greedy paradigm and bit manipulation
- Trees and Graphs(BFS and DFS)
- Dynamic Programming
- More graph algorithms(MST, Dijkstra's, Bellman Ford)
- Segment Trees for range queries
- Square root decomposition

We also had assignments for after each session. Two contests were conducted during the mentorship.

The mentorship ended with a final contest.

Code

Assignments:
https://drive.google.com/open?id=1n4BX5PWDPj58wywqLbhWsXMJBuFW0N3C

Contest 1:

Pop Count

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/pop-count/submissions/code/1307845944

Let's Play Odd Even

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/odd-even-saga-1/submissions/code/1307846232

Van Helsing snares Dracula

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/van-helsing-snares-dracula-1/submissions/code/1307848556

Shipment of Toys

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/shipment-of-toys/submissions/code/1307848697

Game of Numbers

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/playing-with-numbers-5/submissions/code/1309088065

Final Contest:

Play to Win

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/play-to-win/submissions/code/1309029747

Make the arrays same

Submission: https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/make-the-arrays-same/submissions/code/1309029754

Future Work

I plan to further enhance my knowledge and sharpen my skills. I wish to develop a good intuition in algorithms and data structures and use my knowledge to implement efficient algorithms and come up with innovative solutions for various problems.

I will also start preparing for the ACM ICPC contest and hope to do well in the contest.

I shall also start preparing for the intense course work required with respect to the DSA course of the IT department.