IET SUMMER MENTORSHIP 2018

COMPETITIVE PROGRAMMING

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ACKNOWLEDGEMENT

I would like to thank Naveen and Abhishek for conducting such informative and interactive sessions which helped me learn new topics of competitive programming.

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Problem Definition

Competitive programming is solving *well-defined problems* by writing *computer programs* under *specified limits*.

Based on the above definition, competitive programming has three aspects:

- **Well-defined problems**. You are presented with one or more problems. The problem statement contains variables, and you have to 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.
- **Computer programs**. 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.
- **Specified limits**. 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.

Overview:

We had around one session per week .

The sessions were really effective and interactive .

Following are the topics taught in the sessions:

1. STL in C++
2. Game theory
3. Math for Competitive programming
4. Greedy paradigm and bit manipulation
5. Graph theory and trees and heaps
6. Dynamic Programming
7. Segment trees and Square root decomposition

Code:

1.Assignment 1:

https://github.com/IET-NITK/CP-Summer-Mentorship-2018/tree/master/assignments/17IT221_Madhuparna/Assignment%201

2.Assignment 2:

https://github.com/IET-NITK/CP-Summer-Mentorship-2018/tree/master/assignments/17IT221_Madhuparna/Assignment2

3.Assignment 3:

https://github.com/IET-NITK/CP-Summer-Mentorship-2018/tree/master/assignm

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4.Assignment 4:
https://github.com/IET-NITK/CP-Summer-Mentorship-2018/tree/master/assignments/17IT221_Madhuparna/Assignment4

5.Assignment 5:

6.Assignment 6:

CONTESTS:

1.Contest 1:

a)Pop count

https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/pop-count/submissions/code/1307846005

b)Lets play odd even

https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/odd-even-saga-1/submissions/code/1307845953

c)Summation series

https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/summation-of-series/submissions/code/1307846363

d)Van Helsing snares Dracula
https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/van-helsing-snares-dracula-1/submissions/code/1307846577

e)Shipment of toys
https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/shipment-of-toys

f)Good Knight
https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/good-knight/submissions/code/1307848322

g)Fill the tank
https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/fill-the-tank-1

h)Game of numbers
https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/playing-with-numbers-5

i)Calculate the power

https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/calculate-the-power/submissions/code/1307850009

j)Golf with gray code
https://www.hackerrank.com/contests/cp-summer-mentorship-test-1/challenges/golf-with-gray-code/submissions/code/1307870058

2.Contest 2:
a)Munni vs Bunny
https://www.hackerrank.com/contests/cp-summer-mentorship-test-2/challenges/munnivsbunny/submissions/code/1308737702

b)Trip to Bahamas
https://www.hackerrank.com/contests/cp-summer-mentorship-test-2/challenges/trip-to-bahamas/submissions/code/1308737815

c)Am I special
https://www.hackerrank.com/contests/cp-summer-mentorship-test-2/challenges/am-i-special/submissions/code/1308737862

d)Diaz in Vice City

https://www.hackerrank.com/contests/cp-summer-mentorship-test-2/challenges/diaz-in-vice-city/submissions/code/1308738506

e)Tyrion and his tree

f)Xor on arrays
https://www.hackerrank.com/contests/cp-summer-mentorship-test-2/challenges/xoronarray/submissions/code/1308741515

3.Contest 3:
a)Lesser Primes
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/lesser-primes

b)Bunny loves u
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/bunny-loves-u

c)Play to win
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/play-to-win/submissions/code/1308958570

d)Make the arrays same
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/make-the-arrays-same/submissions/code/1308924253

e)Choice of seats
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/choice-of-seats/submissions/code/1308959655

f)Cyclic array problem
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/cyclic-array-problem/submissions/code/1308930976

g)Good subsequence
https://www.hackerrank.com/contests/cp-summer-mentorship-final-contest/challenges/good-subsequence-1

h)Bob and the city
i)Jumps on array

FUTURE WORK

I look forward to take part in various competitive programming contests and explore new topics.