Programming Challenges

Event Overview

I. Description
   A. Competitors will write algorithmic or heuristic code to solve multiple short tasks on the Hackerrank platform (hackerrank.com/cssa) . Coding languages such as C++, Java, Python, JavaScript, Scala, and Swift are allowed.

II. Participants
   A. Competitors must work individually.

III. Format
   A. Competitors will solve three tasks, each of which has five test cases. Each individual test case will have different weights and will affect the score respectively.

IV. Materials
   A. Competitors are allowed to create a binder (online or physical) which they can use during the test.

V. Scoring
   A. Competitors are graded based on their accuracy to solve all test cases. If a tie occurs, competitors will be graded for their accuracy on the bonus task (fourth task), which has ten test cases. If a second tie occurs, individuals will be graded on their time taken to solve the first three tasks.

Event Topics

I. Competitors may be tested on and asked to solve tasks involving any of the following topics and any subtopics falling under them:
   A. Complete Search
   B. Sorting & Sets
   C. Prefix Sums
   D. Sorting & Searching
   E. Graphs
   F. Dynamic Programming
   G. Trees
   H. Miscellaneous Topics

Event Resources

- USACO Guide
  - Contains algorithms and exercises for specific algorithms. Levels are divided into bronze, silver, gold, and platinum. Platinum is the highest level of difficulty on this site.

- Book on Competitive Programming
    - Contains basic introduction on competitive programming, important data structures and libraries, problem solving paradigms, graphs, mathematics, string processing, and geometry.
- Understanding programming languages
    - Great resource for beginners who are entering the sector of competitive programming and C++
- Algorithms List & Explanations, GeeksforGeeks
    - Covers greedy algorithms, dynamic programming, geometric algorithms, mathematical algorithms, bit algorithms, etc.