



IPSC IT FEST 2026

Support Material

Algorithm Challenge

The Doon School

DEHRADUN

Support Material

1. A worked run (NOTE: This is only an example)

1.1

00:00 - 05:00 (Setup): Team logs into the local workstation. They open Python IDLE, check the keyboard mapping, and run print("Hello World"). The compiler returns the text successfully. Status: Passed inspection.

05:00 - 20:00 (Planning Phase): The two compulsory questions are released. The participant uses the provided paper to draw logic flowcharts for Question 1 (an array manipulation problem) and Question 2 (a string parsing problem). Hands are kept strictly away from the keyboard.

20:00 - 01:35:00 (Coding Phase): The participant writes code for Question 1, testing it with custom inputs via the IDLE interactive shell. At 01:10:00, they complete Question 2.

Live Run Execution: The participant launches the live run portal for Question 1. They enter input values into the console interface. The code executes, prints the output, and terminates cleanly on its own within 45 milliseconds.

Scoring Evaluation:

• Functional Correctness: Passes all 10 hidden test cases (35/35 points).

• Efficiency: Achieves the optimal O(n) complexity check (10/10 points).

• Structure: Code includes documentation comments for the core loop functions (5/5 points).

• Total Score: 50 points achieved for Question 1.

2. Starter guide

2.1 The core technique this event tests is algorithmic optimization under space-time constraints. Solving a problem is not just about getting the correct output; it requires selecting the ideal data structures (like maps, arrays, or stacks) to minimize computational overhead. Error Handling is also something that may be appreciated.

3. What to learn

Concept	Why it matters here	Where to start
Basic Loops & Conditions	Tells the computer how many times to repeat an action or when to make a decision.	Practice writing basic for and while loops, along with if-else statements.
Built-in Data Structures	Choosing the right container ensures faster lookups, insertions, and memory tracking.	Learn Python's dicts/sets and Java's HashMaps/HashSet implementations.
Efficient Standard Libraries	Essential tools like numpy or pandas speed up mathematical processing dramatically.	Practice vectorized array sorting and indexing methods without explicit loops.
Console I/O Stream Handling	Your program must be able to take typed user values and print back the answers clearly.	Master using Scanner in Java or the basic input() and print() functions in Python.
Arrays and Lists	Used to hold a collection of items (like a list of scores or names) in one single variable.	Learn how to create an array, look up an item by its index, and loop through it.
String Manipulation	Helps you read, break down, clean up, and check blocks of text or words.	Practice basic built-in actions like splitting a sentence into words or converting text to lowercase.

4. Common mistakes

4.1 Anticipating frequent participant errors based on past events:

• Failing the Hard Timeout: Writing basic brute-force solutions with nested loops that crash or timeout when faced with large hidden test datasets.

• Modifying Executing Code: Attempting to alter a variable name or fix a typo mid-execution, triggering an automatic run disqualification.

• Ignoring the Planning Phase: Typing out code immediately at the 5-minute mark without drawing flowcharts, leading to messy logic errors that consume valuable debugging time.

• Relying on Graphical Outputs: Attempting to build full GUI window animations via matplotlib during the live run instead of outputting data streams directly to the console interface.

5. FAQ

5.1 Expected questions and answers:

Q: Can I use both Java and Python during the event?
A: No. You must pick exactly one language and stick to it for both compulsory questions throughout the entire duration of the competition.

Q: What happens if my program gets stuck in an infinite loop during a live run?
A: If execution exceeds the hard timeout limit of 300 seconds, the run will be forcefully terminated, resulting in a zero score for that execution's metrics.

Q: Am I allowed to look up syntax rules on Google Search during the round?
A: No, using the Internet during the round is not permitted and any generative AI platforms like Gemini, ChatGPT, or Copilot is strictly prohibited.

Q: What happens if my assigned computer randomly shuts down mid-round?
A: You must alert an Event Head immediately to call an Emergency Stop. Your timer will be paused while technical provisions are made or your workstation is shifted.

Q: Do I get partial credit if my code passes only half of the tests?
A: Yes. Functional correctness is scored incrementally. If your program passes 5 out of 10 hidden test cases, you will receive partial marks for that criterion.