

Problem Solving

# INTRODUCTION

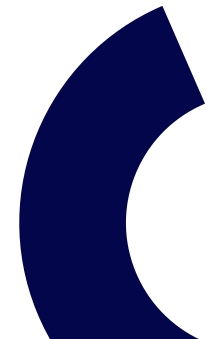
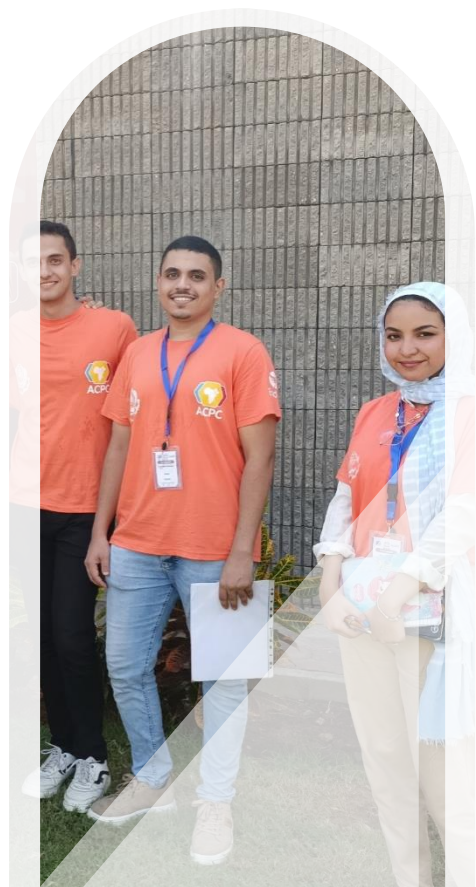
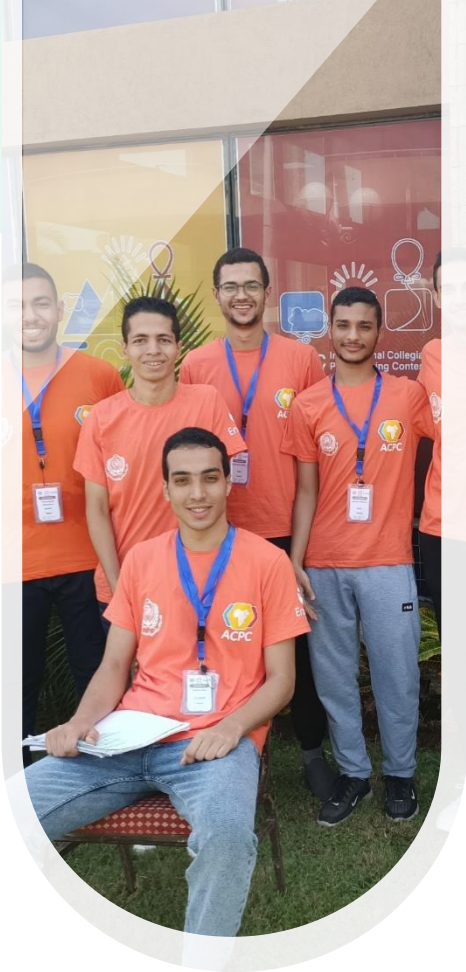
FRI, 13 NOV 2021





# About Us

- We are FCI-FU final year students.
- We participated in ECPC 2019/2020 and 2020/2021.
- Some of us got seventh place in ECPC qualifications 2019/2020.
- Some of us got third place in ECPC qualifications 2020/2021.
- Two of us made it to the top 10 of the ECPC 2020/2021 Qualifiers.



# Vision

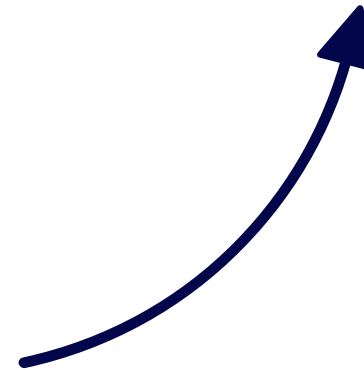
Build community that help students to have ability to think, analysis and solve problems and make them ready to join in problem solving competitions.



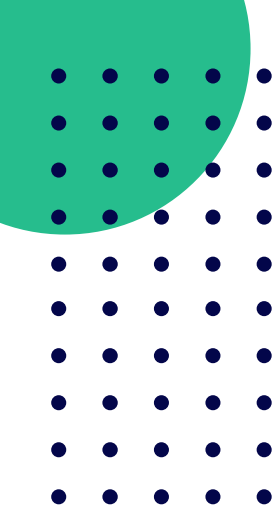
THINK



ANALYSIS



SOLVE





# Mission

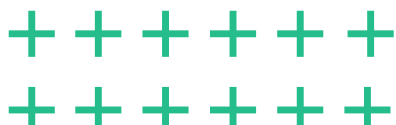
Make weekly two-level sessions and creating competitions that simulate the ECPC competition.

**01.**

Basic of Programming  
in C++

**02.**

Problem Solving





# Problem Solving

What and Why?





# Programming Competition

What and Why?



# Programming Competitions

- Programming Competitions (Competitive programming) is a mind competition and it is a hobby and much fun for many.
- Competitions is your gateway to do much practice to build Algorithmic Solving skills.
- Competition can be individuals or teams and online or onsite.





# Competitions Styles



## Offline

- ICPC (College Level).
- IOI (Secondary School).



## Online

- Codeforces.
- Hackerrank.
- UVA.
- SPOJ.
- LeetCode.



## Programming Languages

- **C++** and **Java** are the most popular languages in Programming Competitions (main in ICPC).

\* Python is also used in competitions but it is not recommended.





# ICPC Competition

- International Collegiate Programming Contest
- (ICPC) is the oldest, largest, and most prestigious programming contest. It is a Battle of the Brains.



# ICPC Levels

- 01.** Qualifications are made in which all universities compete, and 10% of the number of participating teams qualified for each university.

- 03.**
- Nationals Winners qualified to regional.
  - ACPC: Arab Collegiate Programming Contest.

Local competitions

National Level

Regional Level.

World Finals.

- 02.**
- Each country has formal national competition.
  - ECPC (Egypt), LCPC (Lebanon), ...etc.

- 04.** Winners in the regions are qualified to World Finals.



# Gains from competitions

- Speed, Coding, Debugging, Testing Skills.
- One critical gain from competitions is the increase of your tools (data structures, algorithms, tricks and workarounds, .... etc.)
- Teamwork working under pressure.
- The skills acquired in programming contests also improve career prospects, as they help to pass the "technical interviews", which often require candidates to solve complex programming.



# Content



# LEVE 1: Basic of Programming in C++

This level is an introduction to the fundamentals of computer programming, It is specifically designed for students with no prior programming experience.

This level uses C++ for implementation.

## Duration

- 8 sessions
- 1 session per week
- 3 Hours for each session



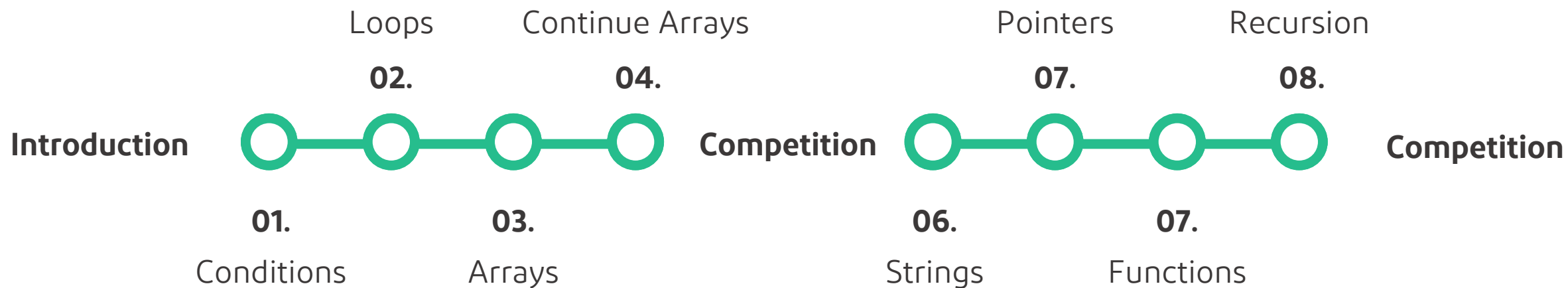


# Content

- Condition.
- Loop.
- Arrays.
- Strings.
- Pointer.
- Time complexity.
- Dynamic memory.
- Functions.
- Recursion.

# Our Schedule

(First semester)





# References

## Online Judges

### ■ Codeforces.

- <https://codeforces.com/>

### ■ Hackerrank.

- <https://www.hackerrank.com/dashboard>

### ■ vjudge.

- <https://vjudge.net/>

### ■ URI.

- <https://www.beecrowd.com.br/judge/en/login>

### ■ UVA Online Judge.

- <https://onlinejudge.org/>

## Videos

### ■ ICPC.

- <https://www.youtube.com/watch?v=TngPtAFRcbE>

### ■ What is Codeforces.

- <https://www.youtube.com/watch?v=7y6jB16zVl8>

### ■ Other Online Judges.

- [https://www.youtube.com/watch?v=hc\\_GdHypDqU](https://www.youtube.com/watch?v=hc_GdHypDqU)

### ■ Installing CodeBlocks.

- <https://www.youtube.com/watch?v=EGMLihuNNGo>







# THANKS!

Any Questions?!