

# TMS Coding Club

10/21/2021

# Vision

- ▶ Inspire interests in programming and help students get prepared to change the world by learning a lifetime skill, gaining confidence and opportunity

# Goal

- ▶ Inspire Interest
  - ▶ It is creation, it is fun, it is mental sport
- ▶ Learn knowledge
  - ▶ CS concepts and programming languages
- ▶ Develop capabilities
  - ▶ Problem solving skills and computational thinking
- ▶ Build character traits
  - ▶ Persistence, collaboration
- ▶ Challenge ourselves
  - ▶ Participate programming competition, build real applications

# Level & Focus

## ▶ Group A - Beginner

- ▶ With no or little coding experience

## ▶ Focus

- ▶ Basic CS and coding concepts
- ▶ Python learning
- ▶ Simple projects

## ▶ Group B - Intermediate (Focus on Programming Competition)

- ▶ Basic knowledge in programming language (Python, Java, or C++, C++ preferred)
- ▶ 6 months+ coding experience
- ▶ Interested in participating programming competitions

## ▶ Focus

- ▶ Proficiency in language and basic libraries
- ▶ Data structures and algorithms
- ▶ Problem analysis and solution efficiency
- ▶ Debugging/troubleshooting skills
- ▶ Practice and participate programming competitions

## ▶ Group C - Intermediate (Focus on Building Applications)

- ▶ Basic knowledge in programming language
- ▶ 6 months+ coding experience
- ▶ Interested in building real applications

## ▶ Focus

- ▶ Proficiency in language
- ▶ Basic data structures
- ▶ Extended libraries
- ▶ Debugging/trouble shooting skills
- ▶ Relatively complicated projects and build real applications
- ▶ Teamwork

# Activities

- ▶ Learn by doing, practice and working together
- ▶ Weekly meeting/gathering (virtually for now) based on group, for coaching, sharing, assignment report back, etc.

## ▶ Group A - Beginner

- ▶ Teaching by coach
- ▶ Work on simple projects
- ▶ Move to Group B or C when ready

## ▶ Curriculum

- ▶ Know coding environment and tools
- ▶ Learn Python basics - variables, basic data structure, control and condition statement, functions, classes
  - ▶ <https://www.learnpython.org/>
  - ▶ [Python Crash Course](#)
- ▶ Simple projects

## ▶ Group B - Intermediate (Focus on Programming Competition)

- ▶ Teaching/sharing by coach (also guest speaker)
- ▶ Students sharing and discussion
- ▶ Practice solving competition problems
- ▶ Participate programming competition both individually and as a team
  - ▶ ACSL (American Computer Science League)
  - ▶ USACO (USA Computing Olympiad)

## ▶ Group C - Intermediate (Focus on Building Applications)

- ▶ Teaching/sharing by coach (also guest speaker)
- ▶ Students sharing and discussion
- ▶ Work on various relatively complicated projects (normally take weeks), like gaming, animations, websites, data analysis, etc. Most ideas could be coming from students.
- ▶ Participate in App challenges

# Others

- ▶ Coach/volunteer recruiting
  - ▶ Both parent coaches and student coaches(high school preferred) are welcome
  - ▶ 3 years+ coding experience (coaching experience is a plus)
  - ▶ For Group B, with programming competition background, USACO Silver or plus
  - ▶ For Group C, with experience of application creation
  - ▶ Biweekly staff/coach sync-up
- ▶ Students to use their own computers