EMS Coding Club

8/26/2024

In this session

- Goals of the club
- What will we learn?
- How will each session be?
- How to join?

Goals

Inspire
- Expose students to the wide world of computer science
- Explore their level of interest

Learn
- How to think like a programmer?
- Core Computer Science Concepts
- Hands-on coding

Build
- Work on projects that are interesting
- Develop algorithms for a class of problems

Participate
- Compete in coding events

What will we learn

Core Concepts

- Example Topics:
  - Problem Decomposition
  - Pattern Recognition
  - Abstraction
  - Algorithms
  - Order of Complexity
  - Testing
  - Agile Methodology
  - How to use modern tools?

Basic Python

- Example Topics:
  - Language syntax
  - Comments
  - Variables
  - Data Types
  - If…Else statements
  - For Loops
  - While Loops
  - Lists
  - Tuples
  - Sets
  - Dictionaries

Advanced Python

- Example Topics:
  - Functions
  - Arrays
  - Classes/Objects
  - Inheritance
  - Iterators
  - Modules
  - File Handling
  - Pygame
  - Numpy
  - Intro to machine learning

What students will need?

- Meeting will be online
  - So, they will need a computer (not school computer) with function audio and camera. Please let Club Chair know if student does not have access to a computer.
  - Video will need to be turned on at all times.
  - Online meeting chat will not be restricted. So, students need to be cautious on what they post in meeting chat.
  - A quiet place to take the class
- Communication with be via Google Classroom
  - Students will need access to a Google Account
  - They should be able to join Google Classroom and access Google colab
- Their complete presence
  - Do your work ahead of each session.
  - No distractions – any student can be called upon at any time.
  - Help other students who are stuck.
  - Learn from those who are ahead.

How will each session be?

- Wed 5:00pm to 6:00pm (starts Sep 25th)
- Virtual Meeting + few in-person events
- Students will be given videos to watch and projects/assignments to do ahead of every session.
- If we get enough volunteers, assignments will be graded.
- In every session, we will pick a few students and have them show their work. Parents should ensure that student can log-in, install software, present their screen and have no online-meeting issues.
- Students will help those who could not solve previous week's assignments.
- We will introduce a new topic (different topics for basic vs advanced)
- Students will start work on next topic in class.
- 5 min Reflection
- Example projects:
  - Create your own rock, paper, scissor game (Introduces variables and conditional statements)
  - Secret Messages (Encryption program that introduces iteration (looping) over text string)
  - Fetching the weather (HTTP requests, RESTful APIs)
  - Password generator and many mor

Roles – We need Volunteers every week

- Chair
  - Kaushik Pushpavanam Kaushik@evergreenptsa.org
  - Ensure Club success.

- Coach
  - Emily He emily@evergreenptsa.org
  - Leads every class and sets curriculum and lesson plans.

- Coaches' jobs:
  - Communicate ahead of every class.
  - Teach new programming concepts.
  - Ensure good participation in class.

- Parents/Guardians
  - Help kids with their technical issues
  - Help with checking kids work.

- Other Volunteer jobs:
  - Grade Assignments.
  - Guide students to participate in competitions
  - Administrative work (register teams for competitions etc.)
  - Help with fun events like Pizza Parties.
  - Others as needed

Competitions

- [American Computer Science League (acsl.org)](acsl.org)
- Junior / Intermediate Division - Each contest consists of an online 30-minute, 5-question short answer test and an online programming problem to solve in 72 hours.
- Each Team can have max of 12 members
- There are four contests during the regular season.
  - Contest #1: available Nov. 1, 2023; closes Sunday January 14, 2024 @ 11:59pm EST
  - Contest #2: available Jan. 2, 2024; closes Sunday March 3, 2024 @ 11:59pm EST
  - Contest #3: available Feb. 5, 2024; closes Sunday April 7, 2024 @ 11:59pm EDT
  - Contest #4: available March 11, 2024; closes Sunday May 12, 2024 @ 11:59pm EDT

Competitions

- [Home - Bebras® Computing Challenge (bebraschallenge.org)](bebraschallenge.org)
- The next USA Bebras Challenge takes place from 6 - 19 November 2023
- The Bebras challenge is designed to help students explorer their talents and passion for informatics and computational thinking with engaging challenges.
- Benjamins (age 10-12) / Cadets (age 12-14) - Each group will get 3 sets of 5 tasks. The 3 sets each have a level of difficulty: easy, medium or hard. They will have 45 minutes to complete the tasks.

Other Competitions

- Congressional App Challenge
  - Students create and submit their original apps for a chance to win

- Hackathons
  - Code day (https://www.codeday.org/)

How to join?

- Just click https://evergreenptsa.org/Packet/CodingClubReg
- Please note that you must login to Evergreen PTSA website for registration

Questions?

Please email

Kaushik Pushpavanam

Kaushik@evergreenptsa.org