DigiCode Applied Programming Youth Contest 2022

The Union of Advanced Technology Enterprises (UATE) is initiating the 7th annual "DigiCode" youth Applied Programming competition.

Goals:
- Contribute to the development of algorithmic thinking in adolescents
- Create a game developer out of game players
- Identify talented young people and give them the opportunity to develop their skills
- Identify active schools and individuals

Who Can Participate?
- School children
- Students of Secondary Professional Educational institutions

Programming languages and environment
- Scratch / Aghues
- K-turtle / Kria
- Python

Scratch is a graphical programming language developed by the Massachusetts Institute of Technology (MIT) which is easily accessible to students, teachers and parents.
Aghues is the Armenian version of Scratch with new modules used to program robots.

Kturtle is a programming language developed by the Massachusetts Institute of Technology (MIT) that is easily accessible to pupils, students, teachers and parents. It is a convenient tool for providing students with basic knowledge of mathematics, geometry, and programming. **Kria** is the Armenian version of the Kturtle Program, including the Armenian script, which is used to program robots.

Python is a high-level programming language, through which students can develop a program quickly and integrate with hardware devices. The script is simple and easy to read. Today it is widely used in a number of IoT devices.

How to Register:
- For Scratch/ Aghues fill out the application here.
- For K-turtle/ Kria fill out the application here.
- For Python fill out the application here.

What You Need to Do:
- Register on scratch.mit.edu with your full name.
- Create and upload your own work.
- Take a video about your game/project.

Stages:

Applications and submissions are accepted until **April 1, 2022.**
The regional stage of the competition will take place on **April 9**, where the finalists will be selected. The finale will be held on **April 23**.
During the regional rounds and finale, the participants will present their work for **4-5 minutes** and will answer questions from the jury members. After summarizing the results, winners from different categories will be selected.

Nominations:
Scratch/ Aghues:
- Virtual Laboratory on **STEM** (Science, Technology, Engineering, Mathematics) subjects
- Computer games using inertia, gravity, and other physics phenomena

K-turtle/ Kria
- Best Algorithmic Solution (Application of Mathematical Formulas). This category will be based on the **Olympiad's** dimension. Computers will be provided at the competition venue and **2.5 hours** will be given to complete the tasks.

Python
- New technical solutions for device integration
- For example, with the help of Raspberry Pi or another type of single-board computer, create a program that can measure and display the weather, location, humidity and/or other necessary characteristics of a particular area. The program can be based on both Local (existing on the computer) databases and online APIs.

Obligations
- When registering on the Scratch.mit.edu website, fill in:
  - ➢ Your first and last name
  - ➢ School
  - ➢ Age
  - ➢ Title of your project

- The virtual labs should be beautifully designed, with a complete script, of an educational or cognitive nature. (Non-linear Algorithms are an advantage)

Computer Games Must Meet the Following Criteria:
Scratch/ Aghues Projects:
- The main menu contains
  - Start or Play
  - Settings
  - Info
  - How to Play or Rules or Help
- In either Armenian or English
- More than **5** active characters that can change the course of the game
- More than **12** unchanging but active sprites

- More than **4** game levels (worlds)
- More than **7** applicable variables (e.g. points, lives, time etc.)
- Sound effects
- English comments
  Fighting games with violent and aggressive scenes are prohibited

K-turtle/ Kria Projects:

- Mandatory to use mathematical formulas (non-linear algorithms),.
- 2-Dimensional coordinates, drawing of geometric formulas, having some preliminary data (e.g. one side of the triangle, the angle, the volume of prism, the height etc.)
- Tasks will be given in advance by the organizers.

Python Projects (device integration):

- Devices can be Raspberry-Pi or any other single-board computer.
- You need to use more than 1 sensor, depending on the problem you are solving.
- The problem needs to be simple and understandable.
- The most important part of the project is the programming, no engineering knowledge is required (no robotics construction is required).

Duplicated games and programs/ projects downloaded from the internet will be disqualified and will not be allowed to participate in any future competitions.
Do not download and use scripts from Scratch.mit.edu whose algorithms are not written by you.

Awards:

- Cash prizes
- Participation in training course
- Opportunity to be an expert at an IT company
- Camp ticket
- Equipment, robot parts, printing materials, etc.

You can use the following links as literature:

armath.am/hy/resource/ category / programming
wiki.scratch.mit.edu/wiki/Scratch_3.0 , https://userbase.kde.org/KTurtle
ggg.nairi.education/#887 ,https://pythonhosted.org/RPIO
armath.am/uploads/E-learning/Aygestan/RaspberryPi_Python.pdf
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Python_guide_for_beginners_v2.pdf ggg.i-gorc.am/#69