

GAME ON

Overview

I had the opportunity to run this year's 'Compute This' event at the Indiana Science Olympiad. I had proctored I would like to suggest another computing event that might draw more interest from middle school students, and would be more exciting for the participants. I'll outline the proposal with the format used in the "Compute This" summary, as I'm not sure what the official format for submitting a new event is.

Essentially, I propose that the teams build games using the excellent program "Scratch," available free from MIT (<http://scratch.mit.edu>) This program allows non-programmers to experiment with programming concepts and multimedia by creating their own games and animations. It comes complete with an image editor, audio editor, and tile-based programming system. I've used it with third graders, so it is certainly within the grasp of clever middle-school students.

I'd expect students to practice with the tool before the competition, as it is freely available for home and school. The students would then come to the competition and be given a theme. They would then have 50 minutes to create a simple game incorporating that theme.

Description

This event involves creating a computer game using the free tool Scratch. Scratch may be downloaded from <http://scratch.mit.edu>. Students are presented with a theme, and must build an original game incorporating that theme. Students will be graded on completeness of the game as well as documentation and aesthetic appeal.

A team up to

2 students on one computer.

Event Parameters

No external resources may be used during the competition. Students may not bring in pre-constructed game assets or files. Students may not access the Internet during the competition, except as advised by judges (for getting the theme or submitting files, for example.) All resources used in the game must either be original creations, stock images and sound that comes with Scratch, or modifications of the resources that are shipped with Scratch. Students may bring a headset and microphone to assist in recording and testing audio.

The Competition

During the competition, each team will be supplied with one computer running the most current version of Scratch. No other software should be open on the desktop during the competition, unless directed by the judges.

Teams will be given a broad theme to build their game around. Games that are not centered around the theme will be penalized, to encourage all games to be completely original during the event. Some possible theme ideas:

- Fire
- Gravity
- Silly Sports
- Frogs

The team will have complete freedom within the software to make a game that is based on the theme.

Each game is expected to have a few common characteristics, including the following:

- Some sort of introduction screen
- Some kind of help screen indicating how to play the game (can be on the introduction)

- Some kind of game play screen
- User interaction of some type (probably keyboard or mouse)
- Some kind of autonomous behavior (objects that move without user input)
- Collision detection
- Scorekeeping mechanism of some type
- Some type of feedback mechanism when the game is finished
- Documentation in the 'about this project' tab of the save page

Students will also be scored on the quality and originality of artwork (graphics and sound) as well as gameplay and overall impression.

After the competition, students will save their files to a designated spot (most likely the desktop) and will submit the assignments according to the Judge's instructions (this could be collecting on a USB drive or submission to an online repository, for example).

Scoring

The following score sheet is recommended. If possible there should be more than one judge examining each game, to provide some inter-operator reliability.

Part 1 Game Mechanics

- Introduction (5 pts)
- Help / instructions (5 pts)
- User control (5 pts)
- Autonomous sprites (enemies, powerups, whatever) (5 pts)
- Collision management (5 pts)
- Scorekeeping (5 pts)
- De-briefing (5 pts)
- Documentation (5 pts)
- Code organization (neatness, named objects, use of message-passing to organize code) (10 pts)

Judges will have some discretion. For example, an archery game may not require moving sprites that are not under the player's direct control, but the judge could choose instead to use these points to reward the mechanics of an arrow that follows gravity. Such exceptions should be clearly marked on the rule sheet.

Part Two – Game Play

- Implementation of the theme (10 pts)
- Quality and originality of graphics (10 pts)
- Use of sound (10 pts)
- Play balance (difficulty or ease of playing) (10 pts)
- Overall impression / originality. (10 pts)

Additional thoughts

It seems to me this would be a very exciting project for the students and coaches, and would be a very good introduction to computer science. Students are very interested in video games, and the opportunity to actually build a game will be highly motivational to them.

Scratch is freely available from the MIT media lab. I would be happy to write for them about explicit permission to use in this project, but I expect they will be very happy to do so, especially if we give them the credit due on the project. (In the unlikely event they do not approve, there are some other good tools I could recommend instead.)

I'm aware that some coaches will not know how to lead this project during the first year, but the material on the scratch site is quite good. I would also be willing to create some online videos for coaches, students, and parents, explaining how the software works, and how to prepare for this event. I'd also be willing to work with the regional event coordinators to help them plan their event.

It would also be possible to allow teams to build their games before the event and then present them during the event. I believe this is the model for a number of other events that involve impounding the project early in the day. If we do it that way, the teams could create more elaborate games, but it would be much harder to know exactly what they did. I think it's worth trying a live event first to see if it's reasonable, then moving to the impound technique if we find that 50 minutes simply isn't enough time.

Thanks for considering to pilot this event....

If you need help with this event you may want to contact:

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