

Interactive Game Design with Greenfoot – YEAR 1

Greenfoot Single-player Interactive Game

Level:	High School. Open to any competitors who have not previously competed in a Year 1 or Year 2 Greenfoot Competition.
Type of Contest:	Team
Composition of Team:	2 – 4 students per team
Number of Teams:	10 entries per Center

Greenfoot is an innovative 2D programming environment that makes it easy and fun for students to learn fundamental constructs of object-oriented programming through the creation of animated video games. Designed to be a teaching tool for introductory Java-based computing, it uses 2D graphics and a drag-and-drop interface, as well as direct insertion of Java code, to facilitate an engaging intermediate programming experience.

OVERVIEW

Develop an educational and creative interactive game using Greenfoot to teach principles of Java programming. The game should have three levels of difficulty. This is a MESA Statewide Virtual competition. Entries will be submitted to a statewide URL for judging by 5:00 p.m. **February 23, 2018.**

All entries must be designated and created by California MESA students. Software packages and their sources are as follows:

Software Package	Source
Greenfoot 2.3 or above (3.1.0 now available)	www.greenfoot.org/download
Java JDK 8 SE Compiler	http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html

A great resource for getting started with Greenfoot programming is the following textbook:

- **Koelling, Michael. *Introduction to Programming with Greenfoot*, Prentice Hall. Upper Saddle River, 2010.**

It can be purchased online for a nominal fee.

Judges reserve the right to contact contestants prior/during judging for verification of student work. Student work should be verified by the teacher/mentor prior to submission; this might help to eliminate copying and missing content.

GAME DETAILS

1. **Skill Levels:** Each game must have three levels of difficulty with the player given the option to choose the desired level.
2. **Time Limit:** A level should take between 2 and 3 minutes to play.
3. **Start and Return to Menu:** All levels must have the following buttons that will function while the level is executing:
 - a. Restart
 - b. Return to main menu
4. **Sound Effects:** The game must include sound effects
5. **Animations:** The game must include animations. Animation characters can be obtained from the Greenfoot images library or imported from other sources.
6. **Timer:** The game must include a timer.
7. **Scoreboard:** The game must include a scoreboard.
8. **Instructions:** The game must contain clear and informative in-game instructions relevant to all ages and skill levels. Teams must also submit an instructional document in Microsoft Word format at the time of game submission.
9. **Game Cover:** Each team must provide a DVD case game cover appropriate for display in a retail establishment. The cover should include the name of the game and screenshots of the game
10. **Java Questions:** Questions should be answered in complete sentence format. Answers should be submitted with game file. Answers may be typed or handwritten legibly. A copy of the questions should be attached to the answers.
11. **Labeling:** The software and DVD game cover should include the following information:
 - a. Student team member names
 - b. Name of School
 - c. Name of MESA Center
12. **Submission:** Email address for submission will be released by February 2, 2018. Include on the subject line: "Greenfoot Virtual Contest - Year 1 (or Year 2). In the body of the email, include student name(s), school name, and MESA Center.

JUDGING

Games will be judged in the following categories (See attached rubric):

Game Components	30 points
Technology Fluency	30 Points
Game Cover/Marketing	10 points
Creativity	20 points
Answers to Questions	10 points

SCORING

Judges will score games individually. The average score of all judges' results will be totaled to determine the score for each team.

AWARDS

Medals will be awarded for first, second, and third place teams overall and by region. Center Directors will be notified by **March 9, 2018** of local and regional winners.

2018 MESA Interactive Game Design Competition with Greenfoot Year 1 Rubric

Points		Advanced	Developing	Emerging
Game Components	30	Three levels of increasing difficulty, animation, and sound effects	Two levels of difficulty	One level of difficulty
Technology Fluency	30	The game works as designed with no errors due to programming or design	The game works completely from beginning to end but may have minor flaws in the way it flows	The game does not flow well or stops prematurely.
Game Cover / Marketing	10	Game title is large and bold. Information is typed clearly and neatly. There are at least three visuals/screenshots of game components. Team members are credited for their contributions to the game.	Game title is not prominent. Information is not typed clearly and neatly. There are two visuals/screenshots of game components. Some team members are credited for their contributions to the game.	There is no clear game title. There is one or no visual included. Team members do not receive credit for their contribution to the game.
Creative Design	20	Game concept is highly creative.	Game concept shows some creativity.	Game concept is not creative.
Answers to Questions	10	All questions are answered correctly in complete sentence format	At least eleven questions are answered correctly in complete sentence format	Ten or fewer questions are answered in complete sentence format or questions are not answered in complete sentence format.

Questions about Java

Tips on internet searches: When doing an internet search use websites sponsored by universities, corporations, or other established organizations. Avoid gathering information from Wikis or question/answer forums as the quality of information on such sites is often incomplete or incorrect.

1. What is computer hardware?
2. What is computer software?
3. What is Java and what company owns the Java language?
4. What is the major advantage of Java over other programming languages?
5. What is a compiler?
6. What is the latest compiler now used for Java?
7. What is a Java Virtual Machine (JVM)?
8. What is an integrated development environment (IDE)?
9. Name two popular IDE's for Java?
10. What is the relationship between Alice, Greenfoot, and Java?
11. What is object oriented programming?
12. What are two advantages of object oriented programming?
13. What is a class and how is it different from an object?