

- LEVEL:** Middle School/High School
- NUMBER OF TEAMS:** One (1) team per school can participate at the MESA Day state competition. Three (3) teams can participate at MESA regional events.
- TEAM MEMBERS:** Two (2) to Four (4) Students per Team
- OBJECTIVE:** Students will participate in teams to navigate a course. Part of the team will need to code the directions while the other part will follow the directions to navigate the course through checkpoints.
- Students will solve questions involving cryptography at some checkpoints.
- MATERIALS:** All materials will be provided by MESA.

RESOURCES:

The code used for this problem will come from <https://studio.code.org/s/express>

TESTING PARAMETERS:

1. Team members will be broken into 2 groups: Coders and Walkers that are kept in separate rooms. They may not communicate in any way except by code written by the Coders
 - a. Groups will consist of a maximum of 2 people.
 - b. Coders will write the code for the Walkers to follow
 - c. Walkers will follow the code that the Coders write to stations where they will need to check in
2. Coders will walk the course first to determine the route. Afterward, they will have at most 1 hour to write the code that the Walkers will follow.
3. Coders will give the judge the code to be given to the Walker of their team
4. A judge will read the code and the walker will follow the code exactly as written.
5. Total time to complete the course will be recorded and counted as part of the score.
6. Students will be walking outside and should be prepared for the weather.
7. All distances will be given in meters
8. All turns must be in terms of degrees (i.e. 90 degrees, 180 degrees, etc.)

JUDGING:

1. All teams will start promptly at 9:00.
2. Judges will separate the teams into Coders and Walkers
3. Judges will walk with the Coders and show the route. Coders will be allowed to use their Engineering Design Notebook to take notes.
4. Coders will return to the Coders room. Time will start for at max a 1 hour coding session. Coders can use only commands from Code.org's code studio (see example 1).
 - a. All coding must start with the "when run" command
 - b. User defined commands can only contain two words (i.e. solve puzzle)
 - c. User defined commands may identify and set variables (i.e. set timer to 30 seconds)
5. When the Coder has finished or time has expired, they will hand their code to the judge.
6. Judges will then bring the team together and take them to the starting point.
7. The Walker will be read the code by a judge.
8. If at any point, the walker is confused they may stop and ask the coder a clarifying question. If needed, walker and coder can agree to go back to a previous checkpoint on the path and resume code. The timer will not stop for these pauses.

9. At each of the three checkpoints, questions involving cryptography will be solved.
10. Teams will have a maximum of 5 minutes to solve each cryptography question.
11. The total time will be recorded.
12. The team will have a maximum of 30 minutes to complete the course.

SCORING CRITERIA:

1. Coders (see rubric):
 - a. Efficiency of code (Use of loops, While statements, etc.)
 - b. Accuracy of Code
 - c. Readability of Code
2. Walkers:
 - a. Following the code
 - b. Time to complete course
3. Answers to cryptography questions
4. Total Score will be Total Rubric Score x 1000 / Time in seconds



Event Specifications
Computer Science Scavenger Hunt
MESA Day 2019

School: _____

Student Names: _____

For Official Use Only

Design Testing:

CODE	5	4	3	2	1
Code Efficiency (x2)	Team uses complex coding skills (Loops, If-Else statements, etc.) successfully	Team uses complex coding skills (Loops, If-Else statements, etc.) with limited success	Team uses basic coding skills successfully	Team uses basic coding skills with limited success	Code does not work.
Accuracy	The Walker was able to make it to all checkpoints with no correction needed	The Walker was able to make it to all checkpoints with 1-2 minor corrections needed	The Walker was able to make it to all checkpoints with 3-4 minor corrections needed	The Walker was able to make it to all checkpoints with at least one major correction needed or more than 4 minor corrections	The Walker was unable to make it to all checkpoints
Code Readability (x2)	No unnecessary code is present	Coder uses meaningful variable names and good layout	The code is well laid out	The code is laid out with some spaces that are difficult to read.	Poor quality of code
Number of Cryptography questions correct (x5)					
Total Score					

Total Time (seconds): _____

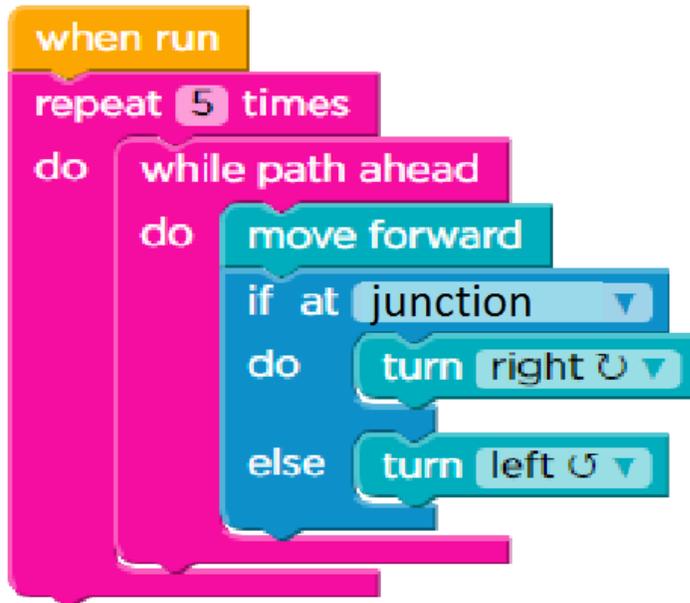
Final Score (Rubric score x 1000/Time in seconds) (rounded to nearest hundredth): _____

Lead Judge Signature: _____

Student Signature: _____

Comments/Suggestions:

Example 1



- When Run
 - Repeat 5 Times
 - Do While path ahead do
 - Move forward
 - If at junction
 - Do Turn right
 - Else Turn left

What it does:

1. Start Program
2. Let's computer know it will do this program 5 times
3. Checks to see if there is a path in front
 - a. If yes, continue to step #4
 - b. If no, the program stops.
4. Move forward
5. Checks to see if there is a junction of a 2nd path.
 - a. If yes, it will turn right
 - b. If no, it will turn left
6. Returns back to step #3 to repeat the cycle