Scratch It Up! (Pilot)

LEVEL:	Middle School
DIVISION(S):	Grades 6th-8th combined
COMPOSITION OF TEAM:	2 Students per team
NUMBER OF TEAMS:	Preliminary – As determined by your local Center Regional – As determined by your Region
SPONSOR:	UC Santa Barbara MESA College Prep

OVERVIEW: Teams will design and create an interactive video game using Scratch to demonstrate knowledge of core programming principles within the designated time limit. **Participation logistics, limits, and competition facilities may vary by host site. Advisors and students are responsible for verifying this information with their center director.**

An Engineering Lab Book is **NOT** a required component of this competition. However, the lab book can help students to more closely follow the practices of an engineer in the completion of their MESA Day projects. The Engineering Lab Book will encourage students to take a purposeful and sustained approached to developing their game. MESA projects are not designed to be completed in a single class period or day, but to be the result of thoughtful research, planning, analysis and evaluation. The lab book should provide a daily and constant written record of the thought and insight that a team is putting into their project, from initial ideas to the final completed project.

MATERIALS:

- Scratch 1.4
  - https://scratch.mit.edu/download
- Computer able to run Scratch 1.4 or higher. Web Based version will be used for MESA Day
  - Ask Center host before MESA Day if computers will be provided or if participants will need to provide their own.

GENERAL RULES:

1) No project is submitted prior to MESA Day.
   a. Teams should work on their game idea and learn the necessary technical knowledge to create a game in 60 minutes during MESA Day.
   b. They will create their game from a new file at MESA Day and not from a file completed before MESA Day.
2) Teams will have 60 minutes to create a game using Scratch with the specifications listed below.

a. The version of Scratch that will be used for the competition is the Web Based version, unless otherwise noted by the hosting MESA Center

3) The created game should include labeling with team members' name, grade level, school, and MESA Center. There will be a 10% penalty for failing to properly label.

4) Teams will be judged based on the quality of their game using a rubric.

5) Teams must be made up of 2 people.

6) Teams may use their Lab Books (see *"MESA Day 19_20 General Lab Book Guidelines"* at https://mesa.ucop.edu/) when creating their game at MESA Day.

SCRATCH GAME GUIDELINES:

The following are the minimum requirements for the Scratch Game:

1) **Points System – the game must have a point system.**
   a. The points system or scoreboard must be visible
   b. The user will earn points in at least two different increments.
      i. Example: bronze coin worth 1 point, gold coin worth 10 points.
        NOTE: You do not have to use coins as part of your points system.
      ii. The point system should calculate correctly.
      iii. There must be at least one method that a user may lose points.
   c. A sound effect must be played when a player earns or loses points
   d. *Lab Book Specification:* Under ***Try It Out***
      i. Include the use of mathematical concepts.
      ii. Describe how your point system works, how points are added for applied math concept #1, how points are deducted for applied math concept #2 and any variables you used along with their definition.

2) **A User Controlled Character**
   a. The character must have at least two-costume changes during gameplay.
   b. Must be controlled with a keyboard or mouse
   c. *Lab Book Specification:* Under ***Design***
      i. Include how your character (sprite) will interact with the environment you created
      ii. Include how the player will control the character
      iii. This will be your Trial #1.

3) **A non-Player Controlled (NPC) Character**
   a. Must have at least two costume changes.
   b. Must be able to move on its own during gameplay.
   c. *Lab Book Specification: **Under Design***
      i. Include how the NPC (sprite) will interact with the environment you created.
      ii. Include how the character moves on its own.
      iii. This will be Trial #2
      iv. For Trail #3, describe how the NPC and your user controlled character interact.

4) **Background**
   a. The "Stage" must have at least 2 backdrop changes during Gameplay.
   b. Each background must have their own looping sound.
   c. *Lab Book Specification: **Under Make It Better***
      i. Include a sketch of the environment for example identify and clearly label the scoreboard, the timer, your user-controlled character, the non-player-controlled character and any other objects that impact gameplay.

5) The game should have a **timer** where the game play must end between 2-3 minutes.

6) **Instructions** – The game must contain clear and informative in-game instructions relevant to all ages and skill levels.

    a. *Lab Book Specification: **Under Create***
        i. Teams must include the instructions under the Create Section.

7) **Start Menu and Restart**
    a. The Start Menu will have the title of the game and a button to start the game.
    b. There must be a restart button that when selected the scoreboard, timer and characters to return to their initial status or positions.

JUDGING:
1) Games will be judged on the following criteria:
    a. Up to 5 points for Creativity
    b. Up to 5 points for User ability
    c. Up to 5 points for Mechanics
    d. Up to 5 points for Implementation

AWARDS:
- Ribbons will be awarded for 1st, 2nd, and 3rd place.
- Only the 1st place team will advance to Regional MESA Day (as determined by your Region).

ATTACHMENTS/APPENDIX:
- Scratch It Up! – Score Sheet
- Scratch It Up! – Technical Rubric

<u>SCRATCH IT UP! – SCORE SHEET</u>

Student 1 Name: _____ Grade: _____

Student 2 Name: _____ Grade: _____

School Name: _____ Center: _____

Team Name: _____

Specifications

☐ A) 2019-2020 rules were followed

☐ B) Game is properly labeled with team members' names, grade level, school, and MESA Center:
(10% deduction in final score if not properly labeled)

☐ C) Points system/Scoreboard Visible

☐ D) Sound is present

☐ E) A user controlled character is present

☐ F) A non-player controlled character present and moves on its own

☐ G) Background changes at least 2 times

☐ H) Timer present

☐ J) Instructions Present

☐ K) Start Menu present

☐ L) Reset button present and works as expected

☐ M) Element(s) that adds points is present

☐ N) Element(s) that deducts points is present.

☐ O) User controlled character has at least two costume changes

☐ P) Non-player controlled Character present

Scoring

Design	Mechanics Score: ____ / 5	Creativity Score: ____ / 5		Design Subscore: Mechanics Score + Creativity Score + UI/HCI Score + Implementation Score
	UI/HCI Score: ____ / 5	Implementation Score:_____/5		
Labeling deduction:	Design Subscore X .10 (if applicable)		=	
Specification Deduction:	Design Sub score X % deduction		=	
1-5 Missing elements from the specification checklist apply a 10% deduction. 6+ Missing Elements from the specification checklist apply a 20% deduction.				**FINAL SCORE** Design Subscore – Labeling Deduction – Specification =

SCRATCH IT UP! – TECHNICAL RUBRIC

CATEGORY (POINTS)	EXCEPTIONAL (5):	EXCELLENT (4)	MET CRITERIA (3)	FAIR (2)	BEGINNING (1)	NOT PRESENT (0)	NOTES
MECHANICS SUBSCORE:	☐ Scoring system is clearly understood. ☐ User after one or two play through will understand how the game works.		☐ Scoring system is understood. ☐ Requires a few play through to understand how the game works. ☐ Scoring can be defined better.		☐ Requires several rounds of gameplay to understand how the game works, and how scoring works.		
CREATIVITY SUBSCORE:	☐ Game concept is highly creative. ☐ Sound adds to immersion of the user. ☐ Game makes effective use of multiple costume/background changes that respond to user progress/actions.		☐ Game concept is derivative. ☐ Sound is present but does not add to the gameplay. ☐ Has minimal costume/background changes.		☐ Game concept is not creative. ☐ Game lacks variety of sprites. ☐ Lacking many creative elements (sound, background, costume changes, etc.)		
USER INTERFACE / HUMAN COMPUTER INTERACTION SUBSCORE:	☐ Control Scheme is intuitive. With little or no learning curve. ☐ Clear directions are present. ☐ Game elements are interconnected or sprites influence other sprites. ☐ The design is very intuitive (e.g. it is clear what element earns points and what elements to avoid)		☐ Control scheme require some direction. ☐ Some sprites influence other sprites. ☐ The design is easy (e.g. arrow keys to move around)		☐ Controls make game almost unplayable. ☐ No interconnected sprite actions. ☐ No clear directions or controls are difficult to figure out.		
IMPLEMENTATION SUBSCORE:	☐ The game works as designed with no errors due to programming or design. All elements within the game are used.		☐ The game works completely from beginning to end but may have minor flaws in the way it flows. ☐ There are some design errors but gameplay is not hindered dramatically. ☐ Game elements are used; a couple elements may have no visible function.		☐ The game does not flow well or stops prematurely. ☐ Contains many elements that are not used.		

MESA DAY CONTEST RULES 2019-2020 **(FINAL)**