Unit 4: Independent Project - Dice

Introduction

Working in *Scratch*, you have had the opportunity to explore some of the basic concepts such as sprites, scripts, and the various elements that you use to create a *Scratch* program. You have also explored how you can completely customize a program. Now you will create a *Scratch* program with a third-party objective. You learned how to play a popular dice game called *Yahtzee*. You saw how dice are a physical/mechanical means of generating random numbers. You then explored an electronic (digital) version of the game. Your task will be to create a *Scratch* program that emulates rolling dice. This could be a simple two-die game such as might be used for moving game pieces on a board (*Monopoly*? *Chutes n' Ladders*?) or could be the object of the game in itself (Craps?). Your final version will be demonstrated in full-screen mode.

Objectives:

The students will be able to:

• Explain the concept and create examples of variables.

• Explain the concept and create examples of iteration.

• Explain the concept and enhance a variable program with conditionals.

• Use conditionals with And and Or to write a grade program (or alternate).

• Use a random number generator to write a dice program (or alternate).

Student Activities:

• Learn and play Yahtzee (using actual dice sets)

• Dice as random number generators

• Score sheets as outcome goals

• Strategies to optimize outcomes (highest possible value, win over opponent, lowest possible value)

• Learn and play Yahtzee program (as model for dice project)

• Groups for collaboration and planning strategies

• *.bmp files for sprites/costumes

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Deliverable Outcomes:

Independently created dice program in Scratch (evidence or collaborative/cooperative permitted) with a minimum of two dice, delivered on time (consult with your instructor for scheduled due date)

Program may be for a single player, multiple players, or against the program

Program includes:

- using dice images provided (modifications to the images is encouraged)

- a "roll" or "start button or command action

- randomization action

- visual indication of dice rolling

- "stop roll" command or "roll auto stop" feature

- "select" function

- "hold"/"score"/"record score" feature

- "tally score" feature

Resources:

http://scratch.mit.edu

https://scratch.mit.edu/help/videos/ (for tutorials)

ScratchGettingStarted.pdf (scratch.mit.edu)

Sample Rubric

KWL Graphic Organizer Chart.pdf (UCLA SMP)

Unit 4: Introduction to Programming

	GRADING RUBRIC				
NAME	Non-Compliant / Missing	Does Not Meet Requirement	Meets Requirement	Exceeds Requirement	Score/37
Program in Scratch w/ 2 dice & on-time	0	18	20	21-22	
Use Dice image	0	---	1	2	
"roll"/"start" button/instruction	0	---	1	2	
Randomization action	0	---	1	2	
Visual Indication of roll	0	---	1	2	
"Stop Roll" or "Auto Stop"	0	---	1	2	
"select" function	0	---	1	2	
"Hold"/"Score"/"Record"	0	---	1	2	
"Tally" Score" feature	0	---	1	2	
				TOTAL	37