Name: Michael Randazzo

Class: Intro to Computer Science

Unit: Algorithm Writing/Conditional Applications

Lesson Topic: Day 6-8 Group Project Dice Game or High/Lo

Lesson Objective:

- Work as a group to construct a game based on random number generation

SWBAT:

- Plan the steps for creating their game
- Properly structure conditionals to identify if the user is the winner or loser in each round
- Construct a project that will update points based on a wager

Standards:

- 9-12.CT.8 Develop a program that effectively uses control structures in order to create a computer program for practical intent, personal expression, or to address a societal issue.
- 9-12.CT.4 Implement a program using a combination of student-defined and third-party functions to organize the computation.
- 9-12.CT.9 Systematically test and refine programs using a range of test cases, based on anticipating common errors and user behavior.
- 9-12.CT.10 Collaboratively design and develop a program or computational artifact for a specific audience and create documentation outlining implementation features to inform collaborators and users.

Teaching Tools:

- Visual Studio 2019, Smart Notebook, Google Docs

Procedures:

- **Do Now:** Students will be assigned to groups a will be given 5-10 minutes to read the descriptions of each potential project and demo a working version before selecting the project they would like to create
- Teacher will read through the prompt for the group assignment and then students should begin planning out their project as an algorithm.
    - Teachers should send the groups that pick the dice game the png's for the dice so that they can be used in the project.
    - Teachers should make a point to clearly identify the win and lose conditions and also how the wager will affect the total after each round.
- After groups submit their algorithm, Students will explain their algorithm to teacher and if it contains all of the key elements then they can proceed to writing the code for the project
    - Algorithm should contain all of the following: storing of wager, generation of random number(s), (display dice for dice game only), conditional for win/lose, display of win/lose, update and display of total.

    - The teacher should ask questions to groups as their algorithm and even play a round out using their algorithm aloud while they present their algorithm.
- Students should work on applying their algorithm in code and creating a working program. Code should be tested and should work as intended. Students should attempt to apply bonus to project only if they are ready to present their working code
    - If students struggle, the teacher should help groups identify the problem with their code but then let the groups discuss how best to solve the problem. If groups finish early first make sure they are ready to present before they start working on the bonuses.
- Each group will first present their algorithm first and then their code and their form and running. Different members of the group should present the different parts. If groups completed any of the bonuses they should highlight how they edited their code to include them.
    - Each student in each group should explain part of the assignment and groups should identify how they edited their algorithm when converting it to code and what places they ran into issues and how they resolved those issues.
- **Closure:** Teacher will pose the question: Which of the two games are you more likely to win and why? Students will then compare and contrast the probabilities of each game.