National University of Computer and Emerging Sciences, Lahore Campus

Course:	Programming Fundamentals	Course Code:	CS 118
Program:	BS(Data Science)	Semester:	Fall 2020
Due Date	20-Dec-2020 at 11:59 pm	Total Marks:	-
Section:	BDS-1A	Page(s):	2
Type:	Project	Weightage	15

Important Instructions:
1. Submit your solution named as your roll number, i.e., 20_1111.cpp. Do not zip your file.
2. You are not allowed to copy solutions from other students. We will check your code for plagiarism using plagiarism checkers. If any sort of cheating is found, negative marks will be given to all students involved.
3. If we find that you have copied code from the Internet, you will get negative marks.
4. Late submission of your solution is not allowed

Requirements of PF Project:
1. Colors should be used.
2. You can do your project in groups (A group should not include more than three students).
3. Graphics library is not compulsory to use. However, you can use it if you want.
4. You cannot use any concept not taught in the class, such as dynamic memory, vectors, maps, string class, etc.
5. You can use struct.

Some of the games that you can develop in your PF project are:

1. Pac-man:
Create a pac-man game which fulfills the following requirements:
1. There are 3 enemies which follow pac-man in order to kill him. Your pac-man will be killed when one of the enemies touches the pac-man. Each enemy should have a different color. The enemies will be placed away from each other.
2. Pac-man will get score when he eats dots.
3. There will be a few special dots which will make pac-man immune to enemies for a short period of time (let's say 5 seconds). When pac-man touches enemies during this time, he will not be killed. Instead, the position of the enemies will be set to the center of the map when they touch pac-man during this time. So, enemies will try to move away from pac-man during this time.
4. A few mazes. (The mazes should be placed randomly for each level).
5. When the player completes one level, another level will start. The levels will be differentiated from each other by the placement of mazes and dots.
6. Pac-man will have 3 lives by default. There will be few special dots which will increase the life of pac-man. (These dots will be rare, i.e., zero, one, or two in a particular level)

Break the Bricks:

The requirements for this game are:

1. There should be different colors of bricks (at least 4 different colors).
2. There should be reasonable number of bricks per level, i.e. at least 35.
3. Some bricks will give more score if the ball hits them. You can differentiate which brick will give more score by the color of the brick. For example, a white brick can give more score than a red brick, etc.
4. The bricks should be placed randomly, so that playing experience for each level is different.
5. When the player completes a level. Another level will start in which the arrangement of bricks will be different.
6. There will be three lives. The life of the player will increase if the player hits a certain brick. The life package will fall from the brick which the player has to pick. Such packages will be rare (i.e., zero, one, or two in a particular level). The life packages should be placed randomly.

You can add more frills in the game if you want. You can come up with another idea if you want. However, you will need to discuss the idea with me via email or Google meet.

You cannot select the following games:

1. Tic-tac-toe
2. Snakes-and-ladders
3. checkers