

Assignment 1

Weight: 20%

Due Date: Monday, 28 March 2022, 23:59

Objectives

The objectives of the assignment are to test the knowledge of the student in:

1. applying the design principles of graphical user interface (GUI).
2. constructing user-friendly GUI.
3. understanding the concept of event handling.
4. using variables.
5. using control structures.
6. using arrays.
7. using classes.
8. using basic error handling techniques.
9. applying proper coding standards.
10. applying basic logic.

Requirements

You are required to build a two-player board game as part of your first assignment. The game should be played on a grid similar to the one shown below.

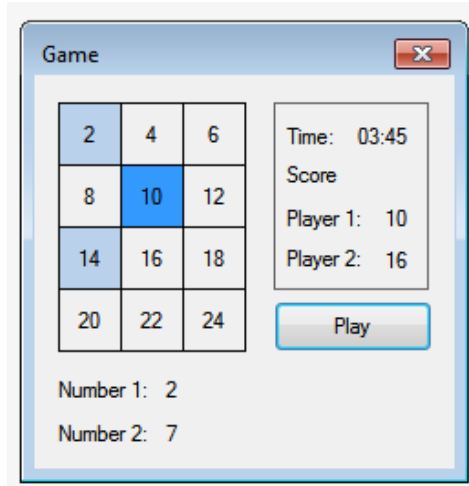


Figure 1: Grid

1. To play the game, a player should generate two random numbers. The player should then click the cell represented by the product of two randomly generated numbers. For example, if the generated number is a 2 and a 7, the player clicks the 7th cell.
2. Each player should be associated with a colour. For each correct click the colour of the cell representing the product of the random numbers should be changed to the colour associated with the player. A player should only be able to click and change the colour of the cell represented by product of the random numbers.
3. A player should miss the turn:
 - a. if the player clicks a wrong cell.
 - b. if the product of the numbers is a number which is not represented by any cell.
 - c. if the product represents a cell which has already been coloured.
4. At the start of the game, the initial score should have a value of 0. With each cell coloured, the score increases by the product of the numbers. You can display the score anywhere within the user interface.
5. The game should have a duration of 5 minutes. Hence, when the game starts, a timer should start. The value of the timer should decrease with time and this decrement should be visible on screen at any point in time. You can display the time anywhere within the user interface.

6. The game should end in two ways. They include:
 - a. The value on the timer reaching 0.
 - b. The players colouring all the cells.
7. Other than the requirements given above, you should also consider the following points, when developing the game.
 - a. Creating and using classes.
 - b. Creating and using arrays.
 - c. Adherence to design and coding standards;
 - i. Proper design of graphical user interface.
 - ii. Appropriate naming of controls and variables.
 - iii. Appropriate use of controls and variables.
 - iv. Proper commenting.

Deliverables

The student should submit fully commented source code including all the resources used.

Marking Criteria

The following is the general marking guide that will be used. This should give the student an idea of how time and effort should be managed. It also indicates how to prioritise the different aspects of the assignment.

Criteria	Requirements	1	2	3	4	5	6	7		
								a	b	c
	Marks Allocated	10	12	15	10	8	10	10	10	15
Attempted to implement the features										
Basic level of implementation of the features										
Satisfactory level of implementation of the features										
Satisfactory level of implementation of the features										

If the student does not understand or fails to explain the feature(s) implemented, then the student will not get any marks for the feature(s).