

תרגיל מס' 5 - חלונות, פקדים, אירועים וזיכרון

Objectives

- Working with Delegates and Events
- Developing a basic Windows Desktop application using .NET WinForms

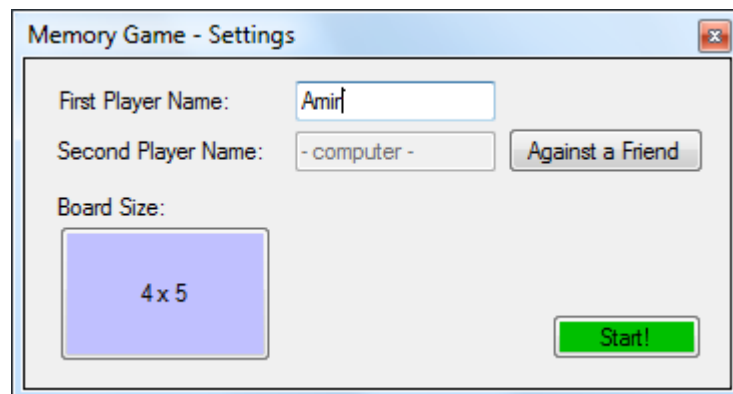
Prior Knowledge

- Using .NET WinForms to develop multi-form Windows desktop application
- Working with basic controls and their events

The Task

Implement the "Memory Game" again, but this time for Windows Desktop with GUI!

The first form will enable the user to configure the board and the player names and types:

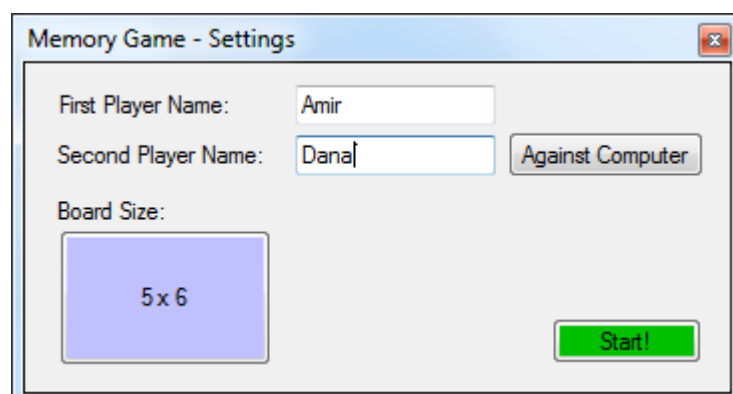


- Clicking the "Against a Friend" button will toggle the `m_TextBoxFriend.Enabled` from false to true and back, and the text in the textbox to empty or "- computer -";

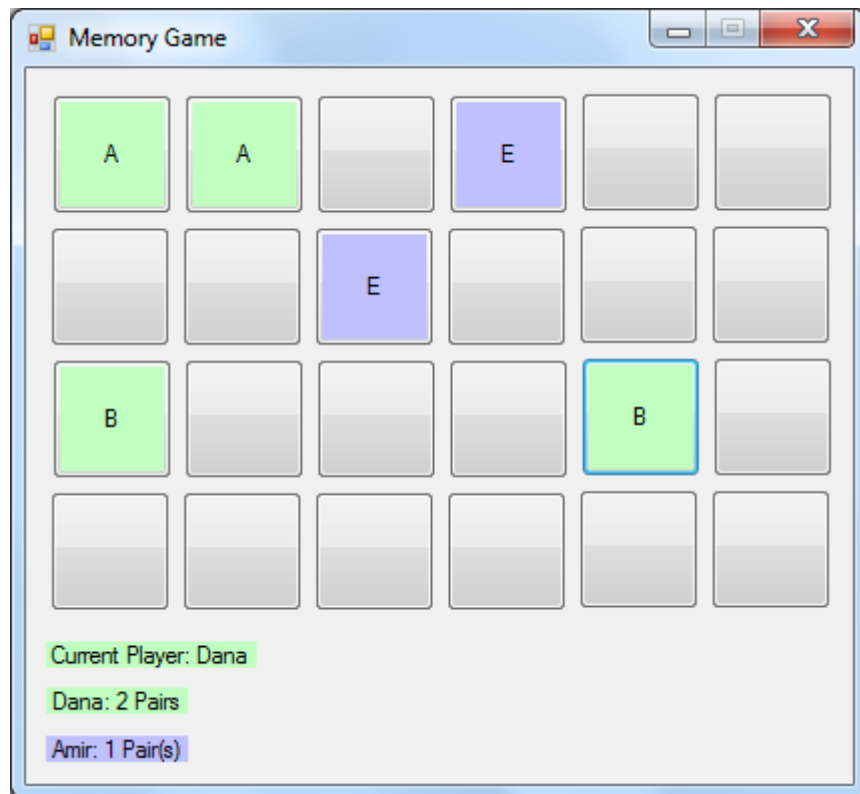
The button's text will be toggled between "Against a friend" and "Against Computer".

- Clicking the purple button will browse through the available board sizes in a loop: 4x4, 4x5, 4x6, 5x4, 5x6, 6x4, 6x5, 6x6, 4x4, 4x5, ..
- Clicking the green "Start!" button or the red X button will close the settings form and the main form will be displayed.
- Example:

Clicking the purple button 4 times, clicking the "Against a friend" button and setting the Second Player Name to "Dana". Note the change in the button's text:



After closing the settings forms, the main form will be displayed, with a matrix of buttons, and three labels, as shown below:



(In this case, the user chose a 6x4 board, Dana revealed 2 matching pair, Amir revealed 1 matching pair, and this is Dana's turn now.)

- The form size will be set according to the matrix size
- Clicking a 'gray' button will display the character that it "holds" and the background will be set to match the current player's color (green / purple).
If this is the second click that reveals a matching pair, the buttons will remain colored, and the current player will continue to a next turn. Otherwise, the buttons will be grayed-out again and the turn will be passed to the opponent.
- Each matching pair will update the score (see screenshot)
- Clicking a colored button will do nothing.
- When game is over (tie / win) message will be displayed (using the `MessageBox.Show` method) containing the final score and asking the user for another round. If the user doesn't want another round, the main form will be closed and the app will terminate. If the user wants another round, the board will be reset to the same settings for another round.
- A bonus of up to 5 points will be given to whomever will use pictures instead of characters, using the <https://picsum.photos/80> service. You must set the border of the picture to match the current player's color (purple / green).

Note:

1. Do not add any further features / logic. Stick to these requirements and specifications.
2. Use the exact methodology that was preseted in the lectures and in the relevant code examples that are published in the course's website.
3. Start you project using the 'Empty Project' template and not using a "Windows Forms Application" template.
4. A bonus of up to 5 points will be given to whomever will implement events in the logic layer that will be handled in the UI layer (i.e. – when a cell's state in the logic layer is changed, the cell "notifies" who ever listens (the UI). The UI will handle this event by updating the display of the relevant cell.
5. You may use the `System.Threading.Thread.Sleep(1000)` method to implement delays where needed.
6. This application is no too complicated, and its logic layer was already implemented in assignment 2, but it will be a challenge for inexperienced programmers, thus will take time and thought. It is advised to begin working on this assignment sooner than later.
7. The 'Click' event raised by a button passes a reference to the button that was clicked (the notifier) in the 'object sender' parameter. It is advised to make use of this reference.
8. All relevant code examples were posted to the course's website.
9. You may ask questions in the course's private Facebook group regarding the assignment.

Submission

1. You must comply with the coding standards, as stated in the relevant document, found on the course website. Pay extra attention to the naming conventions regarding delegates and events. Points will be deducted to whom ever does not comply with these standards.
2. Send your submission to the email address as described in the instructions document, which can be found in the course's website. Points will be deducted for not following the instructions carefully.
3. Avoid cheating (Do not use other students assignments as a basis for yours. Refrain from copying the work of fellow students from your group or previous semesters. Cheaters will be caught and punished. Work independently!).

Good Luck! ☺