



Assessment Task 1-2

Qualification national code and title ICT50220 - Diploma in Information Technology (Advanced Programming)
Unit/s national code/s and title/s ICTPRG554 - Manage data persistence using noSQL data stores
ICTPRG603 - Develop advanced mobile multi-touch applications

Assessment type (☑):

- ☐ Questioning (Oral/Written)
- ☐ Practical Demonstration
- ☐ 3rd Party Report
- ☒ Other – Portfolio

Assessment Resources:

College to supply:

- Computers running Windows 11
- Visual Studio
- Internet access
- Notes and links to online resources

Assessment Instructions:

This is part one of the Portfolio assessment, a group of exercises testing the requirements of the cluster. The Portfolio is due in week 18, although students are encouraged to submit earlier so there is more time for resits.

This part covers using gestures.

Assessment Instrument:

Setup

Create a new Xamarin.Forms C# project in Visual Studio. The name of the project should include your name and the name of the exercise above.

Brief

You are to create a traditional sliding block game where a picture is sliced into eight pieces with one gap and randomised, like so...



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The player must then slide the pieces around until they have the picture.



In our case, the sliding will be done with gestures.

The Data Model

Even games need a data model. In this case, it may seem redundant since the user interface contains all the same information - the order of some tiles in a grid - but it is still important to have the data model separate from the view for the view to reflect the data model.



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Create a data model for the sliding block game. It should store the state of play and should have four methods (apart from constructors)...

- A method that reports on whether the game has been won. That is, if every piece is in the correct place.
- A method that takes a row and column number and returns which piece is in that square.
- A method that slides a piece. It should take a row and column number, check to see if the piece can be moved and, if it can, make the necessary changes to the state of play.
- A method that resets and randomises the board. So, it should put all pieces in the correct places and then slide them around until the board is randomised. It is important that the data model randomises the board by sliding pieces since if you just put random pieces in random spots, the game will probably be unwinnable.

The View and Controller

After you have created the model, you should create the UI. You need to create a grid of nine squares, each of which contains an image, and a button that allows the user to start from scratch. Each square should display the correct image, as reported by the data model, and the user should be able to swipe on a square to get it to slide (assuming it has a space to slide into).

Hints

- Feel free to rename the provided images if that's useful to you. (There are a few ways to do this exercise and at least one would be better if the images had different names.)
- To get an array of the contents of every grid square, you can use...

```
var gridChildren = myGrid.Children;
```

Note that the array is of Views. Views are the underlying class for all UI. If you know what it should be, then you can cast it like so...

```
Label myLabel = (Label)gridChildren[0];
```

- You can also get the row and column of any view (or anything derived from view, such as buttons, labels, frames, etc) in the grid, like so...

```
int col = myGrid.GetColumn(myView);  
int row = myGrid.GetRow(myView);
```

- And, finally, you can change an image just by changing the source property.

```
myImage.Source = "Assets\\newImage.png";
```



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Submission

Compress the solution folder and submit the compressed file via Blackboard under “Assessment” in the sidebar.