# Final Project
## *Mobile Apps Development*

## Objectives
The objectives of this project are to:

• Create a random sequence based game.

• Use the accelerometer to play the game.

• Use a database to save and show the top five highest names/scores.

## Deliverables
There are two deliverables for this project:

1. A **pdf report** containing screen shots of the three main screens/activities, the link to the git repository for the code for the project and a three part conclusion (State how far you got, state the issues overcome and the solutions found, and finally a statement of what is next for you with mobile apps.

2. A **30-60 second video** showing the APP running on your emulator or phone.  This should clearly show :
    • The random sequence being displayed to the player
    • The playing of the game on the accelerometer - tilting to each colour
        • Note (you may only show touching the buttons by hand for lower marks)
    • The user choosing to see the HI Scores in the database.

Upload these deliverables in the place for the final project in Moodle by the deadline.
There is no extension to this deadline, unless by prior agreement with lecturer.

## The Requirements
The app must implement the following requirements:

A. The app is played in landscape mode completely.  Note: you may with the agreement of the lecturer use portrait only for the screens.  However, all screens must work in the one orientation.  It should not be possible to switch orientation when playing.

B. There are several distinct sections to the app once Play is pressed.
    • *Sequence learning:*  A primary display to the user which displays the random colour sequence  on the screen.  e.g. Red, Blue, Red, Green
    • *Play Screen:*  A second play mode where the user plays the game by tilting the phone (accelerometer or touches colours for lower marks)
    • *Game over:*  A 'Game Over' display which gives you your score and a button to display highest scores so far.
    • *Hi Score Screen*:  A high score display, displaying the top five names and scores in a table.

C. The look and feel / theme colours of the app is completely up to the designer.  It should be consistent in look and feel.  All display data should be clear and easy to read.

D. On running the app, the user is shown the Initial Display and presses Play button when ready.

E.  The Sequence screen must display sequence of four random colours initially.  *Each time the game is successfully played, the sequence should increase by two more colours.  Second round should display 6 colours in a random sequence, third round should display 8, etc.*

F.  After the sequence has displayed, the user is automatically brought to the Play screen.  The user attempts to tilt the phone North, South, East or West to match the sequence of colours.

- If the sequence is matched correctly, the score is set to 4 and the user is brought back to the sequence screen.  User is shown a sequence of 6 colours and goes to step F again.
- If the sequence is not matched, a GAME OVER screen is shown.

G.  The user will have a final score.  If this is one of the top five scores in the database, the user should be prompted for their name.  Their name and score are entered into the database.

H.  The top 5 highest scores in the database are shown on the Hi Score Screen.  If the player had a top 5 high score, it should appear in this list after the game.

# Wireframes

These are only for promoting some ideas on illustrating the brief.  You are free to design the game as you see fit as long as your keep to the requirements. Four your wireframes using a tool like Figma will be useful. https://www.figma.com/templates/wireframe-kits/
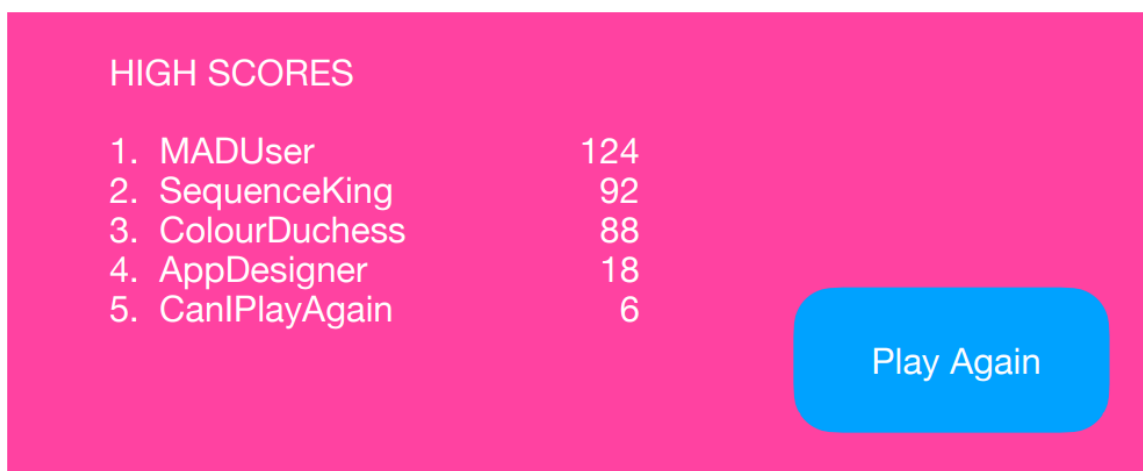
## Initial/Play screen
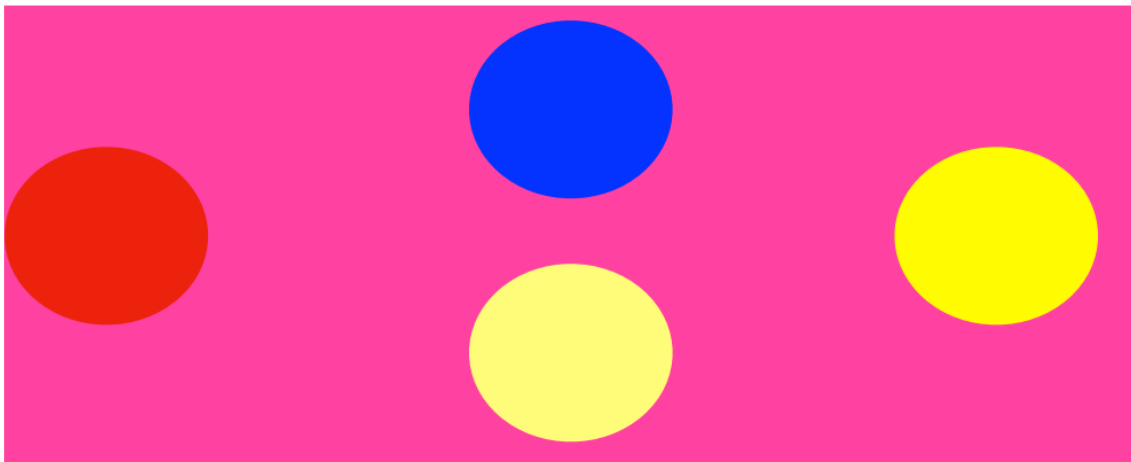


Tilt the device in the sequence that was shown on the first screen. If you match the sequence - you win that round. If you do not get the match, the game is over, and you can view the hi scores.

## Game Over
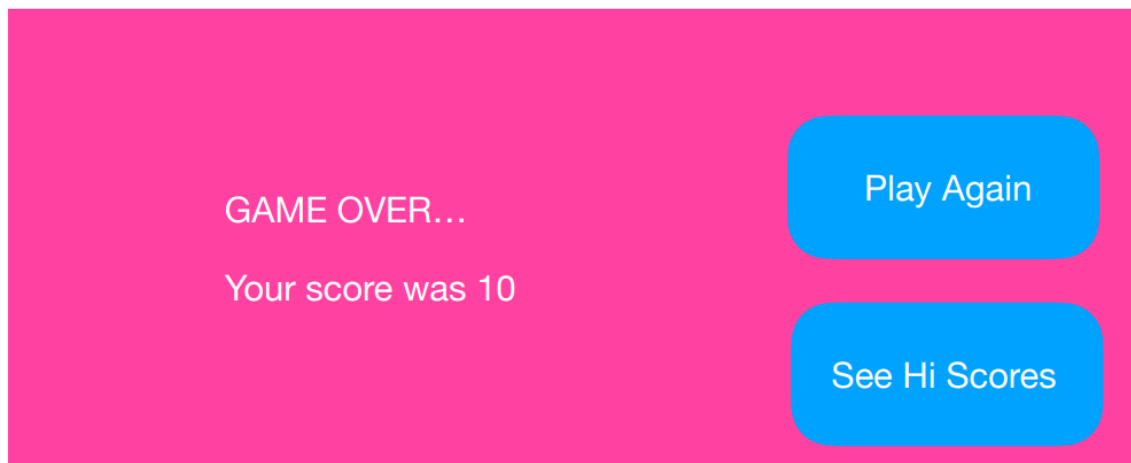


If the score was in the top five scores, the user should be prompted for their name (not shown here)

## Hi-Scores



The final screen should show the top five highest scores and should have a button to return to the first screen.

# Important Notes

1. You can implement the sequence screen with any images or widgets you like if there are four clear options/colours.  For example, you can use four buttons with different colours. Remember, the buttons/images will have to light up somehow to show the sequence,

2. The play screen must implement an accelerometer.  You can use a touch button mode if you wish as an option.  *If you decide to not implement an accelerometer motion play mode and only use touch buttons, the project will be marked out of a maximum of 60%, not 100%,*

3. *A database is required to store the high scores.*

4. *It is highly recommended that you prototype the individual parts of this project before building the final version.*

# Marking Scheme

There are 100 marks for this project, which is worth 30% of the overall module.  They are awarded as follows:

- Implementation of sequence screen - 10 marks
  - Showing the colours sequences correctly each round
- Implementation of the play screen (accelerometer), correct sequence and game control - 55 marks
- Implementation of the game over and hi score screens - 10 marks.
- Implementation of the database/hi score queries/insert - 25 marks.

If an accelerometer is not used for the project, the final score is multiplied by 0.60.