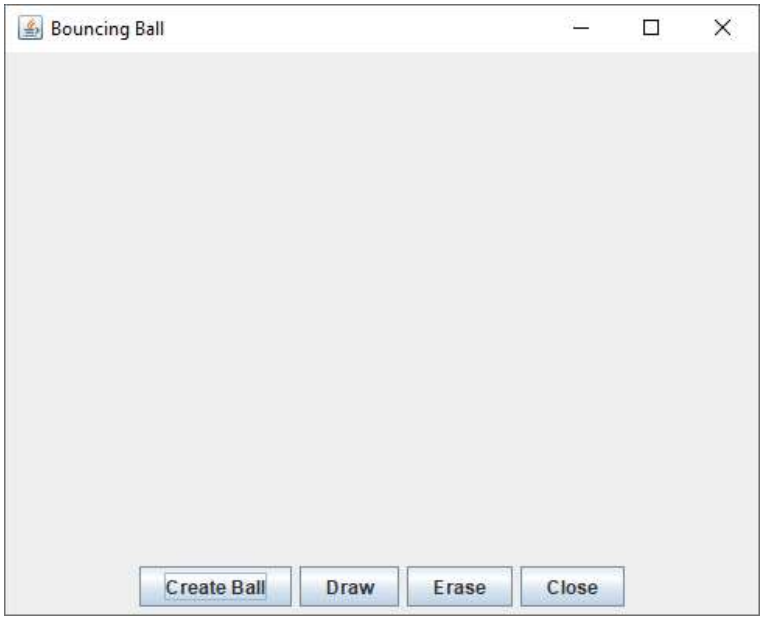
COMP 3609 – Game Programming
Lab #2

Perform the following activities

Program **Description**

1. Write a program, `BounceBall-Stationary`, which creates and displays a stationary ball on a window. The `JFrame` The functionality of the ball is provided by a Ball class.
   - `BallViewer`: This class contains the main method which creates an instance of the `JFrame` and sets it to visible.
   - `BallFrame`: This class extends the JFrame class and has several buttons to create and display the ball on a `JPanel`, to erase the ball from the `JPanel`, and to re-draw the ball in case it is erased.
   - `Ball:` This class defines as stationary `Ball` object. The constructor initializes the x and y co-ordinates to draw the ball at and gets the back ground colour of the `JPanel`.



2. Write a program, `BounceBall-Move`, in which the `Ball` object created in 1. The Ball class inherits from the `Thread` class and overrides its `run`() method. It therefore runs in its own thread of execution.
   - The `run`() method erases the ball, moves it a certain amount of pixels, re-draws the ball, and takes a short sleep. When the ball is added to the `JPanel` on the `JFrame`, it appears as if it is moving along the `JPanel`.
   - The `move`() method Is not aware of the dimensions of the `JPanel` and the ball soon disappears from view. Note that the Ball thread only executes for a fixed amount of iterations.

3. Write a program, `BounceBall-HitWall,` has the same functionality as the program in the BounceBall-Move. However, the `move`() method takes the dimensions of the `JPanel` into consideration. If the ball is about to hit the left or right edge, its *x* velocity is reversed. Similarly, if the ball is about to hit the top or bottom edge, its *y* velocity is reversed.

4. Write a program, `BounceBall-Random` which has the same functionality as the program in the BounceBall-HitWall. However, the size, colour, and initial position of the ball are randomly generated using a random number generator.

5. Write a program, `BounceBall-Sound` which has the same functionality as the program in the BounceBall-Random folder. However, whenever the ball hits one of the edges, a sound is played. The supported sound formats are .au and .wav.

6. Write a program, `BatGame.` This program is the first phase in the development of a Bat and Ball game. It creates a bat as a rectangle which is placed at the bottom of the `JPanel`. The `JPanel` listens for keyboard events. If the left arrow key or the right arrow key is pressed, the bat is moved in the appropriate direction. The bat does not move along the y-axis. The bat must first be erased from the `JPanel` and then re-drawn in its new location. If the bat is near the left or right edge of the `JPanel`, a sound is played and movement beyond the edge is not permitted. Note that the `Bat` class is not implemented as a `Thread.`

7. Write a program SwingTimerEx, which uses a Swing Timer to animate a star on a Board. The star animated is an image .

8. Write a program ThreadAnimationEx, which uses a Thred to animate a star on a Board. The star animated is an image .