Junior Knights Assignments: Intro to pygame

Task A: Bouncing Ball:

In this assignment, you will create a simple pygame program where a ball moves around the screen and bounces off the edges. This exercise will help you understand basic game loops, drawing shapes, movement, and collision detection.

Instructions:
1. Set up a window of size 800x600 pixels. Pick a color to fill the screen.
2. Draw a circle at any starting position. Pick any color for the ball (don't pick the same color as the background).
3. Make the ball move continuously across the screen. Use variables to store the ball's x and y position. Use a velocity variable to control its speed and direction.
4. Bounce the ball when it hits any edge. When the ball hits the left or right edge, it should reverse its x direction. When the ball hits the top or bottom edge, it should reverse its y direction.

Extras:
1. Try making it so that the ball changes color every time it hits an edge.
2. Try increasing the speed of the ball ever so slightly when it hits an edge.

Task B: Catch the Ball:

In this assignment, you will create a simple pygame program where a player controls a paddle to catch a falling ball before it reaches the bottom of the screen. This will require player-controlled movement, collision detection, and scoring.

Instructions:
1. Set up a window of size 800x600 pixels. Pick a color to fill the screen.
2. Create the paddle as a rectangle near the bottom of the screen. Let the player move the paddle left and right using the arrow keys.
3. Make the ball start at a random position at the top of the screen. It should fall downward at a constant speed.
4. If the ball touches the paddle, increase the score and reset the ball's position. If it reaches the bottom, reset the position without increasing the score.
5. After 10 or so ball drops, end the game and output the player score to the terminal.

Extras:
1. Make the ball fall faster after each successful catch.
2. End the game if the player misses 3 balls in a row.