Name: _____ Andrew Id: _____

15-112 Spring 2025 Quiz 6

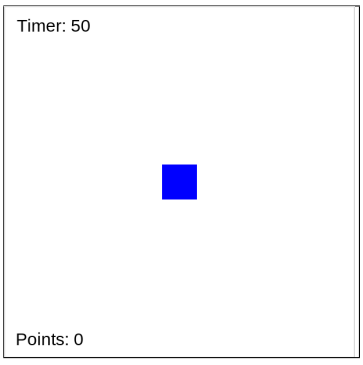
Up to 25 minutes. No calculators, no notes, no books, no computers. Show your work!
Do not use lists, dictionaries, sets, try/except, or recursion on this quiz.

1. (20 points) **Free Response**: Bouncing Square Challenge

   Write an app with the following functionality:

   - **Game Setup:**
     - The game starts with a 400×400 canvas and a blue square centered in the canvas.
     - The size of the square is $\frac{1}{10}$ of the canvas height. You can assume the canvas's width and height are always equal.
     - A countdown timer starting from 10 seconds is displayed at the top-left of the screen.
     - An integer is displayed at the bottom-left of the screen, representing the total number of points the user has earned.
   - **Gameplay Rules:**
     - The user can move the square **up or down** using the **arrow** keys. The square only moves vertically, staying centered horizontally.
     - Each time the user presses the up or down arrow key, the square moves **5 pixels** in the corresponding direction.
     - The square **cannot move past the borders** of the canvas.
     - The square alternates color from **red to blue** every **2 seconds** (starting as blue).
     - If the square hits the window border when its color is **red**, the game is over.
     - If the square hits the window border when its color is **blue**, the user earns **1 point**.
     - If the countdown timer reaches zero, the game is over.
     - Each time the user earns a point, the countdown timer resets to 10 seconds.
     - When the game is over, a **"Time's up"** message appears in the center of the screen, and nothing else is displayed.
   - **2-Bonus Points:**
     - The user **cannot earn two points in a row** by hitting the **same border** twice consecutively.

   Here is an example of the game screen:

   Your task is to write the Python code using `cmu_graphics`.

   Make reasonable assumptions for anything not specified here.

You may continue your work on the back of this page...

Additional Space for Answer to Question 1

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