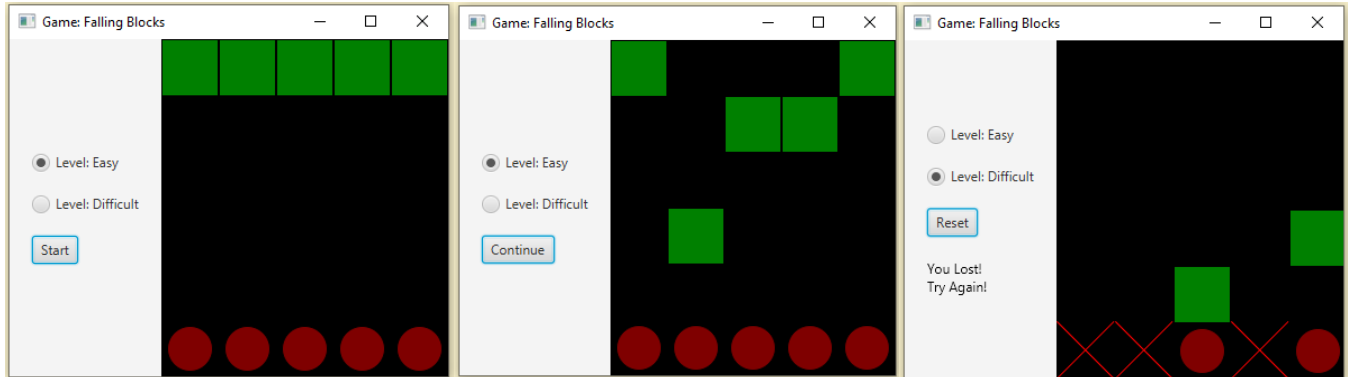


CSC 360 Assignment # 4
Total points: 40

Problem: Create an interactive game – “Falling Blocks”

In this task, you will be creating a user interactive game called “Falling Bricks”.

See below for a screenshot and a video of the final expected product.



The screenshots above show the following snapshots of the game activity (*left to right*):

- *First Image*: Starting layout for the game
- *Second Image*: Game in progress, but paused
- *Third Image*: End of game

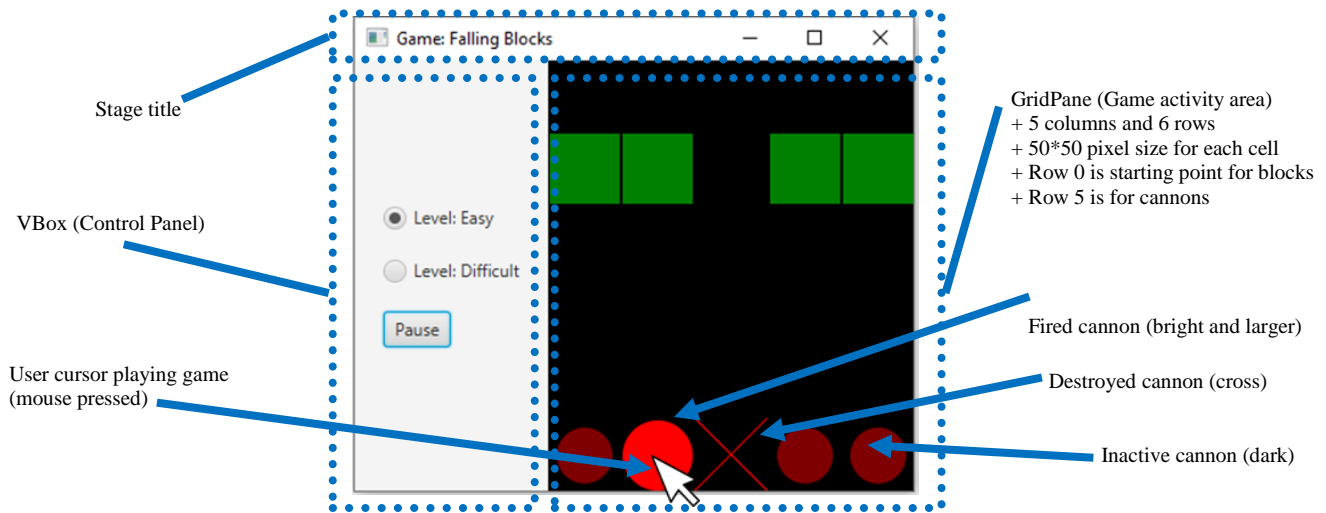
Video link to the features of the Falling Blocks game: [\[click here\]](#)

Falling Blocks Game Description

- *Launch Game*
 - When the game is launched, the default difficulty level is select as “Easy”.
 - The user clicks the “Start” button to begin playing the game.
 - The “Start” button changes to “Pause”
- *Game Play Progress*
 - The game proceeds by randomly making one of the blocks (green squares) drop down one level.
 - The blocks will start at the top, and after the 5th drop, will hit a cannon (red circle) and destroy the cannon.
 - A destroyed cannon is replaced by a red cross.
- *User Interaction for Game Play*
 - When a mouse hovers on top of an available cannon, the color brightens, showing that it is activated.
 - When a mouse exits the boundary of a cannon (circle), the color darkens, showing that it is de-activated.
 - The user clicks on the cannons (red circles) to fire the blocks in the corresponding column.
 - The fired cannon grows in radius while the mouse is presses, and resets to default size when the mouse is released.
 - When a cannon is fired, the falling block (green squares) is sent back to the top.
 - The game is finished when the number of available cannons reduces to 2.
- *User Interaction for Control Panel*
 - The panel on the left is the control panel for the game settings.
 - By default, the game speed is set to “Easy”.
 - The user may change the difficulty level to “Difficult” while the game is in progress.
 - The user may click the “Pause” button while the game is in progress, and the button will change to “Continue”.
 - If the game is finished, a text is displayed (You Lost!) and the button changes to “Reset”, which the user may click to reset the game, and the button changes to “Start”.

Programming Task

The layout design of the game is shown in the following diagram.



You are provided the skeleton source code for the Falling Blocks game in the file: *FallingBlocks.java*
The code for the class is structured as follows:

Primary outer class: **FallingBlocks**

- **Variables**
 - Various global variables and string constants to be used by all outer and inner classes
- **Methods**
 - start(Stage)
 - main()
 - initiateGame()
- **Inner Class: GamePane**
 - GamePane constructor: // TO DO
 - getCannon(): // TO DO
 - getBlock(): // TO DO
 - getCross(): // TO DO
 - cannonFireTrigger(): // TO DO
 - cannonFireTriggerRelease(): // TO DO
 - cannonActivateEffect(): // TO DO
 - cannonDeactivateEffect(): // TO DO
 - getRandomColumnIndex(): // TO DO
 - dropRandomBlock(): // TO DO
- **Inner Class: ControlPane**
 - ControlPane constructor: // TO DO
 - updateDifficultyLevel(): // TO DO
 - gameButtonControl(): // TO DO
- **Inner Class: GameplayTimelineHandler**
 - handle(): // TO DO

The provided skeleton source code includes detailed comments on the description and purpose of each of the classes, variables, methods, and intermediate steps within the program. Read through the provided code in details and complete the “// TO DO” tags which are placed within the code. Each of the “// TO DO” tags may be replaced by one or more lines of code to fulfil the specified requirements for the game to work as desired.

Submission Guidelines:

- Submit only the *FallingBlocks.java* file that you have modified. If you have more than one file in your program, include all files into a single zip file, and submit the single zip file. Do not upload project folders.