Mock06: Threads

Instruction

1. Create an Eclipse project named "**Q6**" inside your <mark>CP_seatNo_{ID}_{firstname}</mark> folder in <mark>c:\temp</mark>. <u>If folder Q6 already exists, you must delete it first (Otherwise your file may get corrupted!)</u>

2. Use JavaFX library. --module-path "path to JavaFX lib folder" --add-modules javafx.controls, javafx.fxml, javafx.graphics, javafx.media

3. Copy folder *application*, *logic, res* from the given folder "**Q6**" into your project *src* folder.

4. Fix the code (read on for details).

5. Export jar (**q6.jar**) file that **includes source code, image files, and .class files** and put it in the **root** folder of your project. <mark>Your jar file must be runnable</mark>.

   <mark>YOU MUST EXPORT JAR FILE containing all mentioned contents. IF YOUR FILE DOES NOT CONTAIN EVEN 1 MENTIONED FILE, YOUR CODE WILL NOT BE MARKED</mark>.

Problem Statement: The Cat and Dog

In "The Cat and Dog" game, the player must control a cat to escape from dogs. If the dogs catch the cat, the game is over. **A video demo of the program is available (demo.mp4).**

Game Window
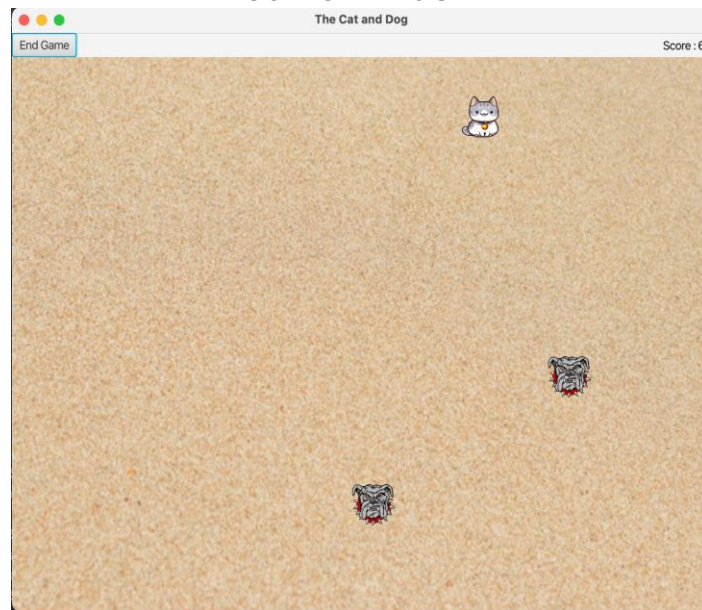
- When you click on the End Game button, the game is over.

- If a dog gets close to the cat, it means the dog can catch the cat, and the game is over.

- The score increases by 1 every second if the game is not over.

- If the game is over, "Game Over" will be displayed.

Game Over
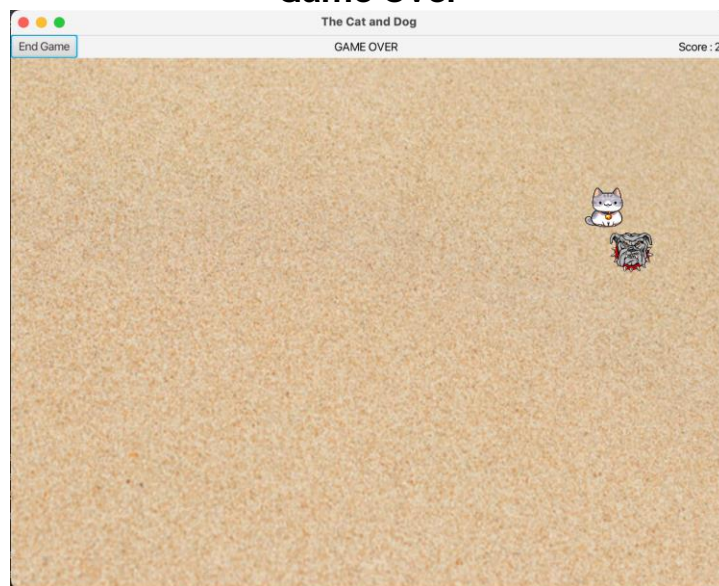
Cat

- Press 'W' to move up, Press 'S' to move down, Press 'A' to move left, Press 'D' to move right

- The special ability stops all dogs' movement for 1 second and has a cooldown of 5 seconds **(start count cooldown when pressed).** You can activate the special ability by pressing 'P'.

Dog

- A new dog spawns every 5 seconds, and each dog remains in the field for 15 seconds before being removed.

- All dogs want to catch the cat, so they will move towards it.

Implementation Detail

The given program does not run. To make it run, there are 5 methods you must fix using your knowledge on threads.

1. useSpecialAbility   in Cat.java
2. spawnDog   in FieldCanvas.java
3. setUpMove   in FieldCanvas.java

4. updateCanvas in FieldCanvas.java

5. updateScore   in GameController.java

Important Note:

• You can add your own methods and variables, including changing some local variables into instance/class variables.

• You can modify path(s) for pictures in both explorer and source code in order to make them appear correctly.

• You **MUST NOT** change the line "Thread.sleep(30);" If you do**, you get 0 points**.

• If **no threads** are used to solve this question, **you get 0 points**.

• You **MUST NOT** change code in files other than Cat.java, FieldCanvas.java and GameController.java. If you do, **you get 0 points**.

Scoring Criteria: (10 points)

- The cat can move correctly (2 points)
- The cat can use special ability
  - All dogs stop for 1 second (1 point)
  - Cool down is 5 seconds (1 point)
- Score is updated correctly (1 point)
- A dog is spawned every 5 seconds (0.5 point)
- A dog is removed every 15 seconds (0.5 point)
- Dogs can move correctly (1 point)
- When a dog is close to the cat, the game is over, and the game is stopped (0.5 point)
- When clicking the end game button, the game is over, and the game is stopped (0.5 point)
- When running the jar file, game is not frozen (2 points)

Export jar (**q6.jar**) file that **includes source code, image files, and .class files** and put it in **src** folder of your project. Your jar file must be runnable or you get 0 points.