CMPE 261: Large Scale Programming
Assignment 1

Istanbul Bilgi University

Fall 2023

Task

You are expected to reimplement the animation in Worksheet 3 with threads and multiple moving objects. Number of objects in the animation should be dynamic.

- Get an input from user to determine the number of objects in the animation. *(10 pts)*
- Initialize all objects on random locations, with random speeds, and random colors inside the frame. *(10 pts)*
- Add buttons to start and stop the animation. *(10pts)*
- Update the locations of each object based on their speeds, using separate threads for the calculation. You can follow the steps below to implement this or implement in a different way as long as you comment your code, *(50 pts)*
  - Create a class called `Shape` which extends `Thread`.
  - Update the movement of the object in the overriden `run` method. You can do the update inside an infinite loop.
  - Create a class called `Animation` which again extends `Thread` or implements `Runnable`. Use `repaint` in the `run` method to paint the shapes on the frame continuously. (If you want to slow down the objects, you can use `Thread.sleep`, but make sure the delay of animation thread matches the delay of shape threads.)
  - *Hint: Interrupted methods can not be started again, so you need to create new shapes with same properties in order to click start-stop-start in sequence and make it work.*
- Make sure that if the shapes hit the edge of the animation frame, they bounce back. *(20 pts)*

Note: Do not compress your files, submit only java files.
Note: Do not forget to justify your answers with comments.