COMP 8851
Instructor: Borna Noureddin
Assignment #3

All work should be done individually.

Total marks: 100

1. [5 marks] Complete exercise 6.5 in the textbook.
2. [5 marks] Complete exercise 7.12 in the textbook.
3. [10 marks] Complete exercise 5.4 in the textbook.
4. [10 marks] Complete exercise 6.38 in the textbook.
5. [10 marks] Complete exercise 9.26 in the textbook.
6. [25 marks] Complete exercise 5.25 in the textbook.
7. [35 marks] Create a 2D simulation with 100 white squares (they can be the same size or varying sizes). Use a background other than white. Give each square an initial position and velocity. Animate the squares so they are moving around the screen during the render loop. For the collision, implement a quadtree data structure of at least depth 4. The quadtree should NOT be recomputed every iteration of the loop, but rather updated to reflect new square positions. When the squares collide, change the color of each square involved in the collision to red. Once the squares have moved past each other and are no longer intersecting with another square, the colour should revert back to white.