CONCORDIA UNIVERSITY

DEPARTMENT OF
COMPUTER SCIENCE AND SOFTWARE ENGINEERING

COMP 426, Fall 2019 Instructor: R. Jayakumar

ASSIGNMENT 3

Issued: Oct. 22, 2019 Due: Nov. 5, 2019

Note: *The assignments must be done individually and submitted electronically.*

Manycore Implementation of 2D Bouncing Balls Simulation Using CUDA

In this assignment, you are going to implement the 2D bouncing balls simulation from Assignment 1 using CUDA. Specifically do the following:

- Develop the CUDA kernel by properly modifying your computation thread from Assignment 1 so that the required computation is done by a large number (hundreds) of concurrent threads.
- Develop the CUDA host program by appropriately modifying the control thread from Assignment 1.
- Implement the required OpenGL calls within your CUDA program appropriately.
- Optimize your CUDA program to minimize/avoid synchronization as much as possible.

You may develop the program on the workstations in the lab or on your own computer with a CUDA-compatible GPU, but demo it on the workstations in the lab. Your assignment will be marked on the basis of the demo.

Your submission should include a report describing how you designed and optimized your CUDA program based on the computation threads and the control thread from Assignment 1 and the source code of your implementation.

Submission Format for Assignments and Project

Create one zip file, containing the necessary source-code files and the report. Your zip file should be called A#_studentID, where # is the number of the assignment. studentID is your student ID number.