SIT315- Seminar 8 - Distributed Computing - OpenCL

Overview

Form a group of 5-6 students and work on the following activities.

Submission Details

Each student should submit the answers in the onTrack individually. Please write the names of all of your group members in the first page of your submission.

Activity 1- OpenCL Terminalogy

During the week eight lecture, we discussed several new terms and concepts related to openCL programming. Based on what you have learnt, provide a brief definition for the following terms/concepts.

1. Host
2. Device
3. Compute Unit
4. Processing Elements
5. Context
6. Command Queue
7. Host program
8. Program kernel

Activity 2 - OpenCL Programming

- **Useful resources**

- https://www.khronos.org/files/opencl20-quick-reference-card.pdf
- https://www.khronos.org/registry/OpenCL/specs/opencl-2.1.pdf
- https://www.khronos.org/registry/OpenCL/specs/2.2/html/OpenCL_API.html

In the resources, you have been provided with a parallel OpenCL program that generates a random vector and computes the square of its magnitude (dot product of the vector with itself). In this activity, you need to:

1. Create a folder in the Head VM and transfer both vector_ops .cpp and .cl files to that folder. Then, compile and run the program using `g++ opencl_matrix_add.cpp -lOpenCL .`
2. Carefully read the provided code and complete it by adding appropriate comments in the designated lines.
3. Implement a parallel vector addition program using OpenCL by extending this code and compare its performance with the multi-threaded version.

After finishing these activities, use the remaining time of the seminar to work on TaskM3.T1P. You can find the task description from OnTrack.