Project Log

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Introduction

This document contains the log of activities and hours spent on the individual project for the course individualProject for Avans.

In this course the student needs to make a project that incorporates the graphical card to do some calculations. The student needs to use OpenGl or OpenCL to do this.

Goal

The goal for this projcet is to use openCL to make a fluid simulation where water can be defined in a square space and the graphics card then calculats how the water flows. The focus first will be to make this in 2 dimensions. If this is done and there is time left the project will be expanded to 3 dimensions.

Log of Activities

1. **Read brightspace and init project**

   - **Activity** Read the brightspace course
   - **Activity** Setup code environment
   - **Activity** Setup git repository
   - **Activity** Write template for this log

2. **Google what is OpenCL**

   - **Activity** Read OpenCL landig page
   - **Activity** Read What is OpenCL

3. **Google openCL tutorial**

   - **Activity** Found getting started linux and followed part of tutorial with own knowledge to see if my envirement on new arch linux is working correctly.

- **Activity** Installed openCL headers
- **Activity** Followed Arch wiki to install openCL
- **Note** First program did not work. Had to google around and after rereading Arch wiki found I also had to install opencl-cover-mesa package isntead of only openc-nvidia.
- **Note** Added user to the video group using "sudo usermode -aG video sean", not sure if this was necessary

4. **Trying to use c++**

   - **Activity** Found OpenCL-CLHPP and looked at the example
   - **Founding** Saw I have to add extra find package to my cmakelists (OpenCLHeaders, OpenCLICDLoader and OpenCLHeaderCpp)
   - **Activity** After searching and trying things for about an hour an nothing working I remembered I can just add the raw hpp file to my project and use it that way.

5. **Search and follow basic tutorial of openCL**

   - **Activity** Found and followed Simple start with OpenCL and C++
   - **Note** In the tutorial a device is selected. At first there was no know device. After searching and testing for about 45 minutes, the problem was that I did not restart my computer.....

6. **Searching for fluids simulator c++ tutorials**

   - **Findings** Found two videos which might help me. But How DO Fluid Simulations Work? and Coding Adventure: Simulating Fluids
   - **Findings** First thing in the second video is how to draw a circle. As I am programming in c++ first have to search how to actually show something on my screen.
   - **note** Have not yet watched videos.

7. **Searching for c++ graphics libraries**

   - **Findings** Google says that QT is still the best library for c++ graphics. As I already have a bit of experience with it I will use this. I do want to keep coding in vscode and not use the QT editor.
   - **Findings** After a lot of googling I made it work so qt can be written within vscode. Also supports QTcreator. This so I can use the visual editor of QTcreator later on if needed.

Hours Spent

#	Activity	Hours
1	Read brightspace and init project	1
2	Google what is OpenCL	0.5
3	Google openCL tutorial	1
4	Trying to use c++	1.0
5	Search and follow basic tutorial of openCL	1.0
6	Searching for fluids simulator c++ tutorials	0.5
7	Searching for c++ graphics libraries	4
	Total Hours	4.5

Results

- Learned the basics of OpenCL.

- Understood how to use OpenCL for parallel computing.