N-body Simulation

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Intro

What is our project about?

To reach the maximum amount of bodies interacting on the screen

To observe gravitational interaction in complex systems of bodies

Goal

What are we going to implement?

To reach maximum N of objects which interaction can be calculated and visualizated

We’re going to implement a gravitational simulator with a graphical interface

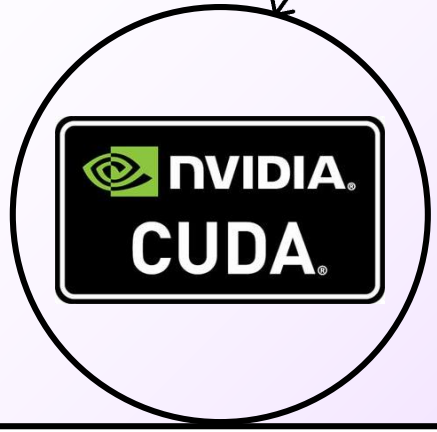
What features will it have?

It will allow users to choose the scenery or set custom initial data and observe the gravitational interaction

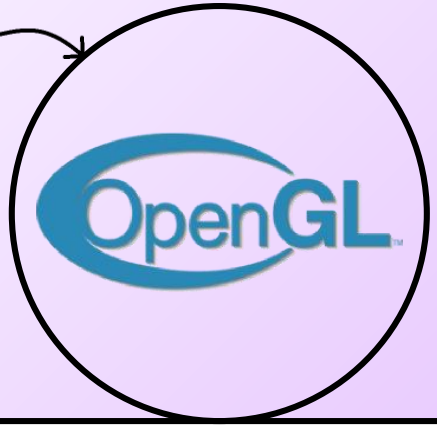
Tools

Programming language

Libraries and frameworks for development



The framework for parallel computations



The library for 3D-graphic

CMake…

Profilers…

Time changing

One of the most useful feature in our program will be the ability to change the time interval between events on a screen

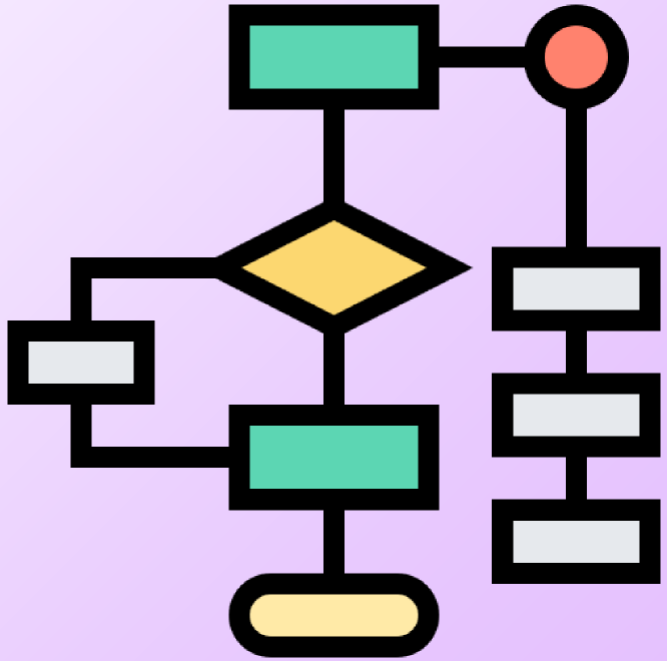
It will allow users to see in more detail what’s happening at a specific moment

Algorithms

The second main idea is to test different calculating algorithms and compare their time of performing and accuracy

It will allow us to understand what algorithm is the most suitable for our application

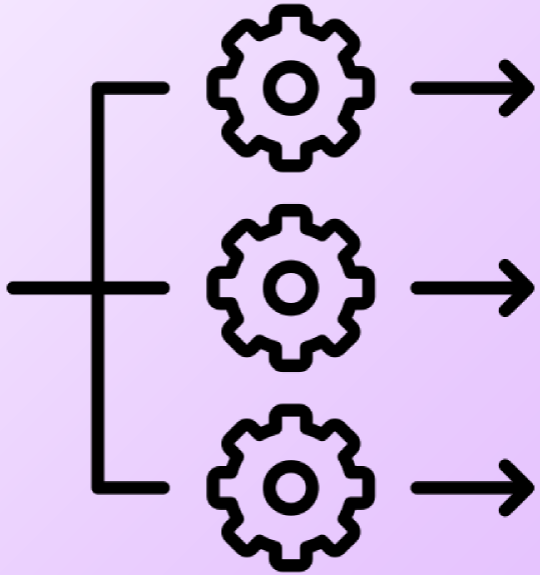
We’re going to use C++ profilers to find out performance on test scenarios



Parallel computations

The third main task is to implement parallel computations using CUDA

It will allow us to understand what is the maximum amount of objects which interaction we can calculate and show on a screen



Current state