Project Summary – Week 4

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Project Title – Pedagogical Aid for Line Segment Intersection Problem using Plane Sweep Algorithm

Description - Our project aims to develop an interactive educational tool to teach the fundamental concept of line segment intersection using the plane sweep algorithm. This tool will be a web-based application designed for students and beginners in computational geometry.

Line Segment intersection is used in many fields such as computer graphics, geographic information and robotics for applications such as Collision Detection, Map overlay, routing and navigation, path planning, etc. making it one of the most fundamental algorithms to learn and get familiar with for beginners. However, grasping the concept and keeping track of related data-structures can be hard for beginners.

This tool aims to provide an interactive interface to visualize the Algorithm as well as keep track of different data structures associated with the problem at any given time, as well as highlighting any piece of code responsible for any updates to visualization and/or related data structures.

References – Right now, the list of references only includes Line Segment Intersection Algorithm in Lecture Slides and D3js – Library for graphical visualization.

Timeline

Up till week 4 – Finalizing the project definition and technologies to be used.

Week 5 – Setting up development environment along with getting familiar with related technologies and libraries.

Week 6 – Implementing basic Algorithm using JavaScript.

Week 7 – Adding Visualization for Graphs and Data Structures.

Week 8 – Adding Pseudocode highlighting as well as stepper buttons.

Week 9 – Adding Random Initialization as well as Description for algorithm.

Week 10 to end – Final code cleaning and webpage deployment.

Stretch Goal – Real Time visualization of the priority queue used in the algorithm.