Project_CS163_APCS24: Data Structure Visualization

Introduction

Data Structure Visualization is a program that allows users to visualize the behavior of common data structures such as linked lists, hash table, tree and graph. This program is written in C++ and uses the Raylib library for graphics rendering.

Features

Supported Data Structures

This program currently supports the following data structures:

- Singly Linked List
- Chaining Hash Table
- AVL Tree
- Minimum Spanning Tree (Graph)

Main Features Included

Main features included:

- Smooth animations of the algorithms responsible for inserting, deleting, searching, and updating values in the data structure.
- Control the speed of the animations and play, pause or reverse the animations.
- Step-by-step code highlight.
- Create random, user defined or load-from-file list.

Installation

Prerequisites

- C++ compiler: `g++`
- RayLib library installation instructions available on the RayLib Website.
- Tinyfiledialogs library installation instructions avaliabe on the Tinyfiledialogs Website.

Building RayLib

1. Download or clone the repository to your local machine.
2. Install Raylib library by following the instructions in Raylib's official website.
3. Navigate to the project directory and open a terminal.
4. Compile the code using the following command:

Integrating tinyfiledialogs

1. Download or clone the `tinyfiledialogs` source code to your machine (e.g., from SourceForge). Extract if necessary.
2. Copy the two files `tinyfiledialogs.c` and `tinyfiledialogs.h` into your project's directory structure. For example, place them alongside your own source code files, or in dedicated subdirectories like `src/`, `include/`.
3. Navigate to your project's root directory and open a terminal (or command prompt).
4. Compile your application's source code together with the `tinyfiledialogs.c` file. You will need to link against the system libraries required by `tinyfiledialogs` on your platform. Below is a **general illustrative example** using `g++`:

Demo Video

Here is the demo video.

Credits

This program was created by Group 1 - 24A02 as a project for CS163 - Introduction to Computer Science 2 at VNU - University of Science.

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