

Data Structure Visualizer

Prof. Umme Zakia

Stud. Sanjay desu

Stud. Chuan En Hou (David)



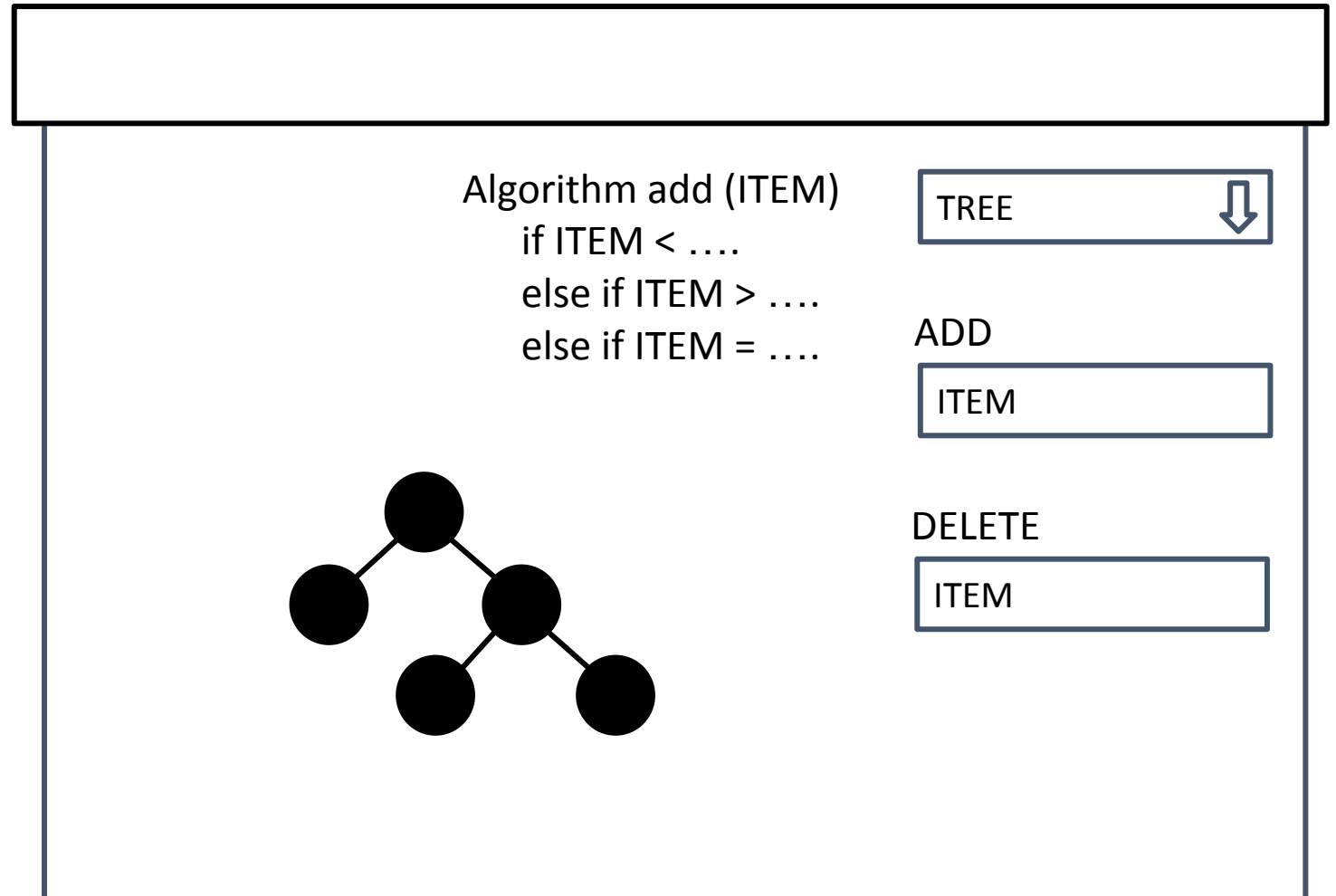
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Agenda

- Introduction
- Problem Statement
- Project Overview
- Approach
- Project Demonstration

Introduction

- Java GUI
- Data Structures and Visualization
- Education Purpose

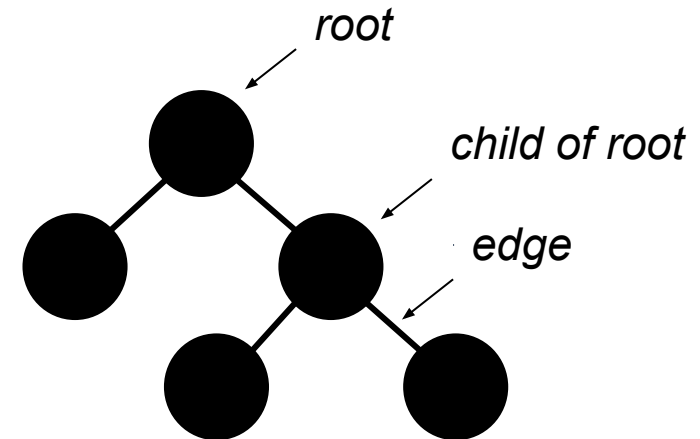


Problem Statement

Pure Text

A tree data structure is a hierarchical structure that is used to represent and organize data in a way that is easy to navigate and search. It is a collection of nodes that are connected by edges and has a hierarchical relationship between the nodes. The topmost node of the tree is called the root, and the nodes below it are called the child nodes. Each node can have multiple child nodes, and these child nodes can also have their own child nodes, forming a recursive structure. (GeeksforGeeks, 2024)

Visualization



Project Overview

Data Structure

Example: Tree

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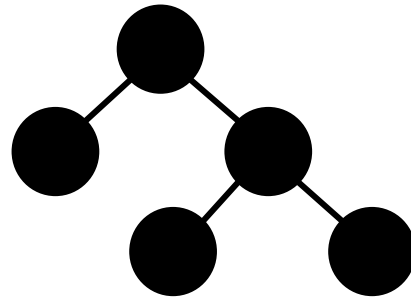
Visualizer

Example

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Data Structure Visualizer

Fix the problem



Approach (1/2)

Data Structure

+

Visualizer

```
Algorithm enqueue (Script, Q, Item) {  
    Script.add("add new item");  
    Script.add("move new item to point 0,0");  
    rear = ( front + size ) % Z;  
    Q[rear] = Item;  
    size += 1;  
    Script.add("move new item to rear");  
}
```

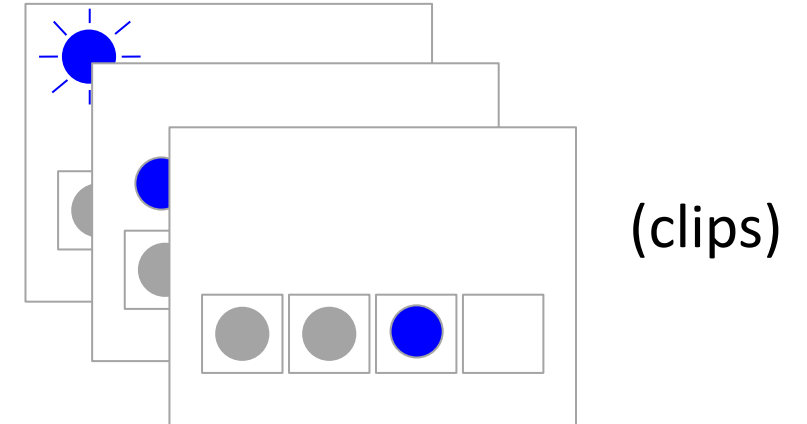
```
Algorithm enqueue (Script, Q, Item) {  
    Script.add("add new item");  
    Script.add("move new item to point 0,0");  
    rear = ( front + size ) % Z;  
    Q[rear] = Item;  
    size += 1;  
    Script.add("move new item to rear");  
}
```

Approach (2/2)

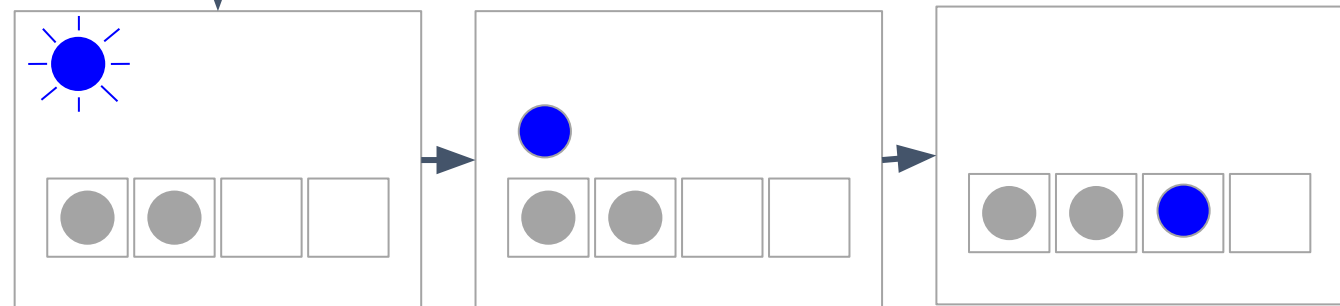
Visualizer

read script

```
Algorithm enqueue (Script, Q, Item) {  
    Script.add("add new item");  
    Script.add("move new item to point 0,0");  
    rear = ( front + size ) % Z;  
    Q[rear] = Item;  
    size += 1;  
    Script.add("move new item to rear");  
}
```



run clips



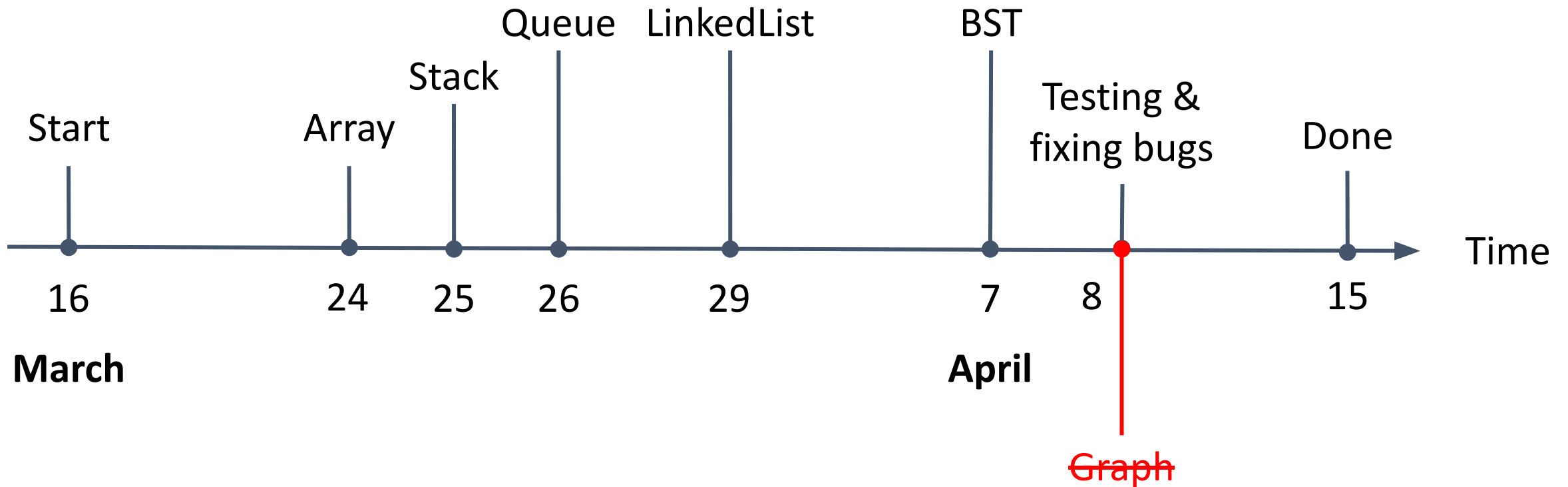
Approach (2/2)

Basically,...

It's a flipbook!



Project Progress



Project Demonstration

- Layout
- Features
 - Responsive UI
 - Real Time Code Animation
 - Real Time Prompt Window
 - Speed Control
- Quick Demo
 - Array
 - Stack
 - Linked List

References

Data Structure

- GeeksforGeeks. (2024, April 17). Introduction to tree data structure and algorithm tutorials.

GeeksforGeeks.

<https://www.geeksforgeeks.org/introduction-to-tree-data-structure-and-algorithm-tutorials/>

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PowerPoint

- Canva @canvacreativestudio



Team Lucky

Get In Touch

Project Code



<https://github.com/Xyberonzyx7/NYIT.CSCI-507-Data-Structures.FinalProject>

Sanjay desu

✉ jdesu@nyit.edu

Chuan-En Hou (David)

✉ advance.houdavid@gmail.com