

# Data Structure Visualizer

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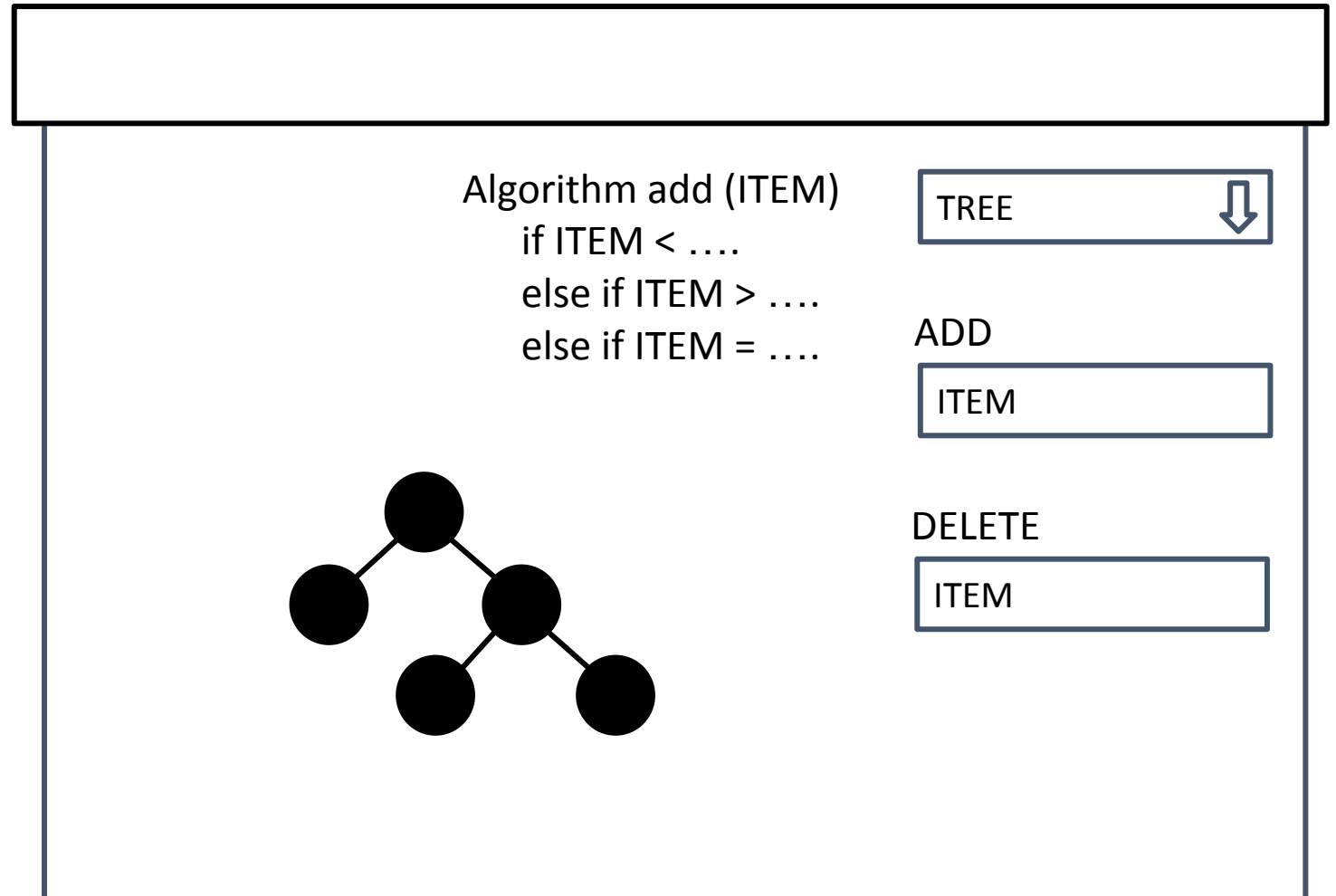
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# Agenda

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

# Introduction

- Java GUI
- Data Structures and Visualization
- Education Purpose

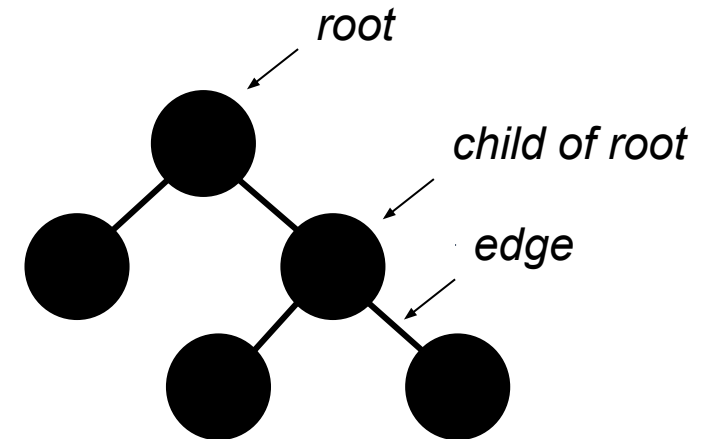


# Problem Statement

## 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

+

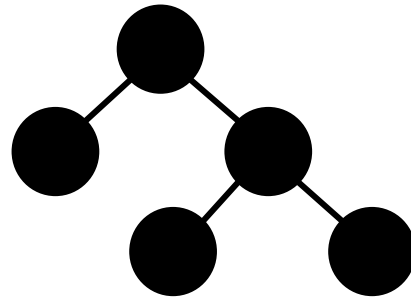
Visualizer

Example

=

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");  
}
```

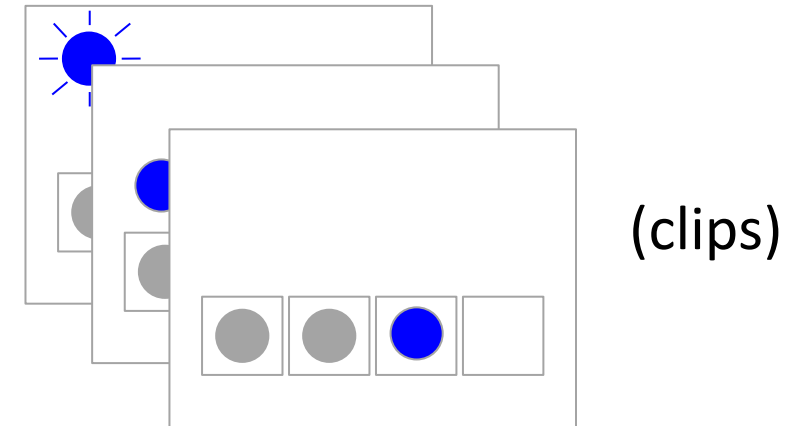
```
Algorithm enqueue (Script, Q, Item) {  
    Script.add("add new item");  
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    rear = ( front + size ) % Z;  
    Q[rear] = Item;  
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}
```

# Approach (2/2)

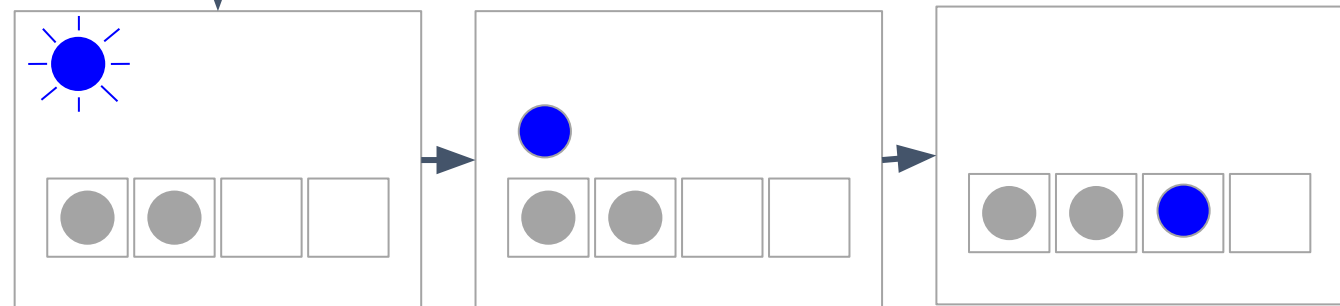
Visualizer

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)

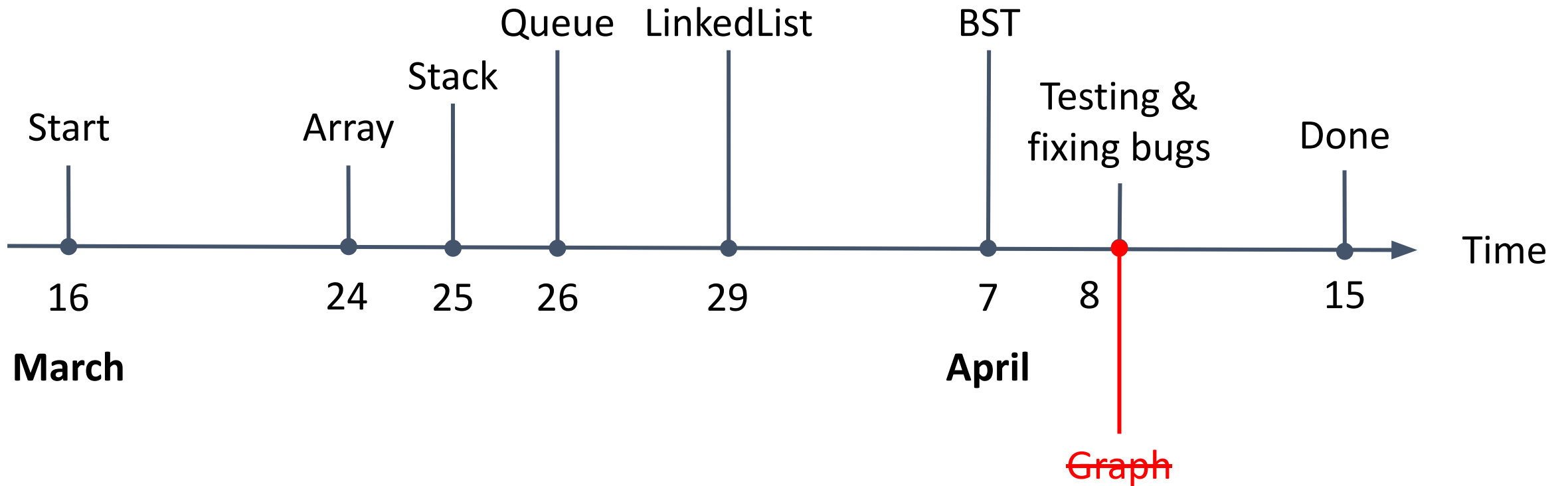
Basically,...

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
  - Tree



# References

## Data Structure

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

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## PowerPoint

- Canva @canvacreativestudio



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# Get In Touch

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