Graphical Interface for Garbage Collection Visualization.

Garbage-Collection-Visualizer

Garbage Collection Visualizer

📌 Project Overview

The Garbage Collection Visualizer is an interactive tool designed to illustrate how memory management and garbage collection work in programming languages. This project provides a visual representation of memory allocation, object references, and garbage collection processes.

🎯 Features

Live Memory Visualization: Watch how objects are allocated and deallocated in real time.

Multiple GC Algorithms: Supports visualization of different garbage collection techniques like Mark-Sweep, Reference Counting, and Generational GC.

Custom Object Allocation: Users can create and delete objects dynamically to see how the GC reacts.

Step-by-Step Execution: Allows pausing and stepping through the garbage collection process.

Interactive UI: Easy-to-use interface with detailed explanations.

🚀 Technologies Used

Frontend: HTML, CSS, JavaScript (React.js/D3.js for visualization)

Algorithms: Mark-Sweep, Reference Counting, Generational GC

📖 How It Works

Object Creation: Create objects and assign references in the simulation.

Garbage Generation: Break references to generate garbage data.

Garbage Collection: Watch the visual representation of different GC techniques.

Analyze Memory: See which objects survive and how memory is freed.

🏗 Future Enhancements

Support for additional GC algorithms (e.g., Copying GC, Concurrent GC)

Improved UI with animations

Performance analysis tools

Export and save simulation states

🤝 Contributing

Contributions are welcome! Feel free to submit issues, feature requests, or pull requests.

📬 Contact

For any queries, reach out via:

Email: priyaranikumari819@gmail.com