Project Proposal: Memory Management Simulation

Overview

This project aims to develop a **Memory Management Simulation** to visualize and analyze key memory management techniques, such as **Partitioning (Fixed and Dynamic)**, **Paging**, **Segmentation**, and **Virtual Memory**. The simulator will help users understand how memory is allocated, deallocated, and managed, while tracking performance metrics like **memory utilization, fragmentation, and page faults**. With an interactive GUI, users can experiment with various configurations, gaining insights into real-world memory management challenges and solutions.

Features

1. **Dynamic Memory Allocation:** Simulates how memory is allocated and freed at runtime.
2. **Fragmentation Visualization:** Displays internal and external fragmentation.
3. **Paging and Segmentation:** Demonstrates memory division techniques.
4. **Virtual Memory Simulation:** Shows how pages are swapped between RAM and disk.
5. **Performance Metrics:** Tracks memory utilization and page fault rates.

Software Tools

1. **Programming Language:** C for implementing the core simulation logic.
2. **IDE/Code Editor:** Code::Blocks, Visual Studio Code, or CLion.
3. **Compiler:** GCC (GNU Compiler Collection) for compiling the code.
4. **Version Control:** Git with GitHub or GitLab for code management and collaboration.
5. **Visualization Tools:** GNUPLOT or SDL library for generating graphs and visual output.

Team Member

Name	ID
Robin Dey	20701011
Ifthekhar Hossain	20701063
Md Mizbah Uddin	20701072
Md Moin Uddin	21701021
Mohammad Rakib	21701077