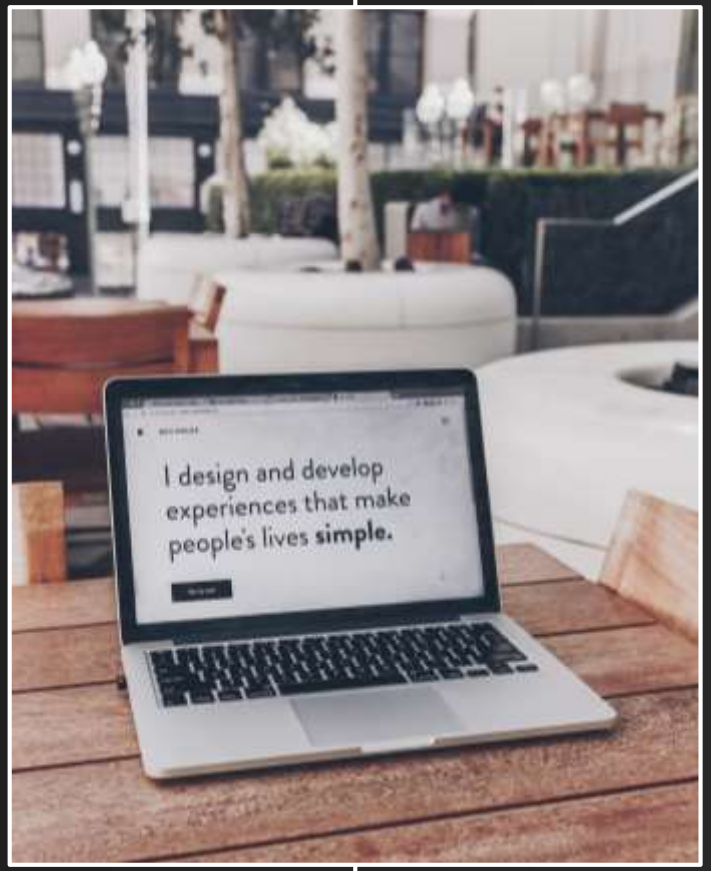

CSBS
Since 1999
OMNI OS
Mini project for Operating Systems



About the project:

- The Omni OS project is an endeavor to create an efficient and user-friendly operating system.
- Developed by our team, this project aims to simplify computing tasks without compromising functionality.
- The Program Launcher is the main entry point to the SIMPLE_OS operating system. It provides a user-friendly menu to access various built-in programs and utilities. Users can choose from a range of tools, each designed for specific tasks. The launcher serves as the central hub for program execution.

Objective of the project:

The 5-in-1 OS project aims to develop a comprehensive operating system with a simple shell, efficient process manager, smart memory allocator, user-friendly file system viewer, and a built-in calculator. This integrated system enhances user productivity, automates tasks, manages processes effectively, optimizes memory usage, streamlines file navigation, and simplifies mathematical computations. The project's goal is to provide a cohesive, versatile, and user-centric computing environment that caters to various needs, from system management to productivity, all within a single, intuitive interface.

Table of contents

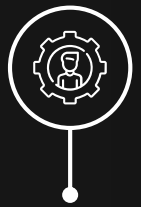
Brief about the program:

The launcher serves as the central hub for program execution.
Features :Choose from a variety of programs, each tailored for different purposes. Access essential operating system functionalities, including a simple shell, process manager, memory allocator, file system viewer, and a basic calculator. Seamless navigation: Select a program, run it, and return to the main menu with ease, Usage Upon launching the Program Launcher, you are presented with a menu that lists available programs. Enter the number corresponding to the program you want to run. The launcher will execute the chosen program, and you can interact with it as needed. To exit the operating system, simply enter '0' or choose the '0, Exit' option from the menu.

Programs included in our project:

Program Launcher

The 'menu' command serves as a central hub for program navigation. - It simplifies the process of finding and executing applications.



Simple Shell

The Simple Shell provides a command-line interface for file management and execution. - It encompasses essential commands like 'cd,' 'touch,' 'rm,' 'cat,' enabling versatile file operations.

File System Viewer

The File System Viewer simplifies file and directory navigation. - Users can effortlessly access and manage files, enhancing overall efficiency.

Programs included in our project:

Process Manager

The Process Manager empowers users to monitor and manage running processes. - It provides the capability to terminate specific processes when necessary.

Memory Allocator

The visual representation of memory allocation allows for real-time monitoring and decision-making. - This is particularly beneficial in environments with limited memory resources.

Calculator

The Calculator provides a user-friendly interface for mathematical operations. - Basic functions such as addition, subtraction, multiplication, and division are seamlessly integrated.

Real World Application

Shell program

Shell programs are used for automating tasks, managing servers, and scripting repetitive operations in various fields, including system administration, web development, and data processing.

Process Manager

Process managers like system in Linux ensure system services run efficiently, improving server reliability. They manage processes, auto-restart crashed services, and handle dependencies, crucial for system stability and availability.

Real World Application

File System Viewer

File system viewers are essential tools in everyday computing. They allow users to locate, organize, and access files, crucial for tasks like document management, data analysis, multimedia production, and efficient data retrieval and sharing in various industries and personal computing.

Real World Application

Memory Allocator

Memory allocators manage a computer's memory, crucial in software development. They allocate, free, and optimize memory usage, enhancing program efficiency, enabling multitasking, and preventing memory leaks in applications.

Calculator

Calculators are vital for solving mathematical problems in education, finance, engineering, and everyday life. They assist in performing complex calculations, making budget decisions, and solving scientific equations efficiently.

Algorithms:

1. *Process Scheduling Algorithms*: - You could implement process scheduling algorithms like Round Robin, First-Come-First-Serve (FCFS), or Priority Scheduling in your Process Manager component to efficiently manage and execute processes.
2. *Memory Allocation Algorithms*: - Memory allocation algorithms like First Fit, Best Fit, and Worst Fit might be used in the Memory Allocator to manage and allocate memory blocks.
3. *File System Algorithms*: - For the File System Viewer, algorithms related to directory traversal (e.g., Depth-First Search) and file handling (e.g., reading and writing files) could be applied.
4. *Command Parsing*: - Implementing algorithms to parse and execute user commands in the Simple Shell is essential. You'll need algorithms to identify the command, parse arguments, and execute them accordingly.

Algorithms:

5. *File System Structure*: - Your File System Viewer may employ data structures such as trees or tables to organize and navigate the file system efficiently.
6. *Inter-Process Communication (IPC)*: - If you implement communication between processes, algorithms for IPC mechanisms like message queues, semaphores, or shared memory might be utilized.
7. *Error Handling and Recovery*: - Implementing algorithms for error detection and recovery, like checksums or error-correcting codes, can help ensure the reliability of your OS.
8. *Algorithms for Basic Commands*: - Each command supported in your Simple Shell (e.g., `cd`, `ls`, `touch`, `rm`, `cat`) will have its own specific algorithms to handle its functionality.

Thank you!

Feel free to reach out to us if you have any questions.

CSBS
Since 1999

Sidhansu Keshri
RA2211042010032

Pratyush Goutam
RA2211042010023

Roel Christy
RA2211042010019