**Major Programming Project-Abstract**

**Project Name**- Services of Operating System

**Project Group Students**- **Project Guide**-

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**ABSTRACT:**

In this project, a free, educational software is proposed to demonstrate and verify basic Operating System Concepts such as Process Scheduling, Process Synchronization, Deadlock and Page Replacement Algorithms along with designing a Website where the software and its documentation is available to be downloaded by the general public.

This software aims to transform the theory of above topics into programmable code so as to graphically represent the concepts. As well as test and compare the results for each simulation. The software provides graphical aid to the user to perform- scheduling of processes to view turnaround time, waiting time and Gantt chart (FCFS, SJF, RR, Priority), simulation of Producer and Consumer Problem to see use of buffer and synchronization, testing on a process sequence for deadlock (Banker’s Algorithm) and implementation of FIFO, LRU and Optimal page replacement algorithm on a page sequence. The website will be the medium of access to the software; it is dynamic and also provides information on how to use the software. Users can provide feedback and updates and bug fixes can be released on the website.

The software is coded in Java and Java Swing while the website is coded in HTML, CSS, JavaScript and Bootstrap (Possible inclusion: Angular JS, Wordpress). The UI design is based on Microsoft’s Fluent and Metro UI Design languages. Web domain and hosting is done by help of AWS.

The targeted audiences for this software are students and teachers, who have basic understanding of Operating System concepts, for practical implementation of topics. The benefit of using this software is that it will provide understanding of the theory behind a topic, proper visualization, use of code for simulation and comparison of found results. Like a calculator provides correct answer for any calculation, this software may serve as digital truth for every simulation by the user.

The results for all simulations are viewed in separate java frames with interactive UI. Data provided during simulation may be stored as files in local system for future reference and comparison.

The software strives for educational visualization i.e. to help learners to practically implement the concepts as it is used inside the Operating System.

**Key words:** -

Operating System, Process Scheduling, Process Synchronization, Banker’s Algorithm, Page Replacement, Simulation

**Project Focus**- To create a GUI based software to learn OS concepts;

Design a website to deploy the software.

**Project Type**- Software + Deployment Website

**Student Level**- Undergraduate

**SPECIFICATIONS (Developing & Testing System):-**

**Hardware Specification:-**

- Processor – Intel(R) Core(TM) i5-7200 CPU @ 2.50GHz

- RAM – 4.00 GB

- Hard Disk – 1 TB

- System Type – 64-bit Operating System, x64-based processor

**Software Specification;-**

- Operating System – Windows 10 Home Edition

- IDE – NetBeans IDE 8.2

- Java – version 8 1.8.0\_131; Java HotSpot(TM) 64 bit server

- Runtime – Java(TM) SE Runtime Environment

- JDK – JDK 1.8.0\_131

- Web Editor – Brackets

- Repository – GitHub

**https://github.com/Ankita2101/MajorProj-OS-**

[Possible inclusion:-

-Database – Apache Derby

- Server- Glassfish ]

MINIMUM REQUIREMENTS:-

**Hardware Specification:-**

- Processor – Intel Pentium & above

- RAM – 1.00 GB & above

- Hard Disk – 512mb & above

- System Type – 32 or 64-bit Operating System

-All platforms

**Software Specification;-**

- Java – version 8

- Runtime – Java(TM) SE Runtime Environment

- JDK – JDK 1.8.0\_131

- Web Browser- Chrome, Firefox etc.

[Possible inclusion:-

-Database – Apache Derby

- Server - Glassfish ]