

**PROJECT COMPLETION REPORT**

# Section 1: PROJECT DATA

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| **Project Title** | **Operating System Algorithms**  **and Problems** |
| **Country** | **Pakistan** |
| **Project ID** | **NULL** |
| **Organization** | **Sukkur IBA University** |
| **Total Marks** | **10** |
| **Project Start Date (dd/mm/yyyy)** | **03/12/2020** |
| **Project Planned End Date (dd/mm/yyyy)** | **25/12/2020 to 31/12/2020** |
| **Total Personnel on the Project** | **5** |
| **Team Members** | **Muhammad Yamin (021-19-0029), Muhammad Fahad Shahzad (051-19-0003), Muhammad Akram (051-19-0033), Irfan Ullah (051-19-0008), Wasid Khan (021-19-0022 )** |
| **Link to Demo Video** | https://drive.google.com/drive/folders/1KDm-raQXaLc8BmCl6nqTv4dH99isZjuT?usp=sharing |

# Section 2: PROJECT Objectives

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| The project **Operating System Algorithms and Problems** provides time efficient solutions to various techniques of executing processes, storing and manipulating data in OS. The techniques include **Disk Scheduling, Process Scheduling and Process Synchronization**. In Process Scheduling Algorithms, the data fetched will be processed through one of the execution methodologies implemented **i.e., FCFS, SJB, RR, LJF etc.** Similarly, after execution here comes **Disk Scheduling Algorithms** which will store data in efficient manners. The **Disk Scheduling Algorithms** that are implemented includes C Scan, Shortest Seek Time First, LOOK, and Scan. The third technique implanted in the project is **Process Synchronization** Where on the basis of **Semaphores and Peterson’s Solution** various methodologies has been adopted which includes **Dinning Philosophers Problem, Producer Consumer Problem, and Reader Writers Problem. The** techniques are well protected for use and makes the data processing very fast. |

# Section 3: PROJECT Techniques

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| The various techniques used, in order to achieve the objectives includes :   * **Disk Scheduling**   File systems must be accessed in an efficient manner, especially with hard drives, which are the slowest part of a computer. As computer deals with multiple processes over a period of time, a list of requests to access the disk builds up. For efficiency purposes, all requests (from all processes) are aggregated together. The technique that the operating system uses to determine which requests to satisfy first is called disk scheduling. The techniques to achieve Disk Scheduling Algorithms, implanted are   1. First Come First Serve 2. Shortest Seek Time First 3. LOOK 4. SCAN DISK 5. C-LOOK 6. C-SCAN  * **Process Scheduling**   The act of determining which process is in the ready state, and should be moved to the running state is known as Process Scheduling.  The prime aim of the process scheduling system is to keep the CPU busy all the time and to deliver minimum response time for all programs. For achieving this, the scheduler must apply appropriate rules for swapping processes IN and OUT of CPU.  Scheduling fell into one of the two general categories:   1. Non Pre-emptive Scheduling: When the currently executing process not gives up the CPU voluntarily. 2. Pre-emptive Scheduling: When the operating system decides to favor another process, pre-empting the currently executing process.      * **Process Synchronization**   Process Synchronization means sharing system resources by processes in a way that, Concurrent access to shared data is handled thereby minimizing the chance of inconsistent data. Maintaining data consistency demands mechanisms to ensure synchronized execution of cooperating processes. The techniques to achieve process synchronization includes :   1. Dinning Philosopher Problem 2. Producer Consumer 3. Reader Writers Problem |

# s Section 4: PROJECT WALKTHROUGH

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| The Project uses above mentioned techniques to satisfy above mentioned objectives. The CLI will allow user to select any of the technique to work or solve his/her problem with. Upon Selection, User will be prompted to the required data from user and upon successful input by the user the system will calculate the associated result accordingly. |

# Section 5: PROJECT TOOLs

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| The tools that are used includes;   1. C Language 2. Semaphores 3. Threading 4. Gcc Compiler 5. Multiple Libraries 6. Peterson’s Solution |

# Section 6: PROJECT IMPACT

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| The project will provide a user friendly CLI for utilizing the outcome fully. Along with that all the required data after calculation that are sideway of the outcome will be shown to user at the end |

# Section 7: PROJECT OUTCOME

# Here we are calculating the different kind of times such as Turnaround time, waiting time and response time and then their averages by using different kind of algorithms. In Process Scheduling algorithms, there is only one file when you run that by GCC compiler it asks that which of these algorithms you want to choose for the given jobs and by selecting the desired numbers it shows a table which consist of all times as discussed earlier.

THE END