



— Course Subject:	Introduction to Operating Systems
— Academic Year:	3 rd Year
— Instructor:	Dr. Mohamed Saleh
— Academic Semester:	May, 2020
— Document type:	Academic research project
— Answer sheet:	Please refer to the template document provided by the department

Operating System Research Project: -

In this project you need to thoroughly survey and contrast the following Kernel modules and services. Your research document should focus on at least (8) of the following key operating systems modules at the kernel level:

1. System calls, User mode and System mode
2. Process concepts, mechanisms, and representation
3. Inter Process communication and RPCs
4. Multithreaded applications versus Multiprocessor applications
5. Threads, Concurrency and Synchronization
6. Scheduling algorithm, Affinity, Context switching, and Priority classes
7. Concurrency and Mutual Exclusion
8. Semaphores, Monitors and Readers/Writers
9. Deadlock avoidance and prevention techniques
10. Main Memory and Virtual Memory Management Algorithms
11. Kernel Input / Output Sub-system
12. Mass Storage Structure and Disk Scheduling Algorithms

⇒ You need to assess your analysis and your research findings along several dimensions including algorithms and/or pseudo-code.

⇒ *Extra Credit:*

- In your survey document try to highlight the main differences between Windows Kernel and Linux Kernel.