

IE2061: Operating Systems and System Administration

Year 2 Semester 2

2025

Assignment Title	Comparative Study and Problem-Solving in Operating Systems
Learning outcomes covered	LO 2: Assess different kinds of process/thread management problems and solution LO 7: Design system administrative scripts
Assignment Mode	Physical
Maximum Marks	100
Contribution to the Final Grade	20%
Date published	15/09/2025
Deadline for submissions	06/10/2025
Mode of Submission	Online

Assignment description

Marking Scheme

Criteria	Excellent 45 - 50	Good 35 - 44	Satisfactory 20 - 34	Poor 6 - 20	Very Poor 0 - 5
1. Report (50%) 1.1 Understanding & Application of OS Concepts (15) 1.2 Integration of management perspective (15) 1.3 Analysis & critical thinking (15) 1.4 Structure, formatting & references (5)					

<p>2. Presentation and Viva (50%)</p> <p>2.1 Organization & Flow of Presentation (10)</p> <p>2.2 Individual contribution and delivery (10)</p> <p>2.3 Viva / Q&A (30)</p>					

Group Assignment: Comparative Study and Problem-Solving in Operating Systems

Assignment Description

Each group will assign two different operating systems (e.g., Windows vs. Linux, Android vs. iOS, UNIX vs. macOS). The group will then conduct a comparative study across four major domains of OS design and management and propose solutions to common OS and system administration challenges in real-world environments (The two different operating systems assigned to each group will be updated on the group list sheet).

Assignment Structure (4 Parts / 4 Members)

Part A – OS Structures & Evolution

- Compare the two assigned operating systems in terms of architecture, system calls, and structure.
- Identify strengths and weaknesses in supporting modern IT environments.
- Justify which operating system is more suitable for scalability and business continuity.

Part B – Process & Scheduling Challenges

- Analyze how the two operating systems handle process/thread scheduling, synchronization, and deadlocks.
- Highlight problems faced in high-demand industries (e.g., banking, cloud computing, manufacturing).
- Evaluate cost-performance trade-offs in process management.

Part C – Memory & Storage Issues

- Examine memory management techniques (paging, segmentation, virtual memory) in each operating system.
- Compare file system management approaches (e.g., NTFS vs. EXT4).
- Discuss real-world challenges such as data loss, recovery, and performance bottlenecks.
- Assess storage strategies for enterprises, including cloud adoption and compliance.

Part D – Security & Administration

- Compare protection and security mechanisms of the two operating systems.
- Identify real-world security issues (e.g., malware in Windows, privilege escalation in Linux).
- Review administrative tools used for monitoring and control.
- Evaluate management policies and decision-making for securing IT infrastructure.

Submission Requirements

Submission Requirements

1. **Group Report** (3000 words)
 - Clear structure with Parts A–D
 - References (IEEE style)
 - Diagrams/tables encouraged
2. **Group Presentation and Viva** (15 minutes)