THE UNIVERSITY OF DODOMA

COLLEGE OF INFORMATICS AND VIRTUAL EDUCATION

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (CSE)

GROUP ASSIGNMENT

COURSE NAME: OPERATING SYSTEM SECURITY

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1. What is system security?

System security refers to the practice of protecting computer systems, networks, and data from unauthorized access, theft, or damage. It involves implementing measures such as firewalls, encryption, antivirus software, and access controls to ensure the confidentiality, integrity, and availability of system resources. The goal of system security is to defend against threats like hackers, malware, and data breaches while ensuring the system operates smoothly and securely.

Example:

- **Banking System Security:** Online banking platforms use system security measures such as encryption to protect sensitive customer information like passwords and transactions. Firewalls are used to prevent unauthorized access to their servers.

2. What are the security problems in an operating system (OS)?

Operating systems are responsible for managing hardware and software resources. If security issues exist, they can affect the entire system. Security problems include:

- **Malware Attacks:** Programs like viruses and ransomware can corrupt or encrypt data.
- **Unauthorized Access:** An attacker might exploit weak passwords to log in as an admin.
- **Software Vulnerabilities:** Bugs in the OS may allow attackers to execute malicious code.
- **Privilege Escalation:** A hacker could exploit an OS flaw to gain admin-level control.

Examples:

- **Ransomware Attack:** In 2017, the WannaCry ransomware exploited a vulnerability in Windows OS, encrypting files and demanding payment for decryption.

3. Why is operating system security important?

Operating systems are the backbone of any computing device, and securing them ensures that:

- The data stored and processed remains private.
- The system remains functional without interruptions.
- Threats like hackers and malware are mitigated.

Examples:

- **Personal Device Security:** Ensuring that your smartphone OS is updated and secure prevents sensitive data, like passwords or photos, from being stolen.
- **Corporate Security:** Companies like Amazon secure their servers' OS to ensure smooth operations for their millions of users worldwide.