Coventry University Group

Student Assignment Brief

This document is intended for Coventry University Group students for their own use in completing their assessed work for this module. It must not be passed to third parties or posted on any website. If you require this document in an alternative format, please contact your Module Leader.

Contents:

The work you submit for this assignment must be your own independent work, or in the case of a group assignment your own groups' work. More information is available in the 'Assignment Task' section of this assignment brief.

Assignment Information

Module Name: Operating Systems

Module Code: 401IT

Assignment Title: Report on operating systems operational and security management.

Assignment Due: 11th July 2025 - 18:00

Assignment Credits: 10 credits

Word Count (or equivalent): [2000 words +/- 10%]

Assignment Type: Applied Core

Percentage Grade (Applied Core Assessment). You will be provided with an overall grade between 0% and 100%. You have one opportunity to pass the assignment at or above 40%. Resit attempts will be capped at 40%

Assignment Task

Your task is to develop an in-depth report that critically analyses various operational aspects of operating systems and evaluates their security management strategies. The report should demonstrate your ability to discuss the principles of different operating systems, assess their capabilities, and provide an analysis of their security strategies. The operating systems to be evaluated include Linux, Windows, and Windows Server.

The report should be 2000 words and divided into two parts, each focusing on specific aspects of operating systems management and security.

Part 1: Operational Management of Operating Systems (60%)

Section 1: Process and Service Management (15%)

1. **Definition and Importance:**
    - Define processes and services within operating systems.
    - Discuss the significance of effective process management and its impact on system performance.
    - Explain how processes and services can be started, stopped, and managed using both graphical user interfaces (GUI) and command-line interfaces (CLI).
    - Highlight the differences in process and service management techniques between Linux, Windows, and Windows Server.
    - Emphasize the importance of these operations in maintaining optimal system performance and resource allocation.

Section 2: File System Management (15%)

1. **File System Structure and Management:**
    - Explain the structure and management of file systems in Linux, Windows, and Windows Server.
    - Describe the hierarchical organization of files and directories in these operating systems.
    - Discuss the importance of file system permissions in securing data.
    - Explain how file system permissions are managed differently across Linux, Windows, and Windows Server.
    - Provide an overview of command-line and GUI methods to create, modify, and delete files and directories.

Section 3: User Account and Access Control Management (10%)

1. **User Account Principles:**
    - Describe the principles of user account management across different operating systems.
    - Explain the significance of user accounts in system security and resource management.

- Explain the process of creating, modifying, and deleting user accounts in Linux, Windows, and Windows Server.
- Discuss how access control is implemented using Access Control Lists (ACLs) and Role-Based Access Control (RBAC) in these systems.
- Highlight the importance of access control in preventing unauthorized access and ensuring system integrity.

Section 4: Memory Management (20%)

1. **Memory Management Concepts:**
    - Describe the principles of memory management in various operating systems.
    - Cover key concepts such as stack, heap, shared memory, virtual memory, addressing, paging, swapping, buffers, and ring buffers.
    - Explain how different operating systems handle memory management tasks.
    - Discuss the significance of efficient memory management in system performance and stability.
    - Compare and contrast the memory management techniques used by Linux, Windows, and Windows Server.

Part 2: Security Risks and Management Strategies (40%)

Section 1: Security Risks in Operating Systems (20%)

1. **Identification and Analysis:**
    - Identify common security risks associated with Linux, Windows, and Windows Server.
    - Discuss recent vulnerabilities and exploits, referencing CVE databases.
    - Evaluate the severity and potential impact of these security risks on systems and data.
    - Analyse how different operating systems are affected by these risks and the measures they take to mitigate them.

Section 2: Security Management and Mitigation Strategies (20%)

1. **Effective Practices:**
    - Discuss effective security management practices for operating systems.
    - Detail strategies such as patch management, intrusion detection systems, and security audits.

2. **Tools and Technologies:**
    - Provide examples of tools and technologies used to enhance operating system security, such as firewalls and antivirus software.
    - Explain the role of these tools in preventing, detecting, and mitigating security threats.

Submission Instructions:

The report must be submitted as a single Microsoft Word document via the AULA upload link for this assignment. The file should be named with your student number and the module code (e.g. 1234567_605IT_CW1.docx).

This is an individual assignment. Each student must submit their own work. Group/team submissions are not permitted.

Be sure to keep backup copies of your submission. Failure to successfully upload does not excuse late submission.

Marking and Feedback

How will my assignment be marked?

Your assignment will be marked by the module team

How will I receive my grades and feedback?

Provisional marks will be released once internally moderated.

Feedback will be provided by the module team alongside the grades release.

After marking is completed, you can access your marked work and feedback by clicking on the submission link. Feedback will be provided in the Turnitin viewer, and mark distributions will show you where marks were awarded or deducted. If you are unsure how to access your feedback, please ask your tutor for clarification.

Your provisional marks and feedback should be available within [2 weeks (10 working days)].

What will I be marked against?

Details of the marking criteria for this task can be found at the bottom of this assignment brief.

Assessed Module Learning Outcomes

The Learning Outcomes for this module align to the marking criteria which can be found at the end of this brief. Ensure you understand the marking criteria to ensure successful achievement of the assessment task. The following module learning outcomes are assessed in this task:

3. Describe and make productive use of operating system services for activities such as process control, threading, memory management and device access.
4. Evaluate operating systems and identify related security risks and ways to manage these with a range of supporting technologies.

Assignment Support and Academic Integrity

If you have any questions about this assignment please see the Student Guidance on Coursework for more information.

Spelling, Punctuation, and Grammar:

You are expected to use effective, accurate, and appropriate language within this assessment task.

Academic Integrity:

The work you submit must be your own, or in the case of groupwork, that of your group. All sources of information need to be acknowledged and attributed; therefore, you must provide references for all sources of information and acknowledge any tools used in the production of your work, including Artificial Intelligence (AI). We use detection software and make routine checks for evidence of academic misconduct.

Definitions of academic misconduct, including plagiarism, self-plagiarism, and collusion can be found on the Student Portal. All cases of suspected academic misconduct are referred for investigation, the outcomes of which can have profound consequences to your studies. For more information on academic integrity please visit the Academic and Research Integrity section of the Student Portal.

Support for Students with Disabilities or Additional Needs:

If you have a disability, long-term health condition, specific learning difference, mental health diagnosis or symptoms and have discussed your support needs with health and wellbeing you may be able to access support that will help with your studies.

If you feel you may benefit from additional support, but have not disclosed a disability to the University, or have disclosed but are yet to discuss your support needs it is important to let us know so we can provide the right support for your circumstances. Visit the Student Portal to find out more.

Unable to Submit on Time?

The University wants you to do your best. However, we know that sometimes events happen which mean that you cannot submit your assessment by the deadline or sit a scheduled exam. If you think this might be the case, guidance on understanding what counts as an extenuating circumstance, and how to apply is available on the Student Portal.

Administration of Assessment

Module Tutor Name:

Module Tutor Email:

Assignment Category: Written

Attempt Type: Standard

Component Code: Cw1

Assessment Marking Criteria

Coventry University Generic Assessment Criteria: Undergraduate

Mark band	Outcome	Guidelines
80-100% 1st	Meets learning outcomes	1st - Exceptional work with very high degree of understanding, creativity, and critical/analytic skills. Evidence of exceptional research well beyond minimum recommended using a range of methodologies. Exceptional understanding of knowledge and subject-specific theories. Demonstrates creative flair, a high degree of originality and autonomy. Exceptional ability to apply learning resources. Demonstrates well-developed problem-solving skills. Work completed with very high degree of accuracy and proficiency and autonomy. Exceptional communication and expression, significant evidence of professional skill set. Student evidences deployment of a full range of exceptional technical, including proficiency in the English Language, and/or artistic skills.
70-79% 1st		1st - Excellent work with clear evidence of understanding, creativity and critical/analytical skills. Thorough research well beyond the minimum recommended using methodologies beyond the usual range. Excellent understanding of knowledge and subject-specific theories with evidence of considerable originality and autonomy. Excellent ability to apply learning resources. Demonstrates consistent, coherent substantiated argument and interpretation. Demonstrates considerable creativity and clear problem-solving skills. Assessment completed with accuracy, proficiency, and considerable autonomy. Excellent communication and expression, some evidence of professional skill set. Student evidences deployment of a highly developed range of technical, including proficiency in the English Language, and/or artistic skills.
60-69% 2:1		2:1 - Very good work demonstrating strong understanding of theories, concepts and issues with clear critical analysis. Thorough research, using established methodologies accurately, beyond the recommended minimum with little, if any, irrelevant material present. Very good understanding, evidencing breadth and depth, of knowledge and subject-specific theories with some originality and autonomy. Very good ability to apply learning resources. Demonstrates coherent substantiated argument and interpretation. Demonstrates some originality, creativity and problem-solving skills. Work completed with accuracy, proficiency, and autonomy. Very good communication and expression with evidence of professional skill set. Student has a thorough command of a good range of technical, including proficiency in the English Language, and/or artistic skills.

50-59% 2:2		2:2 - Good understanding of relevant theories, concepts and issues with some critical analysis. Research undertaken accurately using established methodologies, enquiry beyond that recommended may be present. Some errors may be present and some inclusion of irrelevant material. Good understanding, with evidence of breadth and depth, of knowledge and subject-specific theories with indications of originality and autonomy. Good ability to apply learning resources. Demonstrates logical argument and interpretation with supporting evidence. Demonstrates some originality, creativity and problem-solving skills but with inconsistencies. Expression and presentation mostly accurate, proficient, and conducted with some autonomy. Good communication and expression with appropriate professional skill set. Student consistently demonstrates a well-developed range of technical, including proficiency in the English Language, and/or artistic skills.
40-49% 3rd Class		3rd - Meet the learning outcomes with a basic understanding of relevant theories, concepts and issues. Demonstrates an understanding of knowledge and subject-specific theories sufficient to deal with concepts. Assessment may be incomplete and with some errors. Research scope sufficient to evidence use of some established methodologies. Some irrelevant material likely to be present. Basic ability to apply learning resources. Demonstrates ability to devise and sustain an argument. Demonstrates some originality, creativity and problem-solving skills but with inconsistencies. Expression and presentation sufficient for accuracy and proficiency. Sufficient communication and expression with basic professional skill set. Student demonstrates technical, including a basic level of proficiency in the English Language, and/or artistic skills.
30-39% Fail	Fails to achieve learning outcomes	Fail – Outcomes not met. Limited understanding of relevant theories, concepts and issues. Little evidence of research and use of established methodologies. Some relevant material will be present. Deficiencies evident in analysis. Fundamental errors and some misunderstanding likely to be present. Limited ability to apply learning resources. Student's arguments are weak and poorly constructed. Limited originality, creativity, and struggles with problem-solving skills. Expression and presentation insufficient for accuracy and proficiency. Insufficient communication and expression and with deficiencies in professional skill set. Student demonstrates some deficiencies in technical, including in their use of the English Language, and/or artistic skills.
0-29% Fail		Fail – Outcomes not met. Clear failure demonstrating very little understanding of relevant theories, concepts and issues. Minimal evidence of research and use of established methodologies and incomplete knowledge of the area. Serious and fundamental errors and aspects missing. Very little evidence of ability to apply learning resources. Student's arguments are very weak and with no evidence of alternative views. Little evidence of originality, creativity, and problem-solving skills. Expression and presentation

		deficient for accuracy and proficiency. Insufficient communication and expression and with deficiencies in professional skill set. Student demonstrates a lack of technical, including in their use of the English Language, and/or artistic skills.