

## ***SIT111: Task 2.1P - Virtual Memory and File Systems***

### **Overview**

The operating system virtualises memory, that is, it presents each application with an illusion that it has access to the entire memory. The operating system also manages I/O devices among which the disk is one of the most important components. Linux (and other operation systems) exposes a *file* abstraction on top of the disk, making it easy for user applications to read and write data to the device.

This task asks you to demonstrate your understanding of these crucial roles of the operation system.

### **Learning Objectives**

To complete this task, you need to demonstrate that you can do the following:

- Describe what virtual memory is.
- Explain the main ideas behind address translation and page tables.
- Describe what a filesystem is.
- Describe a typical filesystem hierarchy in Linux.
- Explain how the operating system resolves files and directories.

### **Summary - TL; DR**

1. Read through the materials on the unit site.
  2. Complete the Active Learning Session exercises.
    - Topic 2.1 activities
    - Topic 2.2 activities
  3. Submit:
    - Summary and reflection
    - Outcome from activities:
      - Answers to exercises, including diagrams or figures if necessary
      - Describe any additional insights or knowledge learned during the active learning activities
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### **Your Task**

Complete the following activities to help you meet these learning goals. Ensure you feel confident you have achieved these goals, then prepare and upload your submission for feedback.

1. Complete Learning Activities - **Work through the Active Learning activities related to Virtual Memory and File Systems** (Topic 2.1 and 2.2 activities). Feel free to discuss the exercises with your peers. However, your submitted solutions must be of your own. For this task, you **do not** have to attempt the exercises marked as **Credit or Distinction**.
2. Prepare Submission - Once you feel confident that you have achieved the learning goals, you can prepare a submission to demonstrate this. This will contain three sections: summary of what you learnt, reflection on your learning, and evidence of study and practice.

### Section 1: Summary

Summarise what you learnt about virtual memory and file systems. This should be a personal summary, written so that it will be useful to you should you need to quickly revise these concepts and tools in the future. Capture the most important aspects from the materials in the unit site, learning activities, and anything else you find related to this topic.

### Section 2: Reflection

Reflect on your learning by responding to the following prompts:

- How do you know you have achieved the learning goals?
- What is the most important thing you learned from this and why?
- How does the content or skills learned here relate to things you already know?
- Where or when do you think it will be useful?

**Note::** The content for the first two sections should not exceed 500 words or 1 printed page.

### Section 3: Evidence of study and practice

This section will contain evidence of your outputs from the learning activities for this task. That is, it contains your answers to the exercises.

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### Upload Your Submission

Once you have all the evidence in place, login to CICRA LMS and mark the task as **Ready for Feedback**. The submission process will ask you to upload evidence of completion of the task. For quizzes, please include a screenshot showing your quiz score. For Active Learning Session problems, you must submit evidence that you

yourself had completed the activities. While working in groups/pairs is welcome, you must have evidence of your own contributions.

The system will also ask you to reflect on what unit learning outcomes have been achieved by this task.

### **Engage with Feedback**

To get the task marked as **Complete**, you need to engage with the feedback you receive. Your tutor will review your submission and may ask you to clarify aspects of your learning, redo parts of the task, or include aspects you have missed. You may be asked to discuss the task in class or online. Use these discussions as an opportunity to help develop and validate your understanding.

If you are asked to resubmit, *make sure your subsequent submission includes a comment that describes how you have addressed the feedback you received*. This needs to demonstrate how you have addressed all the aspects indicated by your tutor in their feedback on your learning.