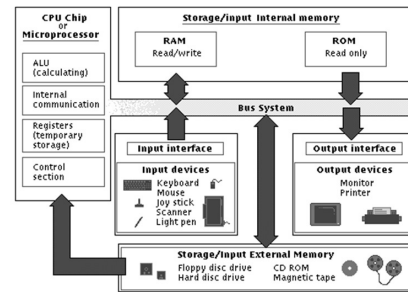


COMP25111

Operating Systems

Lectures 14

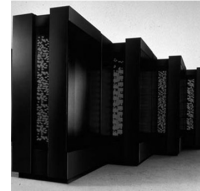


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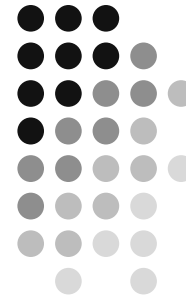
Room: G12 Kilburn Building, Bottom floor



Week

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NOTE: The up-to-date version of this lecture is kept on the associated web site -- available [on-line] @ Blackboard select: COMP15111 Introduction to Computer Systems www.manchester.ac.uk/portal



1

Students Copy

Short Exam Questions

Q1

1. Question

Name three page replacement policies?

ANSWER(S):

- 1) First in First Out (FIFO);
- 2) Least Recently Used (LRU); &
- 3) Not Recently Used (NRU).

NOTE: In the exam approximately 2 question are taken from the topics (and program examples) covered in each lecture.

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2



Getting ready for next week

Do next week's Q3's NOW

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- Once you have re-read the lecture notes; and listened to the audio recording [while stepping through the PPT] of the lecture again:
- Please have a think about next week's Q3's
 - on the next page
- If you try to answer the Q3's now you will be in a much better position to recall the information.
- Once you have done this, transfer your answers to next weeks "Student [OWN answers] version" at the start of next weeks lecture.
 - YES this implies bringing the last weeks lecture notes to the next lecture ...

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1. Question
Name three page replacement policies?
ANSWER(S):
 - 1) First in First Out (FIFO);
 - 2) Least Recently Used (LRU); &
 - 3) Not Recently Used (NRU).
2. Question
What is meant by the term 'working set;' with respect to process memory pages?
ANSWER(S):
Group of recently used pages.
3. Question
What methodology can minimising page faults by the use of sophisticated replacement algorithms?
ANSWER(S):
Pre-paging = bring in page before request by process.
Bring in main memory all or some of the pages a process will need, before they are referenced.

NOTE: In the exam approximately 2 question are taken from the topics (and program examples) covered in each lecture⁴



Questions

Introduction to Questions:

The set of questions are based on lecture 14.

Answer Sheet will be given later in year and will contain the answers to these questions.

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- Remember to find detailed and comprehensive answer you should [also] reference associated text books in the library.
- A reasonable starting place for associated book titles are:
 - 1) This units 'module guide'; given to you in RN's first lecture – or on the web [Blackboard];
 - 2) Those books mentioned in 'Background Reading;'
 - 3) Those books [and web resources] mentioned in Learning Resources.

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Questions

1. Question

Input and output devices connect to a wide variety of different devices. These include two main categories.

Name the two main categories; and give examples of each.

1. Answer

- The two main categories of I/O are:
 - 1) Human interface devices; &
 - 2) Communication devices.
- Examples, of each include devices such as:
 - 1) Human interface devices: keyboard, monitor, mouse; microphone, speakers; (include audio, visual, & manipulated devices); &
 - 2) Communication devices: network cards, modems, etc.

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2. Question

- Name and briefly describe the steps taken to service (undertake) a basic means of reading a character from an I/O device using polling.

- **Answer**



2. Answer

The steps necessary to service a keyboard, using polling, are:

- 1) First, read the status register;
- 2) Second, to check if a character has been entered, check if the status bit is set, or not (this is a conditions code check); this leads to two possible outcomes:
 - 3) 2.1) If the value of the conditions bit is zero, go back to step 1) as no character entered; else
 - 4) 2.2) The value of the status bit is one; continue
- 5) Read the data register; get character from keyboard data register;
- 6) Then, store retrieved character in memory;
- 7) Finally, go back to step 1) and keep polling the status register...



3. Question

- Re-write the list of steps, undertaken in Q2, to enable the processor to do other operations (other than just polling the status register). Note: The list should enable the 'programmed polling' I/O to enable processor to be freed up to do [other] useful work.
- **Answer**



3. Answer

The steps necessary to service a keyboard, using programmed polling I/O with exits, are:

- 1) First, read the status register;
- 2) Second, to check if a character has been entered, check if the status bit is set, or not (this is a conditions code check); this leads to two possible outcomes:
 - 3) 2.1) If the value of the conditions bit is zero, exit polling service routine; as no character entered; else
 - 4) 2.2) The value of the status bit is one; continue
- 5) Read the data register; get character from keyboard data register;
- 6) Then, store retrieved character in memory;
- 7) Finally, exit polling service routine. Then undertake other useful work. Only entering the character polling service routine infrequently.



Revision Exercises

- Scan read Lecture 14's Questions.
 - Answer Lecture 14's Questions
 - Particularly those questions you had difficulties with when you first tried them.