



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020**

COURSE NAME : FUNDAMENTALS OF OPERATING SYSTEM
COURSE CODE : DAT 10303
PROGRAMME : DAT
EXAMINATION DATE : DECEMBER 2019/JANUARY 2020
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : ANSWER ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF SEVEN (7) PAGES

SECTION A

Choose the correct answer.

- Q1** Which of the statement is not true about *Fields* in File Management?
- A. Basic element of data.
 - B. Collection of related *Records*.
 - C. Characterized by its length and data type.
 - D. Contains a single value.
- Q2** Which of the statement is TRUE about *Database* in File Management?
- A. Is a collection of similar *Records*.
 - B. Relationships exist among elements.
 - C. Characterized by its length and data type.
 - D. Collection of related fields.
- Q3** A process is comprised of
- A. a program code (possibly shared).
 - B. a set of data.
 - C. a number of attributes describing the state of the process.
 - D. all of the above.
- Q4** In the Two-state Process model, a process may be in one of two states, which are
- A. ready and running.
 - B. running and not running.
 - C. running and blocked.
 - D. new and pause.
- Q5** "Data is typically lost when power is removed."
Which element that would best fit the above description.
- A. Processor.
 - B. Main memory.
 - C. I/O modules.
 - D. System bus.
- Q6** "Moves data between the computer and the external environment."
Which element that would best fit the above description.
- A. Processor.
 - B. Main memory.
 - C. I/O modules.
 - D. System bus.
- Q7** System bus is
- A. a module that transfers data from external devices to processor and memory, and vice versa where it contains internal buffers for temporarily holding data until they can be sent on.
 - B. a set of locations defined by sequentially numbers addresses that contains either data or instructions.
 - C. the communication among processors, main memory, and I/O modules.
 - D. a program to be executed by a processor that consists of a set of instructions stored in memory.

- Q8** Suppose an interrupt occurs while another interrupt is being processed e.g. printing data being received via communications line, what action should the OS takes in this situation?
- A. Use a priority scheme.
 - B. Disable all process.
 - C. Disable all interrupts.
 - D. Stop the processor.
- Q9** Which of these statements is FALSE about secondary memory?
- A. Auxiliary memory.
 - B. volatile.
 - C. External.
 - D. Used to store program and data files.
- Q10** Which of these statements is FALSE about cache?
- A. Invisible to the OS.
 - B. Processor must access memory at least once per instruction cycle.
 - C. Exploit the principle of locality with a small fast memory.
 - D. None of the above.
- Q11** **THREE (3)** objectives of operating systems are
- A. convenience, easy and simple.
 - B. capacity, speed and cost.
 - C. faster, cheaper and efficient.
 - D. Convenience, efficiency and ability to evolve.
- Q12** Which of these statements is FALSE about operating systems?
- A. A computer is a set of resources for the movement, storage, and processing of data and the OS is responsible for managing these resources.
 - B. A good OS will collect usage statistics for various resources and monitor performance parameters such as response time.
 - C. The OS frequently relinquishes control and must depend on the processor to allow it to regain control.
 - D. None of the above
- Q13** Which of these is the latest version of an Android mobile operating systems?
- A. Android Pie.
 - B. Android "Gingerbread".
 - C. Android "Kit Kat"
 - D. Android "Lollipop"
- Q14** Microsoft Windows is a major computer operating system developed by Microsoft. What is the latest version of Windows operating system?
- A. Windows XP.
 - B. Windows Vista.
 - C. Windows 10.
 - D. Windows 2000.

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Q15 WannaCry is a ransomware worm that spread rapidly through across a number of computer networks in May of 2017 where it encrypts files on the PC's hard drive, making them impossible for users to access, then demands a ransom payment in bitcoin in order to decrypt them.

What operating system were the target of WannaCry ransomware during that time?

- A. Windows XP.
- B. Windows Vista.
- C. Windows 10.
- D. macOS.

Q16 Which of the following is not an operating system?

- A. Windows.
- B. Microsoft.
- C. Unix.
- D. Ubuntu.

Q17 Which of these statements is FALSE about Shortest Job First (SJF) scheduling?

- A. Shortest Job First scheduling works on the process with the shortest burst time.
- B. This scheduling algorithm is optimal if all the jobs/processes are available at the same time.
- C. To successfully implement it, the burst time/duration time of the processes need not be known to the processor in advance.
- D. This is the best approach to minimize waiting time.

Q18 These are the advantages of First Come First Serve (FCFS) scheduling EXCEPT

- A. because there is no pre-emption, if a process executes for a long time, the processes in the back of the queue will have to wait for a long time before they get a chance to be executed.
- B. FCFS algorithm doesn't include any complex logic, it just puts the process requests in a queue and executes it one by one.
- C. FCFS is simple and easy to implement.
- D. every process will eventually get a chance to run, so starvation doesn't occur.

Q19 What is the name of the parent company of Google, YouTube and Android?

- A. Canonical Ltd.
- B. Apple.
- C. Alphabet Inc.
- D. Microsoft.

Q20 Which of these is not a type of memory partitioning?

- A. Fixed Partitioning.
- B. Dynamic Partitioning.
- C. Simple Paging.
- D. Virtual Memory.

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(20 marks)

SECTION B

Determine whether the statement is TRUE or FALSE.

- Q21 *Files* is a collection of related data where relationships exist among the elements.
- Q22 *Database* consists of one or more *Files*.
- Q23 *Records* is a collection of related *Fields*.
- Q24 *Records* is a basic element of data and contains a single value.
- Q25 A directory system should support several operations including searching, creating and listing of files as well as listing and updating directories.
- Q26 Virtual memory takes program addresses and maps them to RAM address.
- Q27 Files management comes from the general idea that “any problems in computer science can be solved by adding indirection”.
- Q28 In virtual memory Physical Addresses (PA) is what the hardware uses to talk to the RAM where the address space is determined by how much RAM is installed.
- Q29 File management provides services to users and applications in the use of files.
- Q30 Memory needs to pack as many processes into memory as much as possible.
- Q31 In most memory management schemes, the kernel occupies some fixed portion of main memory and the rest is shared by multiple processes.
- Q32 The programmer knows where the program will be placed in memory when it is executed.
- Q33 In dynamic partitioning, partitions are of variable length and number.
- Q34 Fixed partitioning will cause internal fragmentation.
- Q35 In FCFS scheduling algorithm, the process which arrives first, will be executed last.
- Q36 Thread is a light weight process.
- Q37 A thread of execution is the smallest sequence of programmed instructions that cannot be managed independently by scheduler.
- Q38 Threads reside inside the process and each thread belongs to exactly one process.
- Q39 Program execution consists of instruction fetch and instruction execution.
- Q40 Virtually all computers provide a mechanism by which other modules (I/O, memory) may interrupt the normal sequencing of the processor.

(20 marks)

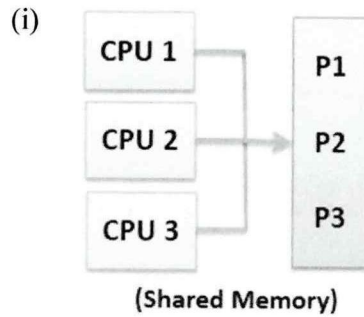
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SECTION C

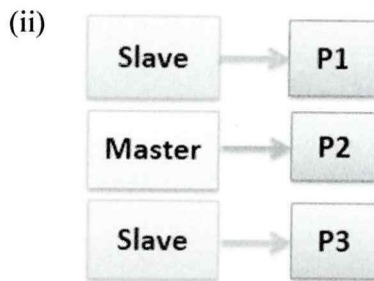
- Q41** (a) Determine **THREE (3)** common problems of memory. (6 marks)
- (b) Explain virtual memory. (4 marks)
- (c) Break down **TWO (2)** advantages and **TWO (2)** disadvantages of Round Robin Scheduling. (8 marks)
- (d) Define process. (2 marks)
- Q42** Describe the function of each of these UNIX command.
- (a) `cat hello.txt | sort | uniq` (2 marks)
- (b) `cat hello.txt | grep "dog" | grep -v "cat"` (2 marks)
- (c) `echo hello > output` (2 marks)
- (d) `echo bye >> output` (2 marks)
- (e) `kill -9 27501` (2 marks)
- (f) `vi final2019.tx` (2 marks)
- (g) `chmod 600 private.txt` (2 marks)
- (h) `script /unix-session.log` (2 marks)
- (i) `ls -a -l` (2 marks)
- (j) `mkdir DAT10303` (2 marks)

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- Q43 (a) Break down **FOUR (4)** characteristics of early computer systems. (4 marks)
- (b) Identify and describe the type of multiprocessing technique based on the shown diagram.



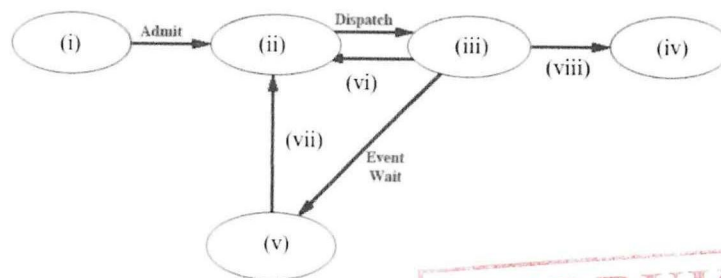
(3 marks)



(3 marks)

- (c) Define what is operating systems. (2 marks)
- (d) Identify the missing elements in the shown Five-State Process Model.

Five-State Process Model



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(8 marks)

- END OF QUESTIONS -