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Assessment type: Assignment

Module name: Operating System 1A

Group 8

Question 1

Q 1.1 –To keep the Operating system simple and within the fixed time constraint

-To keep the Operating system size smaller, thus the Operating system can be stored in smaller sized memory of the real-time system

-To keep the Operating system response time within the fixed time constraints

-To keep the Operating system simple

-If the system does not complete a task in a certain time frame, it may cause a breakdown of the entire system it is running

[Online]

Available at: <https://medium.com/brandons-computer-sceince-notes/real-time-environment>

[Accessed 27 October 2022]

Q 1.2 –Page table is the information structure utilized by a virtual memory framework in a PC working framework to store the mapping between virtual location and physical. Virtual locations are utilized by the program executed by the getting to process, while physical locations are utilized by the equipment, or all the more explicitly, by the RAM subsystem. The page table is a key part of virtual location interpretation which is important to get to information in memory

Every dynamic activity or a dynamic job has its own page map table (PMT), which contains the essential data for each page, namely, the page number and its related memory address of the page outline. As a matter of fact, the Page Map Table incorporates just a single passage for every page. The principle passage in the Page Map Table dependably records the page outline memory address for page 0, the second section is location for page 1

Schemes that use a PMT are:

Demand Paging Memory allocation

In PC working framework or operating system, demand paging (rather than expectant paging) is a technique for virtual memory management. In a framework that utilizes demand paging, the working framework duplicates a disk page into physical memory whenever an endeavor is made to get to it and that page is not currently in memory example if a page fault happens. When a procedure starts execution with none of its pages in physical memory, many page faults will happen until a large portion of a procedure working arrangement of pages is situated in physical memory

[Online]

Available at: <https://medium.com/-computer-sceince-notes/page-map-table>

[Accessed 27 October 2022]

Q 1.3 Multiprocessing refers to processing of multiple processes at same time by multiple Central Processing Unit

* It utilizes single Central Processing Unit
* It facilitates much efficient utilization of devices of the computer system
* It permits parallel processing
* Less time taken to process the jobs

Multiprogramming keeps several programs in main memory at the same time and execute them concurrently utilizing single Central Processing Unit

-It utilizes single Central Processing Unit

-Less efficient than multiprocessing

-such system are less expensive

-More time taken to process the jobs

[Online]

Available at: <https://medium.com/-computer-sceince-notes/operating-system-multiprogramming-and-multiprocessing>

[Accessed 27 October 2022]

Q 1.4 Graphical user interface is important for the novice users Linux is mostly used by developers. A Graphical User Interface a lot of access to files, software features, and the operating system as a whole. Being more user-friendly than a command line especially for new or novice users, a visual file system is utilized by more people. Graphical User Interface users have Windows that enable a user to view, control, manipulate, and toggle through multiple programs and folders at same time.

Linux users frequently use the command line because, sometimes it is the only way to run a particular program or command, or sometimes it is just easier to type a few command than to launch a Graphical User Interface window to do the same thing, especially if you always have a CLI terminal open

Programmers will tend to be more comfortable with CLI use because they are constantly working text. Average users tend to prefer graphical users interface because working mouse is relatively intuitive

[Online]

Available at: <https://medium.com/-computer-sceince-notes/Graphical-user-interface>

[Accessed 27 October 2022]

Q 1.5

Q 1.5.1 the cause of thrashing

-Thrashing is caused by under allocation of the minimum number of pages required by a process, forcing it to continuously page fault.

Q 1.5.2 how does the system detect thrashing

-The system can detect thrashing by evaluating the level of Central Processing Unit utilization as compared to the level of multiprogramming.

Q 1.5.3 once it detects thrashing. What can the system do to eliminate this problem?

-It can be eliminated by reducing the level of multiprogramming

[Online]

Available at: <https://medium.com/-computer-sceince-notes/the-cause-of-thrashing/a7a91c51353>

[Accessed 27 October 2022]

Q 6.1

Q 6.1.1 –The maximum number of active jobs is 2, because the device policy requires allocating 3 drives for each job and there are at most 13 drives available. So the constraint is 3\*<=13, where x is the number of active jobs; the max integer x solution is 2

Q 6.1.2 –The minimum idle drive is 1, occurring when both running jobs are using their maximum usage of 3 drives

-The maximum idle drive is 3, occurring when both running jobs are using their minimum job usage of 3 drives

Q 6.1.3 No additional job will be started unless and until all device have been allocated a job during its run

[Online]

Available at: <https://medium.com/computer-sceince-notes/operating-system->

[Accessed 27 October 2022]

Q 1.7

Q 1.7.1 Batch

-The operating system defines a job which has predefined sequence of commands, programs and data as a single unit. The operating system keeps a number a jobs in memory and executes them without any manual information. Jobs are processed in the order of submission example first come first served fashion

Q 1.7.2 Interactive

-The system is composed of many short transaction where the results of the next transaction may be predictable. The response time needs to be short because the user submits and waits for result

Q 1.7.3 Time sharing

-A time shared operating system allows multiple users to share computer simultaneously. Each action or order at a time the shared system becomes smaller, so only a little Central Processing Unit time is required for each user

Q 1.7.4 Real time

-Often used in a dedicated application, this system reads information from sensors and must respond within fixed amount of time to ensure correct performance

Q 1.7.5 Distributed

-A distributed system should easily connect users to resource, it should hide the fact that resources are distributed across a network, must be open, and must be scalable.

[Online]

Available at: <https://medium.com/brandons-computer-sceince-notes/types-of-operating-system-a7a91c51353>

[Accessed 27 October 2022]