

Final Term Assignment
Operating System Concepts

Time Allowed: 6 hours

Marks: 50

ID : **14294**
SUBJECT : **OPERATING SYSTEM**
DATE : **22/06/2020**
DEPARTMENT : **BS(CS)**

q1. In deadlock prevention strategy do you think it is necessary to check that either safe state exists or not? Give reason to support your answer.

ANS:- State is protected if the framework can designate assets to each procedure (up to its greatest) in some request and still keep away from a stop. All the more officially, a framework is in a sheltered state in particular if there exists a protected grouping.

A sheltered state is anything but a gridlocked state. On the other hand, a stopped state is a perilous state. Not every single risky state are gridlocks.

q2. Differentiate between Dynamic loading and Dynamic Linking with the help of examples.

ANS: DYNAMIC LOADING:- System library or other routine is loaded during run-time and it is not supported by OS.

Suppose our program that is to be executed consist of various modules. Of course its not wise to load all the modules into main memory together at once (in some cases it might not be even possible because of limited main memory). So basically what we do here is we load the main module first and then during execution we load some other module only when its required and the execution cannot proceed further without loading it.

DYNAMIC LINKING:- System library or other routine is linked during run-time and it is supported by OS.

Suppose our program has some functions whose definition is present in some system library. We do know the header file only consists of declarations of functions and not definitions. So during execution when the function gets called we load that system library into main memory and link the function call inside our program with the function definition inside system library.

Q3. Which component of an operating system is best suited to ensure fair, secure, orderly, and efficient use of memory? Also identify some more tasks managed by that component.

ANS:-

- Memory management system is most suitable component of an operating system that ensure fair, secure, orderly and efficient use of memory.
- The tasks managed by memory management system includes keeping track of where, when, and how much memory is allocated and free.
- It also keeps track of used and free memory spaces.
- Memory management system is responsible for the processes swapping and in/out from primary/main memory.

Q4. Differentiate between Symmetric and A-Symmetric encryption with the help of example.

ANS:- Difference Between Symmetric and Asymmetric Encryption

- Symmetric encryption uses a single key that needs to be shared among the people who need to receive the message while asymmetrical encryption uses a pair of public key and a private key to encrypt and decrypt messages when communicating.
- Symmetric encryption is an old technique while asymmetric encryption is relatively new.
- Asymmetric encryption was introduced to complement the inherent problem of the need to share the key in symmetrical encryption model, eliminating the need to share the key by using a pair of public-private keys.
- Asymmetric encryption takes relatively more time than the symmetric encryption

Q5. Describe the difference between external and internal fragmentation. Why should they be avoided?

ANS:- Key Differences Between Internal and External fragmentation

1. The basic reason behind the occurrences of internal and external fragmentation is that internal fragmentation occurs when memory is partitioned into fixed-sized blocks whereas external fragmentation occurs when memory is partitioned into variable size blocks.
2. When the memory block allotted to the process comes out to be slightly larger than requested memory, then the free space left in the allotted memory block causes internal fragmentation. On the other hands, when the process is removed from the memory it creates free space causing a hole in the memory which is called external fragmentation.

3. The problem of internal fragmentation can be solved by partitioning the memory into variable sized blocks and assign the best fit block to the requesting process. However, the solution for external fragmentation is compaction, but it is expensive to implement, so the processes must be allowed to acquire physical memory in a non-contiguous manner, to achieve this the technique of paging and segmentation is introduced

q6. List and describe the four memory allocation algorithms covered in lectures. Which two of the four are more commonly used in practice?

ANS:- The four memory allotment calculations (in the plan of dynamic apportioning situation) are: First-Fit - in the connected rundown of accessible memory addresses, we place the information in the principle section that will accommodate its information. Its point is to limit the measure of looking, yet prompts outer discontinuity later on. Next-Fit - like originally fit, yet ass opposed to looking from the earliest starting point each time, it look from the last fruitfully portion.

First-Fit and next-fit most regularly utilized as it is simpler to actualize and turns out to be better.

q7. Why is the context switch overhead of a user-level threading as compared to the overhead for processes? Explain.

ANS:- This undertaking is known as a setting switch. Setting switch time is unadulterated overhead, in light of the fact that the framework accomplishes no valuable work while exchanging.... Setting exchanging is overhead since it is cycles (time) that the processor is being utilized yet no client code is executing, so no legitimately gainful registering is completing.