**Chapter 8 – Virtual Memory**

**TRUE/FALSE QUESTIONS:**

T F 1)  The size of virtual storage is limited by the actual number of main storage locations.

T F 2)  The addresses a program may use to reference memory are distinguished from the

addresses the memory system uses to identify physical storage sites.

T F 3)  Most of the memory management issues confronting the operating system designer

are in the area of paging when segmentation is combined with paging.

T F 4)  Segmentation is not visible to the programmer.

T F 5)  The placement policy determines where in real memory a process piece is to reside.

T F 6)  Virtual memory allows for very effective multiprogramming and relieves the user

of the unnecessarily tight constraints of main memory.

T F 7)  The principle of locality states that program and data references within a process

do not tend to cluster.

T F 8)  The smaller the page size, the greater the amount of internal fragmentation.

T F 9)  The design issue of page size is related to the size of physical main memory and

program size.

T F 10)  Segments may be of unequal, indeed dynamic, size.

T F 11)  The page currently stored in a frame may still be replaced even when the page

is locked.

T F 12)  One way to counter the potential performance problems of a variable-allocation

global scope policy is to use page buffering.

T F 13)  The PFF policy evaluates the working set of a process at sampling instances based

on elapsed virtual time.

T F 14)  A precleaning policy writes modified pages before their page frames are needed so

that pages can be written out in batches.

T F 15)  UNIX is intended to be machine independent; therefore its memory management

scheme will vary from one system to the next.

**MULTIPLE CHOICE QUESTIONS:**

1)  The address of a storage location in main memory is the \_\_\_\_\_\_\_\_\_\_ .

A)  address space   B)  virtual address space

C)  real address   D)  virtual address

2)  \_\_\_\_\_\_\_\_\_ is the virtual storage assigned to a process.

A)  Virtual address space   B)  Virtual address

C)  Real address   D)  Address space

3)  \_\_\_\_\_\_\_\_\_\_ is the range of memory addresses available to a process.

A)  Address space   B)  Real address

C)  Virtual address   D)  Virtual address space

4)  The \_\_\_\_\_\_\_\_\_\_ structure indexes page table entries by frame number rather than by virtual

page number.

A)  hash table   B)  segment table

C)  page table   D)  inverted page table

5)  The \_\_\_\_\_\_\_\_\_ states the process that owns the page.

A)  process identifier   B)  control bits

C)  page number   D)  chain pointer

6)  A \_\_\_\_\_\_\_\_\_ is issued if a desired page is not in main memory.

A)  paging error   B)  page replacement policy

C)  page fault   D)  page placement policy

7)  \_\_\_\_\_\_\_\_\_ allows the programmer to view memory as consisting of multiple address spaces.

A)  Paging   B)  Locality

C)  Segmentation   D)  Resident set management

8)  \_\_\_\_\_\_\_\_\_\_ is transparent to the programmer and eliminates external fragmentation providing

efficient use of main memory.

A)  Hashing   B)  Paging

C)  Segmentation   D)  Thrashing

9)  The \_\_\_\_\_\_\_\_\_ determines when a page should be brought into main memory.

A)  page fault   B)  fetch policy

C)  working set   D)  resident set management

10)  With \_\_\_\_\_\_\_\_\_ pages other than the one demanded by a page fault are brought in.

A)  slab allocation   B)  thrashing

C)  hashing   D)  prepaging

11)  The \_\_\_\_\_\_\_\_\_ policy results in the fewest number of page faults.

A)  Optimal   B)  FIFO

C)  Clock   D)  LRU

12)  A \_\_\_\_\_\_\_\_\_ chooses only among the resident pages of the process that generated

the page fault in selecting a page to replace.

A)  global replacement policy   B)  page replacement policy

C)  local replacement policy   D)  page placement policy

13)  The \_\_\_\_\_\_\_\_\_ algorithm requires a use bit to be associated with each page in memory.

A)  page placement   B)  working set

C)  VSWS   D)  page fault frequency

14)  \_\_\_\_\_\_\_\_\_ is where modified process pages can be written out at the time of replacement,

or a precleaning policy can be used, which clusters the output activity by writing out a

number of pages at once.

A)  Load control   B)  Cleaning policy

C)  Placement policy   D)  Replacement policy

15)  \_\_\_\_\_\_\_\_\_ is the concept associated with determining the number of processes that will be

resident in main memory.

A)  Virtual memory manager   B)  Page fault frequency

C)  LRU policy   D)  Load Control

**SHORT ANSWER QUESTIONS:**

1)  The address assigned to a location in virtual memory to allow that location to be accessed

as though it were part of main memory is the \_\_\_\_\_\_\_\_\_\_ .

2)  \_\_\_\_\_\_\_\_\_ is a storage allocation scheme in which secondary memory can be addressed as

though it were part of main memory.

3)  The size of virtual storage is limited by the addressing scheme of the computer system and

by the amount of \_\_\_\_\_\_\_\_\_\_ available.

4)  The \_\_\_\_\_\_\_\_\_\_ policy treats the page frames allocated to a process as a circular buffer and

pages are removed in round robin style.

5)  The portion of a process that is actually in main memory at any time is defined to be the \_\_\_\_\_\_

of the process.

6)  A \_\_\_\_\_\_\_\_\_\_ policy allows the number of page frames allocated to a process to be varied

over the lifetime of the process.

7)  Because a process executes only in main memory, that memory is referred to as \_\_\_\_\_\_\_\_\_\_\_\_ .

8)  When the system spends most of its time swapping pieces rather than executing instructions

it leads to a condition known as \_\_\_\_\_\_\_\_\_ .

9)  To overcome the problem of doubling the memory access time, most virtual memory schemes

make use of a special high-speed cache for page table entries called a \_\_\_\_\_\_\_\_\_\_ .

10)  The technique where the processor is equipped with hardware that allows it to interrogate

simultaneously a number of TLB entries to determine if there is a match on page number is

referred to as \_\_\_\_\_\_\_\_\_\_ .

11)  With \_\_\_\_\_\_\_\_\_\_ , a page is brought into main memory only when a reference is made to a

location on that page.

12)  The \_\_\_\_\_\_\_\_\_\_ policy replaces the page in memory that has not been referenced for the

longest time.

13)  The \_\_\_\_\_\_\_\_\_\_ provides a virtual memory capability that allocates page frames in main

memory to processes and also allocates page frames to disk block buffers.

14)  Linux makes use of a three-level page table structure consisting of the following types of

tables: page directory, page table, and \_\_\_\_\_\_\_\_\_\_ .

15)  In SVR4 and Solaris systems, the memory management scheme that manages memory

allocation for the kernel is called the \_\_\_\_\_\_\_\_\_ .