**Linux Memory management**

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1.What Is The Main Goal Of The Memory Management ?and Explain MMU in Linux

2.What’s the difference between physical , virtual memory, linear memory and logical memory ?

3.How are programs and libraries loaded into memory?

4.What is segmentation?

5.How is memory addressed?

6.Tell about the Memory Layout of a Process in Linux .

6.What is swapping? How does it relate to paging?

7.What is thrashing?

8.What are page faults?and its types?

9.How does the kernel handle its own memory? What’s the difference between kernel memory and user memory.

10.What is paging? What hardware mechanisms are involved? What software mechanisms?

11. What tools can you use to find the overall memory utilization and performance of the memory subsystem?

12.How do you find out information about an individual process’s memory utilization? (e.g. resident set size, virtual set size, paging, etc.)

13.Where would you expect to find memory related errors logged?

14.What debugging utilities are available for diagnosing and evaluating memory issues in applications? When would you use each one? (e.g. strace, gdb, valgrind, core, etc.)

15.What type of information about process memory can be found in /proc?

16.How can the memory subsystem setting parameters be tuned? What are some common changes?

17.What Is The Difference Between Swapping And Paging?

18.Is The Process Before And After The Swap Are The Same? Give Reason.?

19.What Do You Mean By U-area (user Area) Or U-block?

20.What Is Fork Swap?

21.What Are The Entities That Are Swapped Out Of The Main 22.Memory While Swapping The Process Out Of The Main Memory?

23.What Do You Mean By Nice Value?

25.What Are Data Structures That Are Used For Demand Paging?

26.What Are The Bits That Support The Demand Paging?

27.Difference Between The Fork() And Vfork() System Call?

29.In What Way The Fault Handlers And The Interrupt Handlers Are Different?

30.At What Mode The Fault Handler Executes?

31.What Do You Mean By The Protection Fault?

32.How The Kernel Handles The Copy On Write Bit Of A Page,when The Bit Is Set?

33.what is memory leak ?

34.Write code for page fault handler in Linux

35.What is cache ? How it is used and mapped the physical address cache and virtual address cache ?

36.Is it better to enable swapping in embedded systems? and why?

37.Explain Memory allocation of kmalloc vs vmalloc in linux ?

38. what is the entry points in kernel?

39.How Memory Management works in KERNEL?(In total about Kernel Memory management)

40.What are the possible ways that memory leaks can happen in a program ?(Apart from allocation and not freeing ) and what are ways of handling ?

41.how to get physically contiguousness memory allocation if kmalloc is giving logical contiguousness allocations?

42.How will you trace the system calls made into the kernel of lInux ?

43.What is mmap ? relation between Malloc and mmap ?and mmap and brk ? What are adv & dis-adv of mmap?

44.What is Kmalloc and how does it differ from normal malloc ? or Why can't we use malloc in kernel code ?

45.what is the role of brk() in malloc ?Tell the relation between heap and brk?

46.Example of using mmap and munmap in C ?

47.What is the page size in Linux kernel in case of 32-bit ARM architecture?

48.What is page frame?

49.What are the different memory zones and why does different zones exist?

50.What is high memory and when is it needed?

51.Why is high memory zone not needed in case of 64-bit machine?

52.How to allocate a page frame from high memory?

53.In ARM, an abort exception if generated, if the page table doesn't contain a virtual to physical map for a particular page.

How exactly does the MMU know that a virtual to physical map is present in the pagetable or not?

54.What's a segementation fault and what are the scenarios in which segmentation fault is triggered?

If the scenarios which triggers the segmentation fault has occurred, how the kernel identifies it and what

are the actions that the kernel takes?

55.what is cache coherence?

56.what is protection mechanism?

57.what is DMA?

58.What is page write back?why not directly the physical address?

59.When cache is enabled in a operating system ,DMA is enabled,how does DMA access the cache?

60.What is DMA. Modes - cycle stealing/burst (blk transfer)/transparent Cache coherency during dma. Which component handles it ?

61.what is Thrashing ?

62.Different segments in a program ?Does linux use segmentation ?

63.When is that we we want to use "user virtual address" instead of "kernel virtual address"?

64.List some situations when we cannot go with kernel virtual address.?

65.How mb differ from wmb in Linux? Is mb equal to wmb & rmb ?

66.what is bus error? common causes of bus errors?

67.what is DMA controller.

68.Write a pseudo code for page fault handler.

69.What is virtual memory ? What is the pre-requisite in hardware for supporting virtual memory ?

70.What are the differences between vmalloc and kmalloc? Which is preferred to use in device drivers?

71.What are the differences between slab allocator and slub allocator?

72.What is boot memory allocator?

73.How do you reserve block of memory?

74.what are the advanatages of using virtual memory?