

What is Paging? Explain how paging can be implemented in CPU to access virtual memory.

Paging is a memory management technique used by operating systems to allow processes to access more memory than is physically available. In paging, the memory is divided into fixed-sized blocks called pages, which are typically 4 KB in size. The pages are stored in physical memory or on a hard disk, depending on whether they are currently being used or not.

To implement paging in a CPU to access virtual memory, the following steps are generally taken:

1. Divide the virtual address space into fixed-size pages: In this step, the virtual address space is divided into fixed-size pages, typically 4 KB in size. Each page is given a unique page number.
2. Divide the physical memory into fixed-size page frames: The physical memory is divided into fixed-size page frames, which are also typically 4 KB in size. Each page frame is given a unique physical address.
3. Map virtual pages to physical page frames: To access virtual memory, the CPU must be able to map virtual pages to physical page frames. This is done by maintaining a page table, which is a data structure that stores the mapping between virtual pages and physical page frames.
4. Translate virtual addresses to physical addresses: When a program references a virtual address, the CPU translates the virtual address to a physical address using the page table. The translation process involves splitting the virtual address into two parts: the page number and the offset within the page. The page number is used to look up the corresponding physical page frame in the page table. Once the physical page frame is found, the offset is added to the physical address to obtain the final physical memory address.
5. Load pages from disk to memory as needed: When a program references a virtual page that is not currently in physical memory, the operating system loads the required

What is Paging? Explain how paging can be implemented in CPU to access virtual memory.

page from disk to memory. This is called a page fault. When a page fault occurs, the operating system selects a page frame to evict, writes its contents to disk if necessary, and then loads the required page into the newly freed page frame.

Related Posts:

1. Structure of Desktop computers
2. Logic Gates
3. Register Organization
4. Bus structure in Computer Organization
5. Addressing modes
6. Register Transfer Language
7. Numerical problem on Direct mapping
8. Registers in Assembly Language Programming
9. Array in Assembly Language Programming
10. Net 31
11. How to start with GNU Simulator 8085
12. Cache Updating Scheme
13. Cache Memory
14. Principle of Cache Memory
15. Cache Mapping
16. Addition and subtraction in fixed point numbers
17. PCI Bus
18. Booths Algorithm
19. Write a short note on design of arithmetic unit ?
20. Write a short note on Array processors ?
21. Write a short note on LRU algorithm ?
22. What is the format of Micro Instruction in Computer Architecture explain ?

What is Paging? Explain how paging can be implemented in CPU to access virtual memory.

23. What is the layout of pipelined instruction in Computer Architecture ?
24. Explain the following interfaces in Detail:PCI Bus, SCSI Bus, USB Bus
25. What is Memory Organization ? Discuss different types of Memory Organization in Computer System.
26. Computer Organization Q and A
27. Write short note on improving cache performance methods in detail ?
28. What is Multiprocessor ? Explain inter process communication in detail ?
29. Briefly explain the concept of pipelining in detail ?
30. Discuss the following in detail: RISC architecture, Vector processing ?
31. Define the instruction format ? Explain I/O System in detail ?
32. Explain the design of arithmetic and logic unit by taking on example ?
33. Explain how addition and subtraction are performed in fixed point number ?
34. Explain different modes of data transfer between the central computer and I/O device ?
35. Differentiate between Serial and parallel data transfer ?
36. Explain signed magnitude, signed 1's complement and signed 2's complement representation of numbers. Find the range of numbers in all three representations for 8 bit register.
37. If cache access time is 100ns, main memory access time is 1000 ns and the hit ratio is 0.9. Find the average access time and also define hit ratio.
38. Explain hardwired microprogrammed control unit ? What is address sequencer circuit ?
39. Explain how a stack organized computer executes instructions? What is Stack?
40. Draw and explain the memory hierarchy in a digital computer. What are advantages of cache memory over main memory?
41. What is Associative memory? Explain the concept of address space and memory space in Virtual memory.
42. Explain SIMD array processor along with its architectural diagram ?

What is Paging? Explain how paging can be implemented in CPU to access virtual memory.

43. Write short notes on
44. Draw the functional and structural views of a computer system and explain in detail ?
45. Explain general register organization.
46. Compare and contrast DMA and I/O processors ?
47. Define the following: a) Flynn's taxonomy b) Replacement algorithm
48. Explain the various pipeline vector processing methods ?
49. Describe the language features for parallelism ?
50. What are different addressing modes? Explain them.
51. Explain any page replacement algorithm with the help of example ?
52. What is mapping? Name all the types of cache mapping and explain anyone in detail.
53. Explain arithmetic pipeline ?
54. Write short notes on, a) SIMD, b) Matrix multiplication c) Instruction format
55. Differentiate: a) Maskable and non-maskable interrupt b) RISC and CISC
56. Computer Organization Previous Years Solved Questions
57. Booths algorithm to multiply +5 and -15