

Hardware and Software Design Job Interview Questions And Answers



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Hardware and Software Design Interview Questions And Answers Guide.

Question - 1:

What is a Turing machine?

Ans:

A Turing machine is a theoretical computing machine invented by Alan Turing (1937) to serve as an idealized model for mathematical calculation. A Turing machine consists of a line of cells known as a "tape" that can be moved back and forth, an active element known as the "head" that possesses a property known as "state" and that can change the property known as "color" of the active cell underneath it, and a set of instructions for how the head should modify the active cell and move the tape. At each step, the machine may modify the color of the active cell, change the state of the head, and then move the tape one unit to the left or right.

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Question - 2:

How does the browser know to go to a certain IP address when you enter a domain like globalguideline.com?

Ans:

It searches through local DNS cache, if nothing is there, it queries the ISP's DNS server.

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Question - 3:

Explain Memory taken for char *, int * etc.?

Ans:

Generally for integer memory is 2 bytes for character is 1 byte
char * and int * are pointers. they point to a memory location hence their size is the same, which is the size of the address space.

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Question - 4:

Write a code to count the no. of 1s in a binary representation of a number?

Ans:

```
I am writing for Microcontrollers. ldi r16,$F0 ldi r17,$08 ldi r18,$00 ldi r19,$00 loop: rol r16 back: brcs one inc r19 dec r17 brne loop end:rjmp end one:inc r18 rjmp back
int count1s = 0; while(num != 0){ if(num & 1 == 1){ count1s++; } num = num >> 1; } printf("%d", count1s);
```

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Question - 5:

Explain Difference between RISC and CISC?

Ans:

RISC-Means Reduced Instruction Set Computer. A RISC system has reduced number of instructions and more importantly it is load store architecture where pipelining can be implemented easily. Eg. ATMEGA AVR.
CISC-Means Complex instruction set architecture. A CISC system has complex instructions such as direct addition between data in two memory locations. Eg. 8085.

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Question - 6:

Is RISC always fast?

Ans:

because it has got separate program and data memory (highly pipelined architecture)



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Question - 7:

What is a real time system?

Ans:

A real time system is a computer system that updates the information at the same rate it receives it. It is of two types, hard real time system and a soft real time system.

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Question - 8:

Name some real time OSs?

Ans:

Real-time operating systems are: QNX, LynxOS, OS-9, Integrity, Katix, Fusion, IRIX, DeltaOS, eCos, AMX, CMX-RTX, INTime, PDOS and many others.

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Question - 9:

Is DOS a real time OS?

Ans:

DOS is not a RTOS (real time Operating system), however MS DOS can be used with certain APIs to achieve the RTOS functionality. For example, the RT Kernel (Real Time Kernel) which can be used with MS DOS to achieve the RTOS functionality. Other example is of Tics. Tics is delivered as a hardware support file for MS DOS.

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Question - 10:

What is a kernel, shell?

Ans:

A shell is a program that presents an interface to various operating system functions and services. The shell is so called because it is an outer layer of interface between the user and the innards of the operating system (the kernel). Kernel is the one which manages all the resources of the Operating System.

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Question - 11:

What is binary search, traversal, hashing?

Ans:

Binary Search: Search a sorted array by repeatedly dividing the search interval in half. Begin with an interval covering the whole array. If the value of the search key is less than the item in the middle of the interval, narrow the interval to the lower half. Otherwise narrow it to the upper half. Repeatedly check until the value is found or the interval is empty.

Hashing provides a fast way to search a large, unsorted data set at the cost of extra memory. It is described as "directly referencing records in a table by doing arithmetic transformations on keys into table addresses."

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Question - 12:

Can recursive programs be written in C++, Write a recursive program to calculate factorial in C++?

Ans:

```
#include <iostream>
using namespace std;
int fact(int n) {
    if(n==0 || n==1) return 1;
    else return(n*fact(n-1));
}
int main() {
    int n;
    cout << "enter any value: ";
    cin >> n;
    a=fact(n);
    cout << a;
    getch();
}
```

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Question - 13:

In C++, what is a constructor, destructor?

Ans:

In C++

Constructor: This is a member of class which invokes when the object is created. Purpose of constructor is to initialise the objects with required values.

Destructor: It is a member of class which invokes when the object is out of scope. The purpose of destructor is to clear the heap memory.

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Question - 14:

What is waterfall model, prototype model?

Ans:

waterfall model is the linear model. The process is done by step by step. We couldn't stop in between of the process. prototype model: after get the model by low cost budget only we are implementing that product. so, its efficient.

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Question - 15:



What is testing? What is unit testing, integration testing, etc?

Ans:

Testing is used for estimate the quality of the product. Unit Testing is tested for each part of the product. Integrate the unit and tested.

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