Interview and Quiz questions

Q1 C language was developed by_____.

(a) Martin Richards

(b) Ken Thompson

(c) Dennis Ritchie

(d) Bjarne Stroustrup

Q2 C is a

(a) High level language

(b) Low level language

(c) Systems programming language

(d) General purpose language

Q3 Which of the following punctuation symbols is used as a statement terminator in a C program?

(a) ;

(b) .

(c) :

(d) ,

Q4 Which of the following symbols can be used in a variable name?

(a) Ampersand (&)

(b) Asterisk (*)

(c) Hyphen (-)

(d) Underscore (_)

Q5 Which of the following is not a keyword in C?

(a) default

(b) continue

(c) variable

(d) volatile

Q6 After executing `int a;` statement, the value of `a` will be

(a) 0

(b) -1

(c) Garbage

(d) None of the above

Q7 Which of the following qualifiers can be used with *double* data type?

(a) signed

(b) unsigned

(c) short

(d) long

Q8 Which of the following data types cannot be modified with sign specifiers (*signed* and *unsigned*)?

(a) char

(b) long int

(c) short int

(d) float

Q9 An operator that works only on integer operands

(a) +

(b) %

(c) –

(d) /

Q10 Relational operator (<) has higher precedence than _____ operator.

(a) Arithmetic (+)

(b) Logical (&&)

(c) Bitwise (<<)

(d) All of the above

Q11 Multiple relational expressions in a test expression must be connected by_____ operators.

(a) Arithmetic

(b) Relational

(c) Logical

(d) Bitwise

Q12 To multiply an unsigned integer by 2^n, a _____ by *n* positions is applied.

(a) Bitwise Left Shift

(b) Bitwise Right Shift

(c) Bitwise AND

(d) Bitwise OR

Q13 Which of the following statements leads to an error?

(a) scanf("%Lf", &a);

(b) scanf("%ld", &a);

(c) scanf("%5d", &a);

(d) scanf("%d\n", &a);

Q14 Consider the statements:

```
int x=10;
printf("Number = %d\n", x);
```

Which of the following is mandatory in the format string to print the value of variable x?

(a) Format specifier (%d)

(b) Character string ("Number = ")

(c) Control code (\n)

(d) All of the above

Q15 For which of the following data types, is the format specifier "%ld" used?

(a) char

(b) short int

(c) long int

(d) float

Q16 printf("%d", printf("Oxford"));

(a) Results in a syntax error

(b) Prints Oxford6

(c) Prints garbage value

(d) Program terminates abruptly

Q17 The output of the following code is

```
for(i=2; i<10; i+=2);
printf(“%d”, i);
```

(a) Syntax error

(b) Prints 10

(c) Run time error

(d) Prints 9

Q 18 The output of the code is:

```
for(i=1;i<10;i++)
        if(i==5)
                continue;
        else if(i==7)
                break;
        else
                printf("%d", i);
```

(a) 1234

(b) 12345

(c) 123456

(d) 12346

Q19 Which of the following statements can be replaced with a series of else-if statements?

(a) Switch statements

(b) Nested if statements

(c) If-else statements

(d) All of the above

Q20 Which of the following gives the address of an integer variable *x*?

(a) x

(b) *x

(c) &x

(d) addr(x)

Q21 Consider the statements: “int a=5; int *p=&a; int **q=&p;” What does the expression **q evaluate to?

(a) 5

(b) 0

(c) Garbage value

(d) None of the above

Q22 Which of the following is not a valid pointer declaration?

(a) char *x

(b) ptr *x

(c) void *x

(d) int *x

Q23 Consider the statements “int x = 10, y=11; int *const p = &x;” Which of the following statements is illegal?

(a) x=11

(b) *p=11

(c) p=&y

(d) y=12

Q24 A function with _____ return type should not be used in an expression in the calling function.

(a) int

(b) char

(c) float

(d) void

Q25 What is the default return type of a user-defined function in C?

(a) int

(b) char

(c) float

(d) void

Q26 Choose the correct statement

(a) Goto statement when used enhances the logical clarity of the program

(b) C is a low level language

(c) Conditional compiling is based on a condition

(d) All of the above

Q27 Choose the incorrect statement

(a) Integer division results in truncation

(b) Integer division results in rounding

(c) The value of EOF is implementation dependent

(d) EOF can be negative

Q28 Assuming a = -1, give the output

```
printf("%d”, 0 < !a);
```

(a) Prints 0

(b) Prints a non-zero value

(c) Garbage value

(d) None of the above

Q29 Assuming x=2, y=3, give the output

```
printf("%d”, x==y);
```

(a) Prints 0

(b) Prints 1

(c) Garbage value

(d) Error

Q30 Break statement can be replaced by which other statement

(a) Continue

(b) Exit

(c) Return

(d) Goto

Q31 Which of the following are the two main parameters for measuring the efficiency of an algorithm?

(a) Processor speed and memory

(b) Data size and space

(c) Time and space

(d) Complexity and capacity

Q32 Which of the following is not a linear data structure?

(a) Arrays

(b) Linked Lists

(c) Trees

(d) Stacks

Q33 Which of the following cases do not exist when referring to complexity of an algorithm?

(a) Average case

(b) Best case

(c) Null case

(d) Worst case

Q34 Which of the following factors determine the efficiency of an algorithm?

(a) Number of statements

(b) Number of variables

(c) Number of key operations

(d) Size of algorithm in terms of Kilobytes

Q35 Which of the following data structures is used to implement recursion?

(a) Arrays

(b) Linked Lists

(c) Stacks

(d) Queues

Q36 Which data structure permits insertion and deletion only from one end?

(a) Array

(b) Linked list

(c) Stack

(d) Queue

Q37 Consider the array declaration "`int a[10];`". Which of the following gives the address of the first element?

(a) a

(b) *a

(c) a[0]

(d) *a[0]

Q38 For an array *a* and integer *i*, which of the following expressions evaluates to a false value?

(a) &a[0] == a

(b) &a[i]==a+i

(c) a[i]==*(a+i)

(d) a[i]==&(a+i)

Q39 Which of the following declarations is a pointer to an array of 4 elements?

(a) int *p[4]

(b) int (*p)[4]

(c) int p[4]

(d) int [4]*p

Q40 For an array of length L and data type X, the compiler allocates _____bytes.

(a) L * sizeof (X)

(b) L + sizeof (X)

(c) L / sizeof (X)

(d) L % sizeof (X)

Q41 For an array `int a[10]`, which of the following expressions is illegal?

(a) a=0;

(b) a[0]=1;

(c) a[0]=1.1;

(d) a[0]=a[1];

Q42 What is the size of the array if the index of its last element is *n*?

(a) *n*

(b) *n* – 1

(c) *n* + 1

(d) Not dependent on *n*

Q43 Which of the following is true for sparse matrices?

(a) Most of the entries are zero

(b) Most of the entries are non-zero

(c) All the diagonal entries are zero

(d) All the diagonal entries are non-zero

Q44. A two-dimensional array int arr[3][3]; is used to represent a 3×3 square matrix. Which of the following represents the second diagonal element?

(a) arr[0][0];

(b) arr[1][1];

(c) arr[2][2];

(d) arr[3][3];

Q45 What is passed to a called function when it is called with an array name as an argument?

(a) Value of the first array element

(b) Address of the first array element

(c) Value of the last array element

(d) Address of the last array element

Q46 Consider two pointers "int *p, *q", which point to members of the same array. Which of the following is not a valid pointer operation?

(a) p > q

(b) p < q

(c) p – q

(d) p + q

Q47 The complexity of adding two matrices is:

(a) mn

(b) m=n

(c) mn/2

(d) max(m,n)

Q48 The complexity of an algorithm that finds the second largest element from an array of n values is:

(a) O(n2)

(b) O(n log n)

(c) O(2n)

(d) O(n)

Q49 If `int a[10] = {1,2,3,4,5};` then `printf("%d %d %d", a[2], a[4], a[6]);` will print

(a) 2 4 0

(b) 2 4 -1

(c) 3 5 0

(d) 3 5 garbage value

Q50 An array of n dimensions can be declared, where n is

(a) 7

(b) Compiler dependent

(c) 255

(d) 10

Q51 If `a[2][3] ={9,8,7,6,5,4};` then 7 will be printed by

(a) a[0][2]

(b) a[1][0]

(c) a[3][0]

(d) a[2][2]

Q52 Which of the following is used to mark the end of strings in C?

(a) 0

(b) \0

(c) -1

(d) 1

Q53 Which of the following is a character array or string?

(a) A

(b) 'A'

(c) "A"

(d) All of the above

Q54 The statement—printf ("%8.3s", "webcam");—will display _____.

(a) webcam

(b) web

(c) cam

(d) No output

Q55 For which of the following format specifiers, character "&" is not required with the variable name in scanf() function?

(a) %d

(b) %f

(c) %ld

(d) %s

Q56 The input function getchar () uses _____.

(a) One char argument

(b) No argument

(c) String argument

(d) One int argument

Q57 Which of the following does not hold true for structures?

(a) User-defined data type

(b) Hold elements of different data types

(c) Usually declared in the global area of the program before main()

(d) Two structures can be compared using equality "==" operator

Q58 Consider the declaration "`struct {int a; char b} Y;`" which of the following notations is used for accessing structure member "a"?

(a) Y.a

(b) Y?a

(c) Y→a

(d) Y×a

Q59 Which of the following allows us to create a new data type from an existing data type?

(a) type

(b) typedef

(c) typecreate

(d) typenew

Q60 Consider the declaration "`struct {int a; char b} *Y;`" which of the following notations is used for accessing structure member "a"?

(a) Y.a

(b) Y?a

(c) Y→a

(d) Y×a

Q61 In a union, the amount of memory required is equal to the _____.

(a) Size of its smallest element

(b) Size of its largest element

(c) Sum of the sizes of all its elements

(d) Difference between the sizes of its first and last elements

Q62 In which of the following lists, the first node contains a pointer to the last node?

(a) Singly linked lists

(b) Circular linked lists

(c) Doubly linked lists

(d) Doubly circular linked lists

Q63 If you have a linked list containing different types, then what pointer type will you use?

(a) int

(b) char

(c) float

(d) void

Q64 Which of the following data structures does not support random access of data stored in it?

(a) Arrays

(b) Strings

(c) Structures

(d) Linked lists

Q65 If you are given pointers to first and last nodes of a singly linked list, which of the following operations would be dependent on the length of the linked list?

(a) Delete the first element

(b) Insert a new element as a first element

(c) Delete the last element of the list

(d) Add a new element at the end of the list

Q66 Free list or free pool connects unallocated regions of memory together in a _____.

(a) Array

(b) Linked List

(c) Queue

(d) Stack

Q67 In the worst case, the number of comparisons needed to search a singly linked list of length n for a given element is

(a) log 2 n

(b) n/2

(c) og 2 n – 1

(d) n

Q68 If the sequence of operations performed on a stack is: push(5), push (10), pop, push (5), pop, pop, push (10), pop, then what would be the sequence of popped values?

(a) 10, 5, 5, 5

(b) 10, 5, 5, 10

(c) 5, 10, 10, 5

(d) 5, 10, 5, 10

Q69 Which of the following is the equivalent postfix expression for *+ p q – r s?

(a) pq + rs– *

(b) pq rs + – *

(c) pq + rs* –

(d) pq + – rs*

Q70 If you wanted to check that in an expression for every close parenthesis ‘)’, there is an open parenthesis ‘(’, which data structure would you use?

(a) Arrays

(b) Linked lists

(c) Stacks

(d) Queues

Q71 Which of the following data structures is used to perform recursion?

(a) Arrays

(b) Linked lists

(c) Stacks

(d) Queues

Q72 On which principle does a stack work?

(a) LIFO

(b) FIFO

(c) FCFS

(d) None of the above

Q73 Which data structure is used for balancing of symbols?

(a) Stack

(b) Queue

(c) Tree

(d) Graph

Q74 Which of the following techniques can be implemented using queues?

(a) Radix sort

(b) Quick sort

(c) Recursion

(d) Depth first search

Q75 Which of the following statements about queues is incorrect?

(a) Queues are first-in, first-out (FIFO) data structures

(b) Queues can be implemented using arrays

(c) Queues can be implemented using linked lists

(d) New nodes can only be added at the front of the queue

Q76 How many queues are needed for the array implementation of priority queues?

(a) 1

(b) 2

(c) 3

(d) 4

Q77 If you have an empty queue and you insert characters ‘r’, ‘a’, ‘t’ (in this order only), what is the order of the characters when you dequeue all the elements?

(a) ‘r’, ‘a’, ‘t’

(b) ‘t’, ‘a’, ‘r’

(c) ‘r’, ‘t’, ‘a’

(d) ‘t’, ‘r’, ‘a’

Q78 Priority of elements in a priority queue determine the order

(a) in which they are entered in the queue

(b) in which they are deleted from the queue

(c) in which they are processed

(d) all of the above

Q79 Which of the following is true about linked list implementation of a queue?

(a) In push operation, if new nodes are inserted at the beginning of linked list, then in pop operation, nodes must be removed from end.

(b) In push operation, if new nodes are inserted at the end, then in pop operation, nodes must be removed from the beginning.

(c) Both of the above

(d) None of the above

Q80 How many queues are needed to implement a stack?

(a) 1

(b) 2

(c) 3

(d) 4

Q81 Which of the following is most suitable data structure to implement trees?

(a) Arrays

(b) Linked lists

(c) Stacks

(d) Queues

Q82 Which of the following statements is true for binary search trees?

(a) The left subtree of a node contains only nodes with keys less than the node's key

(b) The right subtree of a node contains only nodes with keys greater than the node's key

(c) Both left and right subtree nodes contains only nodes with keys less than the node's key

(d) Both a and b above

Q83 Which of the following traversals is used in in-order traversal?

(a) root -> left subtree -> right subtree

(b) root -> right subtree -> left subtree

(c) left subtree -> root -> right subtree

(d) right subtree -> left subtree -> root

Q84 What is the time required for search operation in a binary tree in best case?

(a) O(n)

(b) O (log n)

(c) O (2n)

(d) O (log 2n)

Q85 The height of a binary tree is the total number of nodes on the path from the root node to the deepest node in the tree. The maximum number of nodes in a binary tree of height h is:

(a) 2^{h-1}

(b) $2^{h-1} - 1$

(c) $2^{h} - 1$

(d) 2*(h+1)

Q86 The maximum height of a complete binary tree with n nodes is

(a) Log n

(b) Log 2n

(c) Log (n+1)

(d) Log (n-1) + 1

Q87 AVL trees have a faster _____.

(a) Insertion

(b) Deletion

(c) Updation

(d) Retrieval

Q88 Which of the following features characterizes Red-Black Trees?

(a) Roots do not contain data

(b) Leaf nodes are relevant but do not contain data

(c) Leaf nodes are not relevant and do not contain data

(d) None of the above

Q89 In which of the following trees, the heights of the two child subtrees of any node differ by at most one?

(a) Binary tree

(b) Red Black Tree

(c) Splay Tree

(d) AVL Tree

Q90 Which of the following is a self-adjusting or self-balancing Binary Search Tree?

(a) Splay Tree

(b) AVL Tree

(c) Red Black Tree

(d) All of the above

Q91 The balancing factor of an AVL tree cannot be:

(a) 0

(b) 1

(c) -1

(d) -2

Q92 Binary Search Tree can be used to print the values stored in it in ascending order if it is traversed in which of the following order?

(a) Left, root, right

(b) Right, root, left

(c) Root, left, right

(d) Root, right, left

Q93 In which order must the BST be traversed so that an exact replica of it can be obtained?

(a) Pre order

(b) Post order

(c) Level order

(d) All of the above

Q94 B+ trees are preferred to binary trees in databases because

(a) Disk capacities are greater than memory capacities

(b) Disk access is much slower than memory access

(c) Disk data transfer rates are much less than memory data transfer rates

(d) Disks are more reliable than memory

Q95 Which data structure does not require stack to traverse its nodes?

(a) Binary Search Tree

(b) AVL tree

(c) B+ Tree

(d) Graph

Q96 Which one of the following is a key factor for preferring B-trees to BSTs for indexing database relations?

(a) Database relations have a large number of records

(b) Database relations are sorted on the primary key

(c) B-trees require less memory than binary search trees

(d) Data transfer form disks is in blocks

Q97 Consider a B+-tree in which the maximum number of keys in a node is 5. What is the minimum number of keys in any non-root node?

(a) 1

(b) 2

(c) 3

(d) 4

Q98 In a min heap, the element with the greatest key is always in the _____ node.

(a) leaf

(b) root

(c) first node of the left sub-tree

(d) first node of the right sub-tree

Q99 Which of the following data structures is best suited for efficient implementation of priority queues?

(a) Arrays

(b) Linked Lists

(c) Heaps

(d) Stacks

Q100 Which data structure allows the value of the parent node to be greater than that of its child nodes?

(a) Binary search tree

(b) AVL Tree

(c) Min heap

(d) Max heap

Q101 In a binary max heap containing n numbers, the smallest element can be found in time.

(a) O(n)

(b) O(logn)

(c) O(loglogn)

(d) O(1)

Q102 Consider a binary max-heap implemented using an array. Which one of the following array represents a binary max-heap?

(a) 25,12,16,13,10,8,14

(b) 25,12,16,13,10,8,14

(c) 25,14,16,13,10,8,12

(d) 25,14,12,13,10,8,16

Q103 Breadth First Search is used for traversing which of the following data structures?

(a) Arrays

(b) Stacks

(c) Queues

(d) Graphs

Q104 A vertex with degree one is called as _____.

(a) Isolated vertex

(b) Null vertex

(c) Pendant vertex

(d) Cut vertex

Q105 Which data structure is used for breadth-first traversal of a graph?

(a) Linked list

(b) Array

(c) Stack

(d) Queue

Q106 Which data structure is used for depth-first traversal of a graph?

(a) Linked list

(b) Array

(c) Stack

(d) Queue

Q107 How many edges are there in a regular graph that has n vertices and d degrees?

(a) nd

(b) 2*nd

(c) n + d

(d) (nd)/2

Q108 Using which of the following methods, is sorting not possible?

(a) Insertion

(b) Selection

(c) Exchange

(d) Deletion

Q109 For which of the following arrays, is linear search highly inefficient as compared to binary search?

(a) Small, unsorted arrays

(b) Small, sorted arrays

(c) Large, unsorted arrays

(d) Large, sorted arrays

Q110 Which of the following methods is used in quick sort algorithm?

(a) Backtracking

(b) Divide and Conquer

(c) Greedy method

(d) Top-down method

Q111 Which sorting algorithm will perform best if the list to be sorted is already sorted?

(a) Quick sort

(b) Insertion sort

(c) Radix sort

(d) Merge sort

Q112 Choose the sorting algorithm which takes maximum time to sort the same set of values.

(a) Insertion sort

(b) Bubble sort

(c) Merge sort

(d) Heap sort

Q113 The maximum number of comparisons needed to sort 9 values (each of 3 digits) using radix sort is

(a) 280

(b) 270

(c) 290

(d) 300

Q114 The performance of quick sort algorithm in average case can be given as:

(a) O(n)

(b) O(n2)

(c) O(log n)

(d) O(n log n)

Q115 Key-value pairs are usually seen in which of the following data structures?

(a) Hash tables

(b) Heaps

(c) B trees

(d) AVL trees

Q116 What causes a collision?

(a) The program you are running crashes

(b) There are too many hash keys in the array

(c) Two hash keys are the same

(d) The program is out of memory

Q117 Which of the following methods is used for computing hash keys?

(a) Long division

(b) Subtraction

(c) Modulo division

(d) All of the above

Q118 Which of the following collision resolution methods is free from the problem of clustering?

(a) Linear Probing

(b) Quadratic Probing

(c) Double Hashing

(d) None of the above

Q119 Accessing a file in C requires declaring a pointer variable of type FILE. Which of the following sentences in true?

(a) FILE is a structure declared in stdio.h

(b) FILE is a standard library defined in stdio.h

(c) FILE is a union defined in stdlib.h

(d) FILE is a stream connected to disk file

Q120 Which of the following statements is to create a new text file called “dummy.dat”?

(a) FILE *fp; fp = fopen (“dummy.dat”, “r”);

(b) FILE *fp; fp = fopen (“dummy.dat”, “w+”);

(c) FILE *fp; fp = fopen (“dummy.dat”, “rb”);

(d) FILE *fp; fp = fopen (“dummy.dat”, “w+b”);

Q121 What is the maximum number of characters Windows operating system allows in a filename?

(a) 260

(b) 256

(c) 255

(d) 64

Q122 Which of the following is used as an end-of-file (EOF) character in UNIX?

(a) Ctrl-e

(b) Ctrl-z

(c) Ctrl-o

(d) Ctrl-d

Q123 What is the file pointer associated with scanf() which is defined in header file <stdio.h>

(a) stdin

(b) stdout

(c) stderr

(d) stdprn

Q124 Which of the following statements is false?

(a) fseek() can set the position indicator to the first byte in the file

(b) rewind() can set the position indicator to the first byte in the file

(c) fseek() can set the position indicator to the last byte in the file

(d) rewind() can set the position indicator to the last byte in the file

Q125 In which of the following structures are the leaf nodes stored in secondary storage and the internal nodes stored in primary memory?

(a) Multi-level Index

(b) B-tree index

(c) Inverted index

(d) Hashed index

Answer Grid

1	2	3	4	5
c	a	a	d	c
6	7	8	9	10
c	d	d	b	b
11	12	13	14	15
c	a	d	a	c
16	17	18	19	20
b	b	d	a	c
21	22	23	24	25
a	b	c	d	a
26	27	28	29	30
c	b	a	a	d
31	32	33	34	35
c	c	c	c	c
36	37	38	39	40
c	a	d	b	a
41	42	43	44	45
a	c	a	b	b
46	47	48	49	50
d	a	d	c	b
51	52	53	54	55
a	b	c	b	d
56	57	58	59	60
b	d	a	b	c
61	62	63	64	65
b	d	d	d	c
66	67	68	69	70
b	d	b	a	c
71	72	73	74	75
c	a	a	b	d
76	77	78	79	80
b	a	c	c	b

81	82	83	84	85
b	d	c	b	c
86	87	88	89	90
c	d	c	d	d
91	92	93	94	95
d	a	a	b	c
96	97	98	99	100
d	b	a	c	d
101	102	103	104	105
a	c	d	c	d
106	107	108	109	110
c	d	d	d	b
111	112	113	114	115
b	b	b	d	a
116	117	118	119	120
c	d	c	a	b
121	122	123	124	125
c	d	a	d	b