DSA EXAM

1. Which of the following is NOT a basic data structure?
   (a) Array
   (b) Function
   (c) Linked List
   (d) Stack

2. A linked list node typically contains:
   (a) Only data
   (b) Only a pointer to the next node
   (c) Data and a pointer to the next node (Correct)
   (d) Data, a pointer to the next node, and a pointer to the previous node

3. Which sorting algorithm is known for its in-place sorting and average time complexity of O(n^2)?
   (a) Merge sort
   (b) Quick sort
   (c) Bubble sort (Correct)
   (d) Heap sort

4. What does O(log n) time complexity represent?
   (a) Constant time
   (b) Logarithmic time (Correct)
   (c) Linear time
   (d) Exponential time

5. Which of the following represents the fastest growth rate?
   (a) O(n)
   (b) O(log n)
   (c) O(n^2) (Correct)
   (d) O(1)

6. Output of this program :

```
int main( )
{
int i = 2, j = 3 , k , l ;
float a, b ;
k = i / j * j ;
l = j / i * i ;
a = i / j * j ;
b = j / i * i ;
printf( " %d %d %f %f\n " , k , l , a , b ) ;
return 0 ;
}
```

7. Point out the errors

```
int main( )
 {
int x = 10 , y = 15 ;
if ( x % 2 = y % 3 ) ;
print( " Welcome to GDSC Echelon " )
}
```

8. A year is entered through the keyboard , write a program to determine whether the year is leap or not . Use the the logical operators **&&** and **| |**

9. Which of the following conditions will NOT cause a while loop to continue executing?
    (a) The loop counter variable is less than a specific value.
    (b) The user enters a specific keyword. (Correct)
    (c) A calculation within the loop evaluates to true.
    (d) There is data remaining to be processed.

10. What is the difference between data and information?
    (a) Data is raw, information is processed data (Correct)
    (b) They are the same thing.
    (c) Data is stored on computers, information is not.
    (d) Information is always numerical, data is not.

11. What data type would you use to store a person's name?
    (a) Integer
    (b) String (Correct)
    (c) Boolean
    (d) Float

12. What does the following statement mean: if (age >= 18):
    (a) The program will always run this code.
    (b) The program will only run this code if the age is less than 18.
    (c) The program will check if the age is 18 or greater, and then run the code if it's true. (Correct)
    (d) The program will ask the user a question about age.

13. What is an array?
    (a) A complex mathematical formula.
    (b) A list of items that can be accessed using a single variable name. (Correct)
    (c) A type of loop.
    (d) A way to connect two programs.

14. What is the output for this program ?
    Check the condition if true then 1 and if condition false then 0
     [Note : 1 = TRUE , 0 = FALSE]

```
int main ( ) {
int i = 4 , j = -1 , k = 0 , w , x , y , z ;
w = i = || j || k ;
x = i && j && k ;
y = i || j && k ;
z = i && j || k ;
printf( " w= %d x =%d  y=%d z=%d\n " , w , x , y , z ) ;
return 0 ;
```

    (a) 1100
    (b) 1011
    (c) 1100
    (d) 0101

15. Write down your preferred language and domain you want to work till 4th year ?

16. Which Role are applying for Tick that part :

Technical Area :

Software Development:
Software Developer: This is a broad category encompassing various development roles. They write, test, and maintain software applications. Specialisations within software development include:
> **Web Developer:** Focuses on building websites and web applications.
> **Mobile App Developer**: Creates applications for smartphones and tablets.
> **Full-Stack Developer**: Works on both the front-end (user interface) and back-end (server-side) of applications.

Data Science and Machine Learning:
Data Scientist: Analyzes and interprets large datasets to extract valuable insights.
Machine Learning Engineer: Builds and implements machine learning models for tasks like prediction, classification, and recommendation.

Cloud Computing:
Cloud Engineer: Designs, builds, and manages cloud-based infrastructure and applications.

Security:
Information Security Analyst: Identifies, assesses, and mitigates security risks within computer systems and networks.
Security Software Engineer: Develops software to protect against cyberattacks.
DevOps Engineer: Bridges the gap between development and operations teams, overseeing the entire software development lifecycle.
Software Architect: Designs and plans the overall architecture of software systems.

Next Step is the Interview Round. Only for shortlisted students.
Thank you so much for your time and effort
GDSC Echelon!
Best of luck to everyone!