

# Assignment 1 (C++ 2022)

## 1. What is C++?

### Answers :

C++ is an object-oriented programming (OOP) language that is viewed by many as the best language for creating large-scale applications. C++ is a superset of the C language.

## 2. What is the difference between C and C++?

### Answers :

C is a function driven language because C is a procedural programming language. C++ is an object driven language because it is an object oriented programming. Function and operator overloading is not supported in C. Function and operator overloading is supported by C++

## 3. What are the various OOPs concepts in C++?

### Answers :

CLASS, OBJECT, DATA ABSTRACTION, ENCAPSULATION, INHERITANCE, AND POLYMORPHISM

## 4. What are the C++ access specifiers?

### Answers :

C++ do not have access specifier instead it has access modifier.

## 5. List the type of Inheritance.

### Answers :

1. single
2. multiple
3. multilevel
4. hybrid
5. hierarchical

## 6. C++ uses which approach?

### Answers :

C++ is a Object Oriented Programming and it has bottom-up approach

## 7. List the types of conditional statements.

### Answers :

- 1: if
- 2: else if
- 3: ladder
- 4: switch

## 8. Write a program in C++ to print a “ welcome in Darwin” text in a

**separate line.**

**Answers :**

```
#include <iostream>
using namespace std;
int main(){
    cout<<"Welcome\nto \nDarwin's";
}
```

**9. Write a program in C++ to print the sum of two numbers.**

```
#include <iostream>
using namespace std;
int main(){
    int a,b,sum;
    cout<<"Enter a value of a and b : \n";
    cin>>a>>b;
    sum=a+b;
    cout<<"Sum of "<<a<<" and "<<b<<" = "<<sum;
}
```

**10. Write a program in C++ to display various types of arithmetic operations using function.**

**Answers :**

```
#include <iostream>
using namespace std;
void Sum(){
    int a=5,b=6,sum;
    sum=a+b;
    cout<<"A + B = "<<sum<<endl;
}
void Sub(){
    int a=5,b=6,sub;
    sub=a-b;
    cout<<"A - B = "<<sub<<endl;
}
void Multi(){
    int a=6,b=6,multi;
    multi=a*b;
    cout<<"A x B = "<<multi<<endl;
}
void Divi(){
    int a=5,b=6,divi;
    divi=a/b;
    cout<<"A / B = "<<divi<<endl;
}
```

```

}
int main(){
    int num;
    cout<<"Enter a value : ";
    cin>>num;
    switch(num){
        case 1:Sum();
        break;
        case 2:Sub();
        break;
        case 3:Multi();
        break;
        case 4:Divi();
        break;
        default:cout<<"Nothing to print"<<endl;
    }
    return 0;
}

```

### 11. Write a program in C++ to display various types of arithmetic operations using mixed data types.

#### Answers :

```

#include <iostream>
using namespace std;
void Sum(){
    int a=5,b=6,sum;
    sum=a+b;
    cout<<"A + B = "<<sum<<endl;
}
void Sub(){
    int a=5,b=6,sub;
    sub=a-b;
    cout<<"A - B = "<<sub<<endl;
}
void Multi(){
    float a=6.4,b=6.1,multi;
    multi=a*b;
    cout<<"A x B = "<<multi<<endl;
}
void Divi(){
    double a=5,b=6.5,divi;
    divi=a/b;
    cout<<"A / B = "<<divi<<endl;
}

```

```

}
int main(){
    int num;
    cout<<"Enter a value : ";
    cin>>num;
    switch(num){
        case 1:Sum();
        break;
        case 2:Sub();
        break;
        case 3:Multi();
        break;
        case 4:Divi();
        break;
        default:cout<<"Nothing to print"<<endl;
    }
    return 0;
}

```

**12. Write a program in C++ to calculate the volume of a sphere.**

**Answers :**

```

#include <iostream>
using namespace std;

int main(){
    int r;
    float v,pi=3.14;
    cout<<"Enter a value of r : ";
    cin>>r;
    v=(4*pi/3)*(r*r*r);
    cout<<"Volume of sphere : "<<v<<endl;
    return 0;
}

```

**13. Write a program in C++ to calculate the volume of a cube.**

**Answers :**

```

#include <iostream>
using namespace std;

int main(){
    int a;
    float v;
    cout<<"Enter a value of a : ";

```

```

    cin>>a;
    v=a*a*a;
    cout<<"Volume of cube : "<<v<<endl;
    return 0;
}

```

**14. Write a program in C++ to print the following pattern.**

**a.**

```

*
* *
* * *
* * * *
* * * * *

```

**Answer :**

```

#include <iostream>
using namespace std;

int main(){
    int a,i,j;
    cout<<"Enter a number : ";
    cin>>a;
    for (i=1;i<=a;i++){
        cout<<"\n";
        for(j=1;j<=i;j++){
            cout<<"*";
        }
    }
}

```

**b.**

```

* * * * *
* * * *
* * *
* *
*

```

**Answers :**

```

#include <iostream>
using namespace std;

int main(){
    int a,i,j;

```

```

    cout<<"Enter a number : ";
    cin>>a;
    for (i=a;i>=1;i--){
        cout<<"\n";
        for(j=1;j<=i;j++){
            cout<<"*";
        }
    }
}

```

**15. Write a program in C++ to check whether user input is an Even or Odd number.**

**Answers :**

```

#include <iostream>
using namespace std;
#define MAX_SIZE 100
int main(){
    int a,num[MAX_SIZE],i,oddnum,evennum;
    cout<<"Enter value of array : ";
    cin>>a;
    cout<<"Enter "<<a<<" numbers : "<<endl;
    for(i=0;i<a;i++){
        cin>>num[i];
    }
    oddnum=0;
    evennum=0;

    for (i=0;i<a;i++){
        if(num[i]%2==0){
            evennum++;
        }
        else {
            oddnum++;
        }
    }
    cout<<"Total even numbers : "<<evennum<<endl;
    cout<<"Total odd numbers : "<<oddnum<<endl;
}

```

**16. Write a program in C++ to print the following pattern.**

```

1
2 2

```

3 3 3

4 4 4 4

5 5 5 5 5

**Answers :**

```
#include <iostream>
using namespace std;
int main(){
    int a,i,j;
    cout<<"Enter a number : ";
    cin>>a;
    for (i=1;i<=a;i++){
        cout<<"\n";
        for (j=1;j<=i;j++){
            cout<<" ";
        }
        for (j=1;j<=i;j++){
            cout<<i;
        }
    }
    return 0;
}
```

**17. Write a program in C++ that swaps the values of two variables but does not use the third variable.**

**Answers :**

```
#include <iostream>
using namespace std;
int main(){
    int a,b;
    cout<<"Enter two numbers : ";
    cin>>a>>b;
    cout<<"Before swap : "<<a<<" , "<<b<<endl;
    a=a+b;
    b=a-b;
    a=a-b;
    cout<<"After swap : "<<a<<" , "<<b;
}
```

**18. Write a C++ Program to create a Student class and display id, name, subject, and address.**

**Answers :**

```
#include <iostream>
```

```

using namespace std;
class Students {
    public:
    int id;
    string name;
    string subject;
    string address;
};
int main(){
    Students s1;
    s1.id=15;
    s1.name="Gurram Vinayyy";
    s1.subject="Accounts";
    s1.address="Surat";
    cout<<"Student's Details :: "<<endl<<endl;
    cout<<"ID : "<<s1.id<<endl;
    cout<<"Name : "<<s1.name<<endl;
    cout<<"Subject : "<<s1.subject<<endl;
    cout<<"Address : "<<s1.address<<endl;
    return 0;
}

```

### 19. Write a program in C++ to calculate the volume of a cylinder.

**Answer :**

```

#include <iostream>
using namespace std;
int main(){
    float pi=3.14,r,h;
    double V;
    cout<<"Enter a value of radius : ";
    cin>>r;
    cout<<"Enter a value of height : ";
    cin>>h;
    V=pi*(r*r)*h;
    cout<<"Volume of cylinder : "<<V<<endl;
}

```

### 20. Write a program in C++ to additions of two variables using class.

**Answer :**

```

#include <iostream>
using namespace std;
class Addition {
    public:
    float a,b;

```



```

    float sum;
};
int main(){
    Addition A;
    cout<<"value of A : ";
    cin>>A.a;
    cout<<"value of B : ";
    cin>>A.b;
    A.sum=A.a+A.b;
    cout<<"Sum of "<<A.a<<" and "<<A.b<<" = "<<A.sum;
}

```

## 21. Write a program in C++ to present value using polymorphism.

**Answer :**

```

#include <iostream>
using namespace std;
#define MAX_SIZE 100
int Sum(int a,int b){
    return a+b;
}
float Sum(float a, float b){
    return a+b;
}
double Sum(double a,double b){
    return a+b;
}
int main(){
    float a,b;

    cout<<"Enter a value of a and b : "<<endl;
    cin>>a>>b;
    cout<<"Sum of 2 values : "<<Sum(a,b)<<endl;
}

```

## 22. Write a program in C++ to check the number negative or positive.

**Answer :**

```

#include<iostream>
#include<cstring>
using namespace std;
int main(){
    int i,num;
    cout<<"Enter a number : ";
    cin>>num;
}

```

```

if(num<0){
    cout<<"Number is nagetive "<<endl;
} else if (num>0){
    cout<<"Number is positive "<<endl;
}else{
    cout<<"Number is zero ";
}
}

```

### 23. Write a program to select the week name using a switch case.

**Answer :**

```

#include<iostream>
#include<cstring>
using namespace std;
int main(){
    int num;
    cout<<"Enter a number of week : ";
    cin>>num;
    switch(num){
        case 1 : cout<<"Monday"<<endl;
        break;
        case 2 : cout<<"Tuesday"<<endl;
        break;
        case 3 : cout<<"Wednesday"<<endl;
        break;
        case 4 : cout<<"Thursday"<<endl;
        break;
        case 5 : cout<<"Friday"<<endl;
        break;
        case 6 : cout<<"Saturday"<<endl;
        break;
        case 7 : cout<<"Sunday"<<endl;
        break;
        default: cout<<"Nothing to print !!"<<endl;
    }
}

```

### 24. C++ program to calculate students' total marks, percentage, and division.

**Answer :**

```

#include <iostream>
//#include <cstring>

```

```

#define Max_size 100
using namespace std;

int main (){
    float tmarks,per;
    int marks[Max_size];
    int a,i,num;
    cout<<"Enter a no of subjects : ";
    cin>>num;
    cout<<"Enter your marks : "<<endl;
    for(i=1;i<=num;i++){
        cin>>marks[i];
    }
    tmarks=0;
    for(i=1;i<=num;i++){
        tmarks=tmarks+marks[i];
    }
    cout<<"Total marks : "<<tmarks<<endl;
    per=tmarks/num;
    cout<<"Percentage : "<<per<<endl;
}

```

**25. Write a C++ program to find the sum of odd numbers between 1 to n**

**Answer :**

**26. Write a C++ program to print the sum of digits entered by the user. Write a program in C++ to check greater value.**

**Answer :**

**27. Write a program in C++ to display 1 to 40 numbers with for loop.**

**Answer :**

```

#include <iostream>
using namespace std;
int main(){
    int i,n;
    cout<<"Enter a number : ";
    cin>>n;
    for (i=1;i<=n;i++){
        cout<<i<<endl;
    }
}

```

**28. Write a program in C++ to calculate the volume of a cylinder**

**Answer :**

```
#include <iostream>
using namespace std;
int main(){
    int i;
    float pi=3.14,r,h,V;
    cout<<"Enter a value of r and h : "<<endl;
    cin>>r>>h;
    V=pi*(r*r)*h;
    cout<<"Volume of cylinder : "<<V<<endl;
}
```

**29. Write a C++ Program to find the Largest among three numbers.**

**Answer :**

```
#include <iostream>
using namespace std;
int main(){
    int n1,n2,n3,max;
    cout<<"Enter 3 numbers : "<<endl;
    cin>>n1>>n2>>n3;
    //cin>>n2;
    //cin>>n3;
    max = (n1>n2)?((n1>n3)?n1:n3):(n2>n3?n2:n3);
    cout<<"\nlargest number is : "<<max;
}
```

**30. Write a C++ Program to create an Employee class and display.**

**Answer :**

```
#include <iostream>
using namespace std;
class Employee {
public:
    int id;
    string name;
    string city;
    int salary;

    void display(){
        cout<<id<<"\t "<<name<<"\t "<<city<<"\t "<<salary<<endl;
    }
};
```

```
}  
};
```

```
int main(){  
    Employee e1,e2;  
    e1.name = "Vinay";  
    e1.id=15;  
    e1.city="Surat ";  
    e1.salary = 35000;  
  
    e2.name = "Gurram";  
    e2.id=17;  
    e2.city="Bangalore";  
    e2.salary = 75000;  
  
    cout<<"Id\t"<<" "<<"Name\t"<<" "<<"City\t"<<"\t "<<"Salary\t"<<" "<<"\n"<<endl;  
    e1.display();  
    e2.display();  
}
```