EXPERIMENT 5

① Write a program to find the sum of numbers between 1 to n using a constructor where the value of n will be passed to the constructor

② Write a program to declare a class "Student" having data members as name and percentage. Write a constructor to initialize these data members. Accept and display data for one student.

③ Define a class "College" members variable as roll_no, name, course. WAP using constructor with default values as "Computer Engineering" for course. Accept this data for two objects of class & display the data.

④ Write a program to demonstrate constructor overloading.

① * Default constructor

```
#include<iostream>
using namespace std;
class Num
{
  int n;
  int i;
  int sum = 0;
public:
```

```
Num
{
  n=5;
}
void add()
{
for (i=1; i<=n ; i++)
{
  sum = sum + i ;
}
}
void disp()
 {
  cout <<" Sum is : " << sum;
}
};
int main()
{
 Num no. ;
 no.add();
 no. disp();
return 0;
}
```

* Parameterized constructor

```
#include<iostream>
using namespace std;
class Num
{
 int n;
```

```
int i;
int sum=0;
public:
 Num (int n1)
 {
  n=n1;
 }
 void add()
 {
  for (i=1; i<=n; i++)
  {
   sum = sum+i;
  }
 }
 void disp()
 {
  cout <<" Sum is :" <<sum;
 }
};
int main()
{
Num no(5);
no.add();
no.disp();
return 0;
}
```

* Copy constructor

```
#include<iostream>
using namespace std;
```

```
class Num
{
 int n;
 int i;
 int sum = 0;
 public:
  Num (int n1)
  {
    n=n1;
  }
  void add ()
  {
   for (i=1 ; i<=n ; i++)
   {
    sum = sum + i;
  }
  }
  void disp()
  {
   cout <<"sum is: " <<sum<<endl;
 }
};
int main()
 {
Num no1 (5);
Num no2 (no1);
no.1. add ();
no2. add ();
no. 1. disp ();
no2. disp();
return 0;
 }
```

Output for default and parameterized constructor -

Sum is : 15

Output for copy constructor -

Sum is : 15

Sum is : 15

(2) * Using parameterized constructor

```
#include<string>
#include<iostream>
using namespace std;
class Student
{
 int per;
 String name;
public:
 Student (int p, string n)
 {
  per=p;
  name=n;
 }
 void disp()
 {
 cout<<"Name of Student :"<<name<<endl;
cout<<"Percentage = "<<per<<endl;
 }
};
int main()
 {
Student s1 (93,"Anushka");
 s1.disp();
 return 0;
}
```

Output - Name of student : Anushka
Percentage = 93

(3)
```
#include <iostream>
#include <string>
using namespace std;
class College
{
int roll_no;
string name;
string course;
public:
College ( string n , int r = 25, string c = "CSE")
  {
  name=n;
  roll_no =r;
  course = c;
}
void display ()
{
cout << name << endl;
cout << roll_no << endl;
cout << course;
}
};
int main()
{
College c1 ("Anushka");
c1.display();
return 0;
}
```

Output - Anushka
25
CSE

(4)
```
#include <iostream>
using namespace std;
class Square
{
 int s;
 public:
 Square ()
 {
  s=4
 }
 Square (int side)
 {
  s=side;
 }
 void calculate ()
 {
  int a;
  a=s*s;
cout << " Area of square = " << a << endl;
 }
};
int main()
{
 Square s1;
 Square s2 (5);
 square s3 (s2);
 s1.calculate();
```

```
s2.calculate();
s3.calculate();
return 0;
}
```

Output - Area of square = 16
Area of square = 25
Area of square = 25

x ——— x ——— x

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