

## PRACTICAL-3

DATE: \_\_\_\_\_

### **AIM:-**

- i. Create a class student which stores the detail about roll no, name, marks of 5 subjects, i.e. science, Mathematics, English, C++. The class must have the following:
  - Get function to accept value of the data members.
  - Display function to display values of data members.
  - Total function to add marks of all 5 subjects and store it in the data members named total.
- ii. Create a function power() to raise a number m to power n. the function takes a double value for m and int value for n, and returns the result correctly. Use the default value of 2 for n to make the function calculate squares when this argument is omitted. Write a main that gets the values of m and n from the user to test the function.
- iii. Write a basic program which shows the use of scope resolution operator.
- iv. Write a C++ program to swap the value of private data members from 2 different classes.

### INPUT:-

i).

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

class Student {
private :
    int rollNo ;
    string Name ;
    int science, mathematics, english, CPP, extrasubject ;
    int total ;

public :
    void getDetails () {
        cout << "Enter Roll No : ";
        cin >> rollNo ;
        cout << "Enter Name : ";
        getline (cin, name) ;
        cout << "Enter marks in Science : ";
        cin >> science ;
        cout << "Enter marks in Mathematics : ";
        cin >> mathematics ;
        cout << "Enter marks in English : ";
```

```

    cin >> english;
    cout << "Enter marks in C++ : ";
    cin >> cpp;
    cout << "Enter marks in Extra Subject : ";
    cin >> extrasubject;
}

void calculateTotal () {
    total = Science + mathematics + english + cpp +
        extrasubject;
}

void displayDetails () {
    cout << "In Student Details : \n";
    cout << "Roll No : " << rollno << endl;
    cout << "Name : " << name << endl;
    cout << "Marks in Science : " << Science << endl;
    cout << "Marks in Mathematics : " << mathematics << endl;
    cout << "Marks in English : " << english << endl;
    cout << "Marks in C++ : " << cpp << endl;
    cout << "Marks in Extra Subject : " << extrasubject << endl;
    cout << "Total marks : " << total << endl;
}

int main() {
    Student student;
    Student.getDetails();
    Student.calculateTotal();
    Student.displayDetails();
    return 0;
}

```

Output :-

Enter Roll No : 10
Enter Name : CS
Enter Marks in Science : 12
Enter Marks in Mathematics : 53

Enter Marks in English : 52  
Enter Marks in C++ : 55  
Enter Marks in Extra Subject : 56

Student Details :

Roll No : 10

Name : cs

Marks in Science : 12

Marks in Mathematics : 53

Marks in English : 52

Marks in C++ : 55

Marks in Extra Subject : 56

Total marks : 228

ii).

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

double power (double m , int n=2) {
    double result = 1.0 ;
    for (int i=1; i<=n; i++) {
        result *= m ;
    }
    return result ;
}

int main() {
    double m;
    int n;
    char choice;
    cout << "Enter the base number (m) : ";
    cin >> m;
    cout << "Do you want to enter the exponent (n) ? (y/n) : ";
    cin >> choice;
```

```

if (choice == 'y' || choice == 'Y') {
    cout << "Enter the exponent (n) : ";
    cin >> n;
    cout << m << "raised to the power " << n << " is : " <<
        power(m, n) << endl;
} else {
    cout << m << "Squared is : " << power(m) << endl;
}
return 0;
}

```

Output :-

```

Enter the base number (m) : 3
Do you want to enter the exponent (n) ? (y/n) : y
Enter the exponent(n) : 4
3 raised to the power 4 is 81

```

iii).

```

#include <iostream>
using namespace std;
int num = 10;
class Demo {
public:
    int num;
    Demo() {
        num = 20;
    }
    void display() {
        cout << "Local (class member) num :" << num << endl;
        cout << "Global num :" << ::num << endl;
    }
};

int main() {

```

```
Demo obj ;  
obj.display();  
return 0;  
}
```

Output:-

```
Local (class member) num : 20  
Global num : 10
```

iv).

```
#include <iostream>  
using namespace std ;  
  
class ClassB ;  
class ClassA {  
private :  
    int valueA ;  
public :  
    ClassA (int a) : valueA (a) {}  
    void display() {  
        cout << "Value in ClassA : " << valueA << endl ;  
    }  
    friend void swapvalues (ClassA &a , ClassB &b) ;  
};  
class ClassB {  
private :  
    int valueB ;  
public :  
    ClassB (int b) : valueB (b) {}  
    void display() {  
        cout << "Value in ClassB : " << valueB << endl ;  
    }  
    friend void swapvalues (ClassA &a , ClassB &b) ;  
};
```

```
};
```

```
void swapValues (ClassA &a, ClassB &b) {  
    int temp = a.valueA;  
    a.valueA = b.valueB;  
    b.valueB = temp;  
}
```

```
int main () {  
    ClassA objA (100);  
    ClassB objB (200);  
  
    cout << "Before swapping :" << endl;  
    objA.display ();  
    objB.display ();  
  
    swapValues (objA, objB);  
  
    cout << "After swapping :" << endl;  
    objA.display ();  
    objB.display ();  
  
    return 0;  
}
```

Output :-

Before Swapping :	
Value in ClassA : 100	
Value in ClassB : 200	

After Swapping :	
Value in ClassA : 200	
Value in ClassB : 100	