Assignment 9

Laboratory 4
Static Member and Friend Function

Example 1)

```cpp
#include<iostream>
using namespace std;
class myclass{
    int a,b;    public:
    friend int sum(myclass x);
    void set_value(int x,int y);
};
void myclass::set_value(int x,int y){    a=x;    b=y; }
int sum(myclass x){    return (x.a+x.b);    }
int main(){
    myclass m1;
    m1.set_value(3,5);
    cout<<sum(m1);
}
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$ g++ example1.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$ ./1
8shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$
```

Example 2)

```cpp
#include<iostream>
using namespace std;
class two;
class one{
    private:    int data1;    public:
    void setData(int x){data1=x;}
    friend int add_both(one a,two b); };
class two{    int data2;    public:
    void setData(int x){data2=x;}
    friend int add_both(one a,two b); };
int add_both(one a,two b){    return a.data1+b.data2;    }
int main(){
    one a;    two b;
    a.setData(3);    b.setData(5);
    cout<<"Sum of one and two : "<<add_both(a,b);  }
```

Example 3)

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$ ./1
Sum of one and two : 8shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$
```

```cpp
#include<iostream>
using namespace std;
class B{
    int secret;   public:    friend class A;
    B(){      secret=10;    }
    void sayhello(){      cout<<"Hello Sir "<<secret<<endl;    }    };
class A{
    int value;   public:
    A(){      value=5;    }
    void show(){      cout<<"Value = "<<value<<endl;    }
    void change(B &b){      b.secret=20;    }
};
int main(){
    A a;    B b;    a.change(b);
    b.sayhello();
    a.show();
}
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$ ./1
Hello Sir 20
Value = 5
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/examples$
```

Program 1) Design a complex class with two friend functions add and multiply that takes two objects of a class Yourclass with two data members c and d. Design a member function ADF that is also a friend function of my class and it adds a with c and b with d and displays the result.

```cpp
#include<iostream>
using namespace std;
class complex2;
class complex1{
    int a,b;   public:   void setData(int x,int y){      a=x;b=y;    }
    friend void add(complex1 c1,complex2 c2);
    friend void multiply(complex1 c1,complex2 c2);
};
class complex2{
    int a,b;   public:
    void setData(int x,int y){      a=x;b=y;    }
    friend void add(complex1 c1,complex2 c2);
    friend void multiply(complex1 c1,complex2 c2);
};
void add(complex1 c1,complex2 c2){
        cout<<"sum   of   complex   number   is   "<<c1.a+c2.a<<"   ,
"<<c1.b+c2.b<<endl;
```

```cpp
}
void multiply(complex1 c1,complex2 c2){
      cout<<"multiplication  of  complex  number  is  "<<c1.a*c2.a<<"  ,
"<<c1.b*c2.b<<endl;
}
int main(){
   complex1 c1;   complex2 c2;   c1.setData(3,4);   c2.setData(3,4);
   add(c1,c2);   multiply(c1,c2);}
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$ g++ 1.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$ ./1
sum of complex number is 6 , 8
multiplication of complex number is 9 , 16
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$
```

Program 4) Write a function using a reference variable as arguments and friend function to swap the values of a pair of integers.

```cpp
#include<iostream>
using namespace std;
class number2;
class number1{   int a;   public:
   void setData(int &x){        a=x;    }
   friend void swap(number1 n1,number2 n2);
};
class number2{
   int a;   public:   void setData(int &x){        a=x;    }
   friend void swap(number1 n1,number2 n2);
};
void swap(number1 n1,number2 n2){
   cout<<"The two  numbers are "<<n1.a<<" and "<<n2.a<<endl;
   int temp=n1.a;   n1.a=n2.a;   n2.a=temp;
   cout<<"The two  numbers are "<<n1.a<<" and "<<n2.a<<endl;
}
int main(){
   number1 n1;   number2 n2;   int a=4;   int b=3;
   n1.setData(a);   n2.setData(b);   swap(n1,n2);
}
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$ g++ 4.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$ ./1
The two  numbers are 4 and 3
The two  numbers are 3 and 4
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$
```

Program 6) WAP to count the number of occurrences of each digit present in an integer number.

```cpp
#include<iostream>
```

```cpp
#include <bits/stdc++.h>
using namespace std;
class number{
    int i=0;    int num;    int arr[1000];
    public:
    void set(int x){        num=x;    }
    void count(){
        while(num!=0){  arr[i]=num%10;    num=num/10;    i++;        }    }
    void show(){
        int count=0;        sort(arr, arr + i);
        for(int j=0;j<i;j++){
            for(int k=0;k<i;k++){
                if(arr[j]==arr[k]){
                    count++;
                }
            }
            cout<<arr[j]<<" is "<<count<<" times in number\n";
            count=0;
        }
    }
};
int main(){
    number n;    n.set(2121232421);    n.count();    n.show();
}
```

```
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$ g++ 6.cpp -o 1
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$ ./1
1 is 3 times in number
1 is 3 times in number
1 is 3 times in number
2 is 5 times in number
2 is 5 times in number
2 is 5 times in number
2 is 5 times in number
2 is 5 times in number
3 is 1 times in number
4 is 1 times in number
shyam@shyam-HP-Laptop-15-da0xxx:~/Desktop/oopLAB/laboratory4/questions$
```