DAY 2

NAME :- RISHAV KUMAR
ROLL NO. :- 1851069
CSE 'A'

1.

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

using namespace std;

class Time{
    private:
        int hour;
        int minute;
        int second;
    public:
        void showTime();
        void setTime(int,int,int);
        void addTime(Time);
        Time();
};

void Time::showTime(){
    cout<<setfill('0')<<setw(2);
    cout<<hour<<":";
    cout<<setfill('0')<<setw(2);
    cout<<minute<<":";
    cout<<setfill('0')<<setw(2);
    cout<<second<<endl;
}

void Time::setTime(int h,int m=0,int s=0){
    if (h<0 or m>=60 or m<0 or s>=60 or s<0){
        cout<<"Invalid time"<<endl;
        return;
    }
```

```cpp
        hour=h;
        minute=m;
        second=s;
}

void Time::addTime(Time t){
        second+=t.second;
        minute+=(t.minute+second/60);
        hour+=(t.hour+minute/60);
        minute%=60;
        second%=60;
}

Time::Time(){
        hour=0;
        minute=0;
        second=0;
}

int main(){
        Time t,t2;
        t.setTime(13,51,6);

        cout<<"Time 1:";
        t.showTime();
        t2.setTime(3,51,59);

        cout<<"Time 2:";
        t2.showTime();
        t.addTime(t2);

        cout<<"Time 1 + Time 2:";
        t.showTime();

        return 0;
}
```

Output:-

2.

```cpp
#include <iostream>

using namespace std;

class Account{
    private:
        int ac_number;
        int balance;
    public:
        int get_balance();
        void deposit(int);
        void deduct(int);
        void init(int,int);
        void display();
        void moneyTransfer(Account &,int);
};

int Account::get_balance(){
    return balance;
}

void Account::deduct(int amount){
    if(amount<0){
        cout<<"Invalid amount"<<endl;
        return;
    }
    if(amount>balance){
        cout<<"Insuffient balance"<<endl;
    return;
    }

    balance -= amount;
}
```

```cpp
void Account::deposit(int amount){
    if(amount<0){
        cout<<"Invalid amount"<<endl;
        return;
    }
    balance += amount;
}

void Account::init(int ac_number,int balance=0){
    if (ac_number<=0 or balance < 0){
        cout<<"Invalid Values"<<endl;
        return;
    }
    this->ac_number=ac_number;
    this->balance=balance;
}

void Account::display(){
    cout<<"Account number: "<<ac_number<<endl;
    cout<<"Balance: "<<balance<<"\n"<<endl;
}

void Account::moneyTransfer(Account &payer,int amount){
    if (amount < 0){
        cout<<"Invalid Amount"<<endl;
        return;
    }
    if (amount > payer.get_balance()){
        cout<<"Insufficient amount in payer's account"
<<endl;
        return;
    }

    this->deposit(amount);
    payer.deduct(amount);
}
```

```cpp
int main(){
    Account a1,a2;

    a1.init(100,1000);
    a2.init(101,1500);

    cout<<"Account #1:"<<endl;
    a1.display();

    cout<<"Account #2:"<<endl;
    a2.display();

    cout<<"\n";
    a1.moneyTransfer(a2,600);
    cout<<"Account #1:"<<endl;
    a1.display();
    cout<<"Account #2:"<<endl;
    a2.display();


    cout<<"\n";
    a1.moneyTransfer(a2,1000);
    cout<<"Account #1:"<<endl;
    a1.display();
    cout<<"Account #2:"<<endl;
    a2.display();

    return 0;
}
```

Output:-

```
rishav@rishav-hp-laptop:~/code/oop/day 2$ g++ 2.cpp -o 2
rishav@rishav-hp-laptop:~/code/oop/day 2$ ./2
Account #1:
Account number: 100
Balance: 1000

Account #2:
Account number: 101
Balance: 1500


Account #1:
Account number: 100
Balance: 1600

Account #2:
Account number: 101
Balance: 900


Insufficient amount in payer's account
Account #1:
Account number: 100
Balance: 1600

Account #2:
Account number: 101
Balance: 900
```

3.

```cpp
#include <iostream>

using namespace std;

class Complex{
    private:
        int real;
        int imag;
    public:
        void get_data();
        void show_data();
        Complex add_complex(Complex);
        Complex sub_complex(Complex);
        Complex mul_complex(Complex);
        Complex mul_complex(int);
        Complex();
        Complex(const Complex&);
```

```cpp
};

void Complex::get_data(){
    cout<<"Enter real part:";
    cin>>real;
    cout<<"Enter imaginary part:";
    cin>>imag;
}

void Complex::show_data(){
    char sign = (imag<0)?'-':'+';
    cout<<real<<sign<<abs(imag)<<'i'<<endl;
}

Complex Complex::add_complex(Complex c){
    Complex ans = c;
    ans.real+=this->real;
    ans.imag+=this->imag;

    return ans;
}

Complex Complex::sub_complex(Complex c){
    Complex ans = *this;
    ans.real-=c.real;
    ans.imag-=c.imag;

    return ans;
}

Complex Complex::mul_complex(Complex c){
    Complex ans;
    ans.real=(this->real * c.real) - (this->imag * c.imag);
    ans.imag=(this->real * c.imag) + (this->imag * c.real);
    return ans;
}

Complex Complex::mul_complex(int n){
    Complex ans=*this;
    ans.real*=n;
    ans.imag*=n;
```

```cpp
        return ans;
}


Complex::Complex(){
        real=0;
        imag=0;
}

Complex::Complex(const Complex& c){
        real = c.real;
        imag = c.imag;
}

int main(){
        Complex c1,c2;
        c1.get_data();
        c2.get_data();

        cout<<"First complex number: ";
        c1.show_data();
        cout<<"Second complex number: ";
        c1.show_data();

        Complex sum=c1.add_complex(c2);
        Complex diff=c1.sub_complex(c2);
        Complex prod1=c1.mul_complex(c2);
        Complex prod2=c1.mul_complex(6);

        cout<<"Sum:";
        sum.show_data();

        cout<<"Difference:";
        diff.show_data();

        cout<<"Product:";
        prod1.show_data();

        cout<<"Scalar product:";
        prod2.show_data();
```

```
    return 0;

}
```

Output:-

```
rishav@rishav-hp-laptop:~/code/oop/day 2$ g++ 3.cpp -o 3
rishav@rishav-hp-laptop:~/code/oop/day 2$ ./3
Enter real part:3
Enter imaginary part:4
Enter real part:4
Enter imaginary part:7
First complex number: 3+4i
Second complex number: 3+4i
Sum:7+11i
Difference:-1-3i
Product:-16+37i
Scalar product:18+24i
```

4.

```cpp
#include <iostream>

using namespace std;

void order(int &x,int &y){
    if(x<y){
        int temp=x;
        x=y;
        y=temp;
    }
}

int main(){
    int x,y;
    cout<<"Enter x:";
    cin>>x;
    cout<<"Enter y:";
    cin>>y;

    order(x,y);

    cout<<"x:"<<x<<endl;
    cout<<"y:"<<y<<endl;
```

```
    return 0;
}
```

Output:-

```
rishav@rishav-hp-laptop:~/code/oop/day 2$ g++ 4.cpp -o 4
rishav@rishav-hp-laptop:~/code/oop/day 2$ ./4
Enter x:6
Enter y:7
x:7
y:6
rishav@rishav-hp-laptop:~/code/oop/day 2$ ./4
Enter x:6
Enter y:5
x:6
y:5
```