```
1.Animals problem
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std;//this std has all the standard libraries of c++
class animals//creating a class
{
    string name;
    float population;
    public:
        void set(){//member functio
            cout<<"Enter animal name:";//cout prints the output stream of bits on screen
            cin>>name;//cin belongs to input stream class
            cout<<"Enter population:";//cout prints the output stream of bits on screen
            cin>>population;//cin belongs to input stream class
        }

        float getPopulation() { return population; }
        static void minPopulation(animals a1, animals a2, animals a3){
            if (a1.population <= a2.population && a1.population <= a3.population)
            cout << "Animal with min population: " << a1.name <<"-"<< a1.population << endl;//cout prints the output
stream of bits on screen
        else if (a2.population <= a1.population && a2.population <= a3.population)
            cout << "Animal with min population: " << a2.name <<"-"<<a2.population << endl;//cout prints the output
stream of bits on screen
        else
            cout << "Animal with min population: " << a3.name <<"-"<<a3.population << endl;//cout prints the output
stream of bits on screen

        }

};
```

```
int main(){// In C++, main( )always has return type of int.
    animals a1, a2, a3;//creating an object...memory is alocated here

    cout<<"Animal 1:"<<endl;//cout prints the output stream of bits on screen
    a1.set();
    cout << endl;
    cout<<"Animal 2:"<<endl;//cout prints the output stream of bits on screen
    a2.set();
    cout << endl;
    cout<<"Animal 3:"<<endl;//cout prints the output stream of bits on screen
    a3.set();
    cout << endl;

    cout<<"Min population"<<endl;//cout prints the output stream of bits on screen
    animals::minPopulation(a1,a2,a3);

    return 0;
};
```

```
2.Cars problem
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std; // This std has all the standard libraries of C++

class cars {//creating a class
    string name;
    string colour;
    float petal_length;
    int seating_capacity;
```

```
    float petal_width;

public:
    // Member Function to input car details
    void set() {
        cout << "Enter Company Name: ";//cout prints the output stream of bits on screen
        cin >> name;//cin belongs to input stream class
        cout << "Enter Model Name: ";//cout prints the output stream of bits on screen
        cin >> colour;//cin belongs to input stream class
        cout << "Enter Price:";//cout prints the output stream of bits on screen
        cin >> petal_length;//cin belongs to input stream class
        cout << "Enter Seating Capacity: ";//cout prints the output stream of bits on screen
        cin >> seating_capacity;//cin belongs to input stream class
        cout << "Enter Mileage (in km/l): ";//cout prints the output stream of bits on screen
        cin >> petal_width;//cin belongs to input stream class
    }

    // Function to display car details
    void display() {
        cout << "Company: " << name << endl;//cout prints the output stream of bits on screen
        cout << "Model: " << colour << endl;//cout prints the output stream of bits on screen
        cout << "Price:" << petal_length << endl;//cout prints the output stream of bits on screen
        cout << "Seating Capacity: " << seating_capacity << " persons" << endl;//cout prints the output stream of bits
on screen
        cout << "Mileage: " << petal_width << " km/l" << endl;//cout prints the output stream of bits on screen
    }
};

int main() {// In C++, main( )always has return type of int.
    cars c1, c2, c3;//creating an object...memory is alocated here
```

```
    // Take input from user for car details
    cout << "Enter details for Car 1:" << endl;//cout prints the output stream of bits on screen
    c1.set();
    cout << "Enter details for Car 2:" << endl;//cout prints the output stream of bits on screen
    c2.set();
    cout << "Enter details for Car 3:" << endl;//cout prints the output stream of bits on screen
    c3.set();

    // Display car details
    cout<<endl;
    cout << "Car 1 Details:" << endl;//cout prints the output stream of bits on screen
    c1.display();
    cout<<endl;
    cout << "Car 2 Details:" << endl;//cout prints the output stream of bits on screen
    c2.display();
    cout<<endl;
    cout << "Car 3 Details:" << endl;//cout prints the output stream of bits on screen
    c3.display();
    cout<<endl;
    return 0;
}

3.Complex numbers Problem
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std;//this std has all the standard libraries of c++
class complex//creating a class
{
    int i;
    int r;
    public:
```

```
        void set();//declaring the function
        void display(){//member function
            cout<<r<<"+"<<i<<"i"<<endl;//cout prints the output stream of bits on screen
        }
        friend complex add(complex a, complex b);
};
inline void complex::set(){//defining the function
    cout<<"Enter real part of complex no. :";//cout prints the output stream of bits on screen
    cin>>r;//cin belongs to input stream class
    cout<<"Enter imaginary part of complex no. :";//cout prints the output stream of bits on screen
    cin>>i;//cin belongs to input stream class

};

// Function to add two complex numbers
complex add(complex a, complex b) {
    complex result;
    result.r = a.r + b.r;
    result.i = a.i + b.i;
    return result;
}

int main() {// In C++, main( )always has return type of int.
    complex c1, c2, c3;//creating an object...memory is alocated here

    // Input two complex numbers
    cout << "Enter the first complex number:" << endl;//cout prints the output stream of bits on screen
    c1.set();

    cout << "Enter the second complex number:" << endl;//cout prints the output stream of bits on screen
    c2.set();
```

```
    // Add the complex numbers
    c3 = add(c1, c2);

    // Display the result
    cout << "The sum of the two complex numbers is: ";//cout prints the output stream of bits on screen
    c3.display();

    return 0;
}
```

4.Countries details problem

```
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std; // This std has all the standard libraries of C++

class countries {//creating a class
    string name;
    float area;
    float population;
    float gdp;

public:
    void set() {
        cout << "Enter country name: ";//cout prints the output stream of bits on screen
        cin >> name;//cin belongs to input stream class
        cout << "Enter area in sq.km: ";//cout prints the output stream of bits on screen
        cin >> area;//cin belongs to input stream class
        cout << "Enter population: ";//cout prints the output stream of bits on screen
        cin >> population;//cin belongs to input stream class
```

```
        cout << "Enter GDP: ";//cout prints the output stream of bits on screen
        cin >> gdp;//cin belongs to input stream class
    }

    string getName() { return name; }
    float getArea() { return area; }
    float getPopulation() { return population; }
    float getGDP() { return gdp; }

    static void calculateMax(countries c1, countries c2, countries c3) {
        // Max population
        if (c1.population >= c2.population && c1.population >= c3.population)
            cout << "Country with max population: " << c1.name << c1.population << endl;//cout prints the output stream
of bits on screen
        else if (c2.population >= c1.population && c2.population >= c3.population)
            cout << "Country with max population: " << c2.name << c2.population << endl;//cout prints the output stream
of bits on screen
        else
            cout << "Country with max population: " << c3.name << c3.population << endl;//cout prints the output stream
of bits on screen

        // Max area
        if (c1.area >= c2.area && c1.area >= c3.area)
            cout << "Country with max area: " << c1.name << c1.area << endl;//cout prints the output stream of bits on
screen
        else if (c2.area >= c1.area && c2.area >= c3.area)
            cout << "Country with max area: " << c2.name << c2.area <<endl;//cout prints the output stream of bits on
screen
        else
            cout << "Country with max area: " << c3.name << c3.area << endl;//cout prints the output stream of bits on
screen
```

```
        // Max GDP
        if (c1.gdp >= c2.gdp && c1.gdp >= c3.gdp)
            cout << "Country with max GDP: " << c1.name << c1.gdp << endl;//cout prints the output stream of bits on
screen
        else if (c2.gdp >= c1.gdp && c2.gdp >= c3.gdp)
            cout << "Country with max GDP: " << c2.name << c2.gdp << endl;//cout prints the output stream of bits on
screen
        else
            cout << "Country with max GDP: " << c3.name << c3.gdp << endl;//cout prints the output stream of bits on
screen
    }
};

int main() {// In C++, main( )always has return type of int.
    countries c1, c2, c3;//creating an object...memory is alocated here

    // user input for countries
    cout << "Enter details for Country 1:" << endl;//cout prints the output stream of bits on screen
    c1.set();
    cout << endl;

    cout << "Enter details for Country 2:" << endl;//cout prints the output stream of bits on screen
    c2.set();
    cout << endl;

    cout << "Enter details for Country 3:" << endl;//cout prints the output stream of bits on screen
    c3.set();
    cout << endl;

    // Calculate and display the maximum values
```

```
    cout << "Comparing Countries..." << endl;//cout prints the output stream of bits on screen
    countries::calculateMax(c1, c2, c3);

    return 0;
};
```

5. Elements of the periodic table problem

```
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std;//this std has all the standard libraries of c++
class element{//creating a class
int a;//member variable declared(private)
string n;
public:
    void set(){//member functions
        cout<<"Enter Atomic Number:";//cout prints the output stream of bits on screen
        cin>>a;//cin belongs to input stream class
        cout<<"Enter Element Name:";//cout prints the output stream of bits on screen
        cin>>n;//cin belongs to input stream class
    }
    void display(){//member functions
        cout<<"Atomic Number is:"<<a<<endl;//cout prints the output stream of bits on screen
        cout<<"Element Name is:"<<n<<endl;//cout prints the output stream of bits on screen
    }
};
int main()//return int type
{
    element e1,e2;//creating an object...memory is alocated here
    e1.set();
    e2.set();
```

```
    e1.display();
    e2.display();
    return 0;
    string element;
    cout <<"Enter element name:";//prints "enter elements name to input element name"
    cin >> element;//inputs the name of the element
    int atmoic_no;
    cout <<"Enter atomic number:";//prints "enter atomic_no  to input atomic number"
    cin >> atmoic_no;//inputs the atomic number
    cout <<"Entered element is: "<<element<<"\n";
    cout <<"Entered atomic number is: "<<atmoic_no<<"\n";
    return 0;
}
```

6.Flowers problem

```
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std; // This std has all the standard libraries of C++

class flowers {//creating a class
    string name;
    string colour;
    float petal_length;
    float petal_width;

public:
    // Member Function to input flower features
    void set() {
        cout << "Enter flower Name: ";//cout prints the output stream of bits on screen
        cin >> name;//cin belongs to input stream class
```

```
        cout << "Colour: ";//cout prints the output stream of bits on screen
        cin >> colour;//cin belongs to input stream class
        cout << "Enter Petal length:";//cout prints the output stream of bits on screen
        cin >> petal_length;//cin belongs to input stream class
        cout << "Enter Petal width: ";//cout prints the output stream of bits on screen
        cin >> petal_width;//cin belongs to input stream class
    }

    // Function to display flower features
    void display() {
        cout << "Flower name: " << name << endl;//cout prints the output stream of bits on screen
        cout << "Colour: " << colour << endl;//cout prints the output stream of bits on screen
        cout << "Petal_length:" << petal_length << endl;//cout prints the output stream of bits on screen
        cout << "Petal_width: " << petal_width << endl;//cout prints the output stream of bits on screen
    }
};

int main() {// In C++, main( )always has return type of int.
    flowers f1, f2, f3;//creating an object...memory is alocated here

    // user input for flowers
    cout << "Flower 1:" << endl;//cout prints the output stream of bits on screen
    f1.set();
    cout << "Flower 2:" << endl;//cout prints the output stream of bits on screen
    f2.set();
    cout << "Flower 3:" << endl;//cout prints the output stream of bits on screen
    f3.set();

    // Display flower features
    cout<<endl;
    cout << "Flower 1:" << endl;//cout prints the output stream of bits on screen
```

```
    f1.display();
    cout<<endl;
    cout << "Flower 2:" << endl;//cout prints the output stream of bits on screen
    f2.display();
    cout<<endl;
    cout << "Flower 3:" << endl;//cout prints the output stream of bits on screen
    f3.display();
    cout<<endl;
    return 0;
};
```

7. Food

```
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std;//this std has all the standard libraries of c++
class food//creating a class
{
    string name;
    float cost;
    int quantity;
    public:
        void set(){//member function
            cout<<"Enter food item:";//cout prints the output stream of bits on screen
            cin>>name;//cin belongs to input stream class
            cout<<"Cost of the item:";//cout prints the output stream of bits on screen
            cin>>cost; //cin belongs to input stream class
            cout<<"Quantity:";//cout prints the output stream of bits on screen
            cin>>quantity;//cin belongs to input stream class
        }
        // Member function to calculate discounted cost
```

```
    float getDiscount() {
        if (quantity > 5) {
            return cost * quantity * 0.9; // 10% discount if quantity > 5
        } else {
            return cost * quantity; // No discount
        }
    }

    // Member function to display discounted cost
    void displayDiscountedCost() {
        cout << "Food item: " << name << ", Discounted cost: " << getDiscount() << endl;
    }
};

int main(){// In C++, main( )always has return type of int.
    food f1, f2, f3;//creating an object...memory is alocated here

    //Input data from user
    cout<<"Enter food item details:"<<endl;//cout prints the output stream of bits on screen
    f1.set();
    cout<<"Enter food item details:"<<endl;//cout prints the output stream of bits on screen
    f2.set();
    cout<<"Enter food iteam details:"<<endl;//cout prints the output stream of bits on screen
    f3.set();
    // Displaying discounted costs
    cout << "\nDisplaying discounted costs of food items:" << endl;
    f1.displayDiscountedCost();
    f2.displayDiscountedCost();
    f3.displayDiscountedCost();

    return 0;
```

```
};

8.Games problem

#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std;

class games {//creating a class
    string game;
    int no_of_players;
    bool team_sport; // true for team sport, false otherwise

public:
    void set() { // Member function to set game details
        cout << "Enter sport name: ";//cout prints the output stream of bits on screen
        cin >> game;//cin belongs to input stream class
        cout << "Enter no. of players: ";//cout prints the output stream of bits on screen
        cin >> no_of_players;//cin belongs to input stream class

        string team_sport_input;
        cout << "Team sport (yes/no): ";//cout prints the output stream of bits on screen
        cin >> team_sport_input;//cin belongs to input stream class
        // Convert "yes" or "no" input to boolean
        team_sport = (team_sport_input == "yes");
    }

    void display() { // Member function to display game details
        cout << "Sport Name: " << game << endl;
```

```
        cout << "Number of Players: " << no_of_players << endl;
        cout << "Is it a Team Sport? " << (team_sport ? "Yes" : "No") << endl;
    }
};

int main() {// In C++, main( )always has return type of int.
    games g1, g2, g3;//creating an object...memory is alocated here

    // Take input from user for sports
    cout << "Enter sport 1 details:" << endl;//cout prints the output stream of bits on screen
    g1.set();
    cout << "Enter sport 2 details:" << endl;//cout prints the output stream of bits on screen
    g2.set();
    cout << "Enter sport 3 details:" << endl;//cout prints the output stream of bits on screen
    g3.set();

    // Display details of sports
    cout << "\nSport 1 Details:" << endl;//cout prints the output stream of bits on screen
    g1.display();
    cout << "\nSport 2 Details:" << endl;//cout prints the output stream of bits on screen
    g2.display();
    cout << "\nSport 3 Details:" << endl;//cout prints the output stream of bits on screen
    g3.display();

    return 0;
}
```

9. Languages problem

```
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
```

```
using namespace std;//this std has all the standard libraries of c++
class languages//creating a class
{
    string language;
    double speakers;
    string country;
    public:
        void set(){//member function
            cout<<"Enter language:";//cout prints the output stream of bits on screen
            cin>>language;//cin belongs to input stream class
            cout<<"Country:";
            cin>>country;//cin belongs to input stream class
            cout<<"No. of speakers:";//cout prints the output stream of bits on screen
            cin>>speakers;//cin belongs to input stream class
        }
        void display(){//member functions
        cout<<endl;
        cout<<"Language :"<<language<<endl;//cout prints the output stream of bits on screen
        cout<<"Country:"<<country<<endl;//cout prints the output stream of bits on screen
        cout<<"Speakers"<<speakers<<endl;//cout prints the output stream of bits on screen
    }
};
int main(){// In C++, main( )always has return type of int.
    languages l1, l2, l3;//creating an object...memory is alocated here

    //User input
    cout<<"Enter language 1 details:"<<endl;//cout prints the output stream of bits on screen
    l1.set();
    cout<<"Enter language 2 details:"<<endl;//cout prints the output stream of bits on screen
    l2.set();
    cout<<"Enter language 3 details:"<<endl;//cout prints the output stream of bits on screen
```

```
    l3.set();

    l1.display();
    l2.display();
    l3.display();

    return 0;
};
```

10. Student details problem

```
#include <iostream>//iostreams which allow you to read from files and the keyboard, and to write to files and the
display
using namespace std;//this std has all the standard libraries of c++
class student//creating a class
{
    int semester;
    string name;
    int no_of_subjects;
    float total_marks;
    public:
        void set();//declaring the function
        float getAverage() { // Function to calculate average marks
        return total_marks / no_of_subjects;
    }

    void displayAverage() { // Function to display average marks
        cout << "Average marks of " << name << ": " << getAverage() <<endl;
    }
```

```
};
inline void student::set()//defining the function
{
    //member function
    cout<<"Enter your name:";//cout prints the output stream of bits on screen
    cin>>name;//cin belongs to input stream class
    cout<<"Enter semester:";//cout prints the output stream of bits on screen
    cin>>semester;//cin belongs to input stream class
    cout<<"No. of subjects:";//cout prints the output stream of bits on screen
    cin>>no_of_subjects;//cin belongs to input stream class
    cout<<"Total marks secured:";//cout prints the output stream of bits on screen
    cin>>total_marks;//cin belongs to input stream class
};

int main(){// In C++, main( )always has return type of int.
    student s1, s2, s3;//creating an object...memory is alocated here

    //Input data from user
    cout<<"Enter student 1 details:"<<endl;//cout prints the output stream of bits on screen
    s1.set();
    cout<<"Enter student 2 details:"<<endl;//cout prints the output stream of bits on screen
    s2.set();
    cout<<"Enter student 3 details:"<<endl;//cout prints the output stream of bits on screen
    s3.set();
    // Display average marks and complex numbers
    cout << "\nDisplaying average marks of student 1:" << endl;
    s1.displayAverage();
    cout << "\nDisplaying average marks of student 2:" << endl;
    s2.displayAverage();
    cout << "\nDisplaying average marks of student 3:" << endl;
    s3.displayAverage();
```

```
};
```