

C++ Composition-

Both composition and inheritance place subobjects inside your new class.

In real-life complex objects are often built from smaller and simpler objects. For example, a car is built using a metal frame, an engine some tires, a transmission system, a steering wheel, and a large number of other parts. A personal computer is built from a CPU, a motherboard, memory unit, input and output units, etc. even human beings are building from smaller parts such as a head, a body, legs, arms, and so on. This process of building complex objects from simpler ones is called c++ composition. It is also known as object composition.

So far, all of the classes that we have used had member variables that are built-in data type (e.g. int, float, double, char). While this is generally sufficient for designing and implementing small, simple classes, but it gradually becomes difficult to carry out from more complex classes, especially for those built from many sub-parts. In order to facilitate the building of complex classes from simpler ones, C++ allows us to do object C++ Composition in a very simple way by using classes as member variables in other classes.

A class can have one or more objects of other classes as members. A class is written in such a way that the object of another existing class becomes a member of the new class. this relationship between classes is known as C++ Composition. It is also known as containment, part-whole, or **has-a relationship**. A common form of software reusability is C++ Composition.

In C++ Composition, an object is a part of another object. The object that is a part of another object is known as a sub-object. When a C++ Composition is destroyed, then all of its subobjects are destroyed as well. Such as when a car is destroyed, then its motor, frame, and other parts are also destroyed with it. It has a do and die relationship.

```

1  #include<iostream>
2  using namespace std;
3  class Birthday{
4  private:
5      int day;int mnth;int year;
6  public:
7      void setDOB(int d,int m,int y) {
8          year=y;
9          mnth=m;
10         day=d;
11     }
12     void showDOB() {
13         cout<<" Your Date of birthday is "<<day<<"-"<<mnth<<"-"<<year<<endl;
14     }
15 };
16 class People{
17 private:
18     string name;
19     Birthday bd;
20 public:
21     People(string n, int d,int m,int y) {
22         name=n;
23         bd.setDOB(d,m,y);
24     }
25     void showInfo() {
26         cout<<"Hello Mr. "<<name;
27         bd.showDOB();
28     }
29 };
30 int main() {
31     People p1("Irfan",11,07,1993);
32     p1.showInfo();
33     People p2("Ali",01,03,1995);
34     p2.showInfo();
35
36     return 0;
37 };
38

```