

# Method Overloading and Method overriding C#

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## Background

In this article we will learn about one of the most reusable object oriented features of C#, Method Overloading and Method overriding . We will learn about Method Overloading and Method overriding from the basics because I have written this article focusing on students and beginners. Before proceeding further please refer to my previous articles for a better understanding.

Creating a multiple methods in a class with same name but different parameters and types is called as method overloading. method overloading is the example of Compile time polymorphism which is done at compile time.

- By changing the number of parameters used.
- By changing the order of parameters.
- By using different data types for the parameters.

e.g

```
1. public class Methodoverloading
2. {
3.     public int add(int a, int b)
4.     {
5.         return a + b;
6.     }
7.     public int add(int a, int b, int c)
8.     {
9.         return a + b + c;
10.    }
11.    public float add(float a, float b, float c, float d)
12.    {
13.        return a + b + c + d;
14.    }
15. }
```

In the above example, there are three methods with same method name but they differ with number of parameters and type of parameters, hence this type of methods is called as method overloading.

## FAQ of Method Overloading

Question- Can method overloading have same numbers of parameters and Name with different return types?

Answer- No, because conflict happens in methods while using the parameters.

Now let us learn about the Method overriding

### What is Method overriding ?

Creating the method in a derived class with same name, same parameters and same return type as in base class is called as method overriding.

Method overriding is the example of run time polymorphism, how it is the part of run time polymorphism I will explain in detail.

### Some Key Points of Method overriding

- Method overriding is only possible in derived class not within the same class where the method is declared.
- Only those methods are overridden in the derived class which are declared in the base class with the help of virtual keyword or abstract keyword.

e.g

```
1. public class Account
2. {
3.     public virtual int balance()
4.     {
5.         return 10;
6.     }
7. }
8. public class Amount:Account
9. {
10.    public override int balance()
11.    {
12.        return 500;
13.    }
14. }
```

### Output of the above Program is

- 10 and 500

In the above small program there are two classes Account and Amount and both the classes contain same method name that balance() in which Account class method returns 10 and Amount class returns 500 at run time because Account class method is overridden in a class Amount.

The Method overriding is very useful when we want to return different output of same method in different class according to the need.

Let us consider the example I want to provide the discount on particular product according to the Customer category that A,B,C in this scenario suppose A,B,C are the classes and Discount is the class which contains virtual CustDiscount () method, then I simply override it on class A,B,C instead of writing three different methods for each class.

I hope you understand about the Method overriding and Method overloading, In my next article we will see the real time examples of Method overriding and Method overloading.

## **Summary**

I hope this article is useful for all students and beginners. If you have any suggestion related to this article then please contact me.