



INTRODUCTION TO C#

Arctech Info Private Limited

Title Lorem Ipsum



LOREM IPSUM DOLOR SIT AMET,
CONSECTETUER ADIPISCING ELIT.



NUNC VIVERRA IMPERDIET ENIM.
FUSCE EST. VIVAMUS A TELLUS.



PELLENTESQUE HABITANT MORBI
TRISTIQUE SENECTUS ET NETUS.

Software Evolution

- Machine Language
- Assembly Language
- Procedure Oriented Programming
- Object Oriented Programming



```
box.breadth = b.length + c.length;  
box.height = b.breadth + c.bre  
return box;  
}  
using System;  
namespace C  
    class Box {  
        private double length; // Length of a box  
        private double breadth; // Breadth of a box  
        private double height; // Height of a box  
  
        public double getVolume() {  
            return length * breadth * height;  
        }  
        public void setLength( double len ) {  
            length = len;  
        }  
    }
```

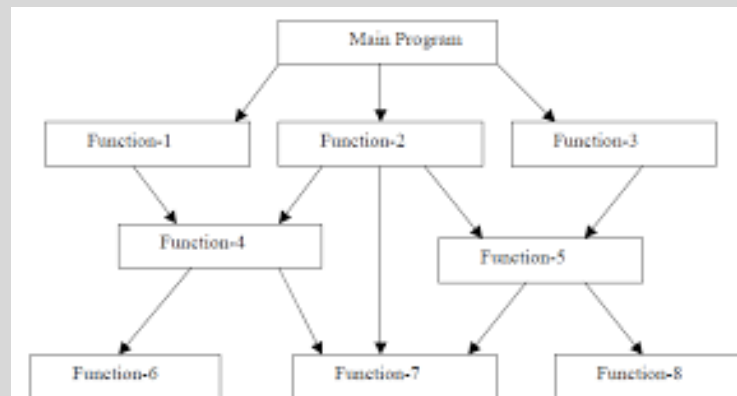


Fig. 1.2 Typical structure of procedural oriented programs

Machine Code

```
10011101000110100000  
01100011010001110110  
10000010111101101110  
11110110001011011000  
10000010011100011011  
10010011000111000000
```

```
01 DATA SEGMENT  
02 NUM1 DB 9H  
03 NUM2 DB 7H  
04 RESULT DB ?  
05 ENDS  
06  
07 CODE SEGMENT  
08 ASSUME DS:DATA CS:CODE  
09 START:  
10     MOV AX,DATA  
11     MOV DS,AX  
12  
13     MOV AL,NUM1  
14     ADD AL,NUM2  
15  
16     MOV RESULT,AL  
17  
18     MOV AH,4CH  
19     INT 21H  
20 ENDS  
21 END START  
22
```

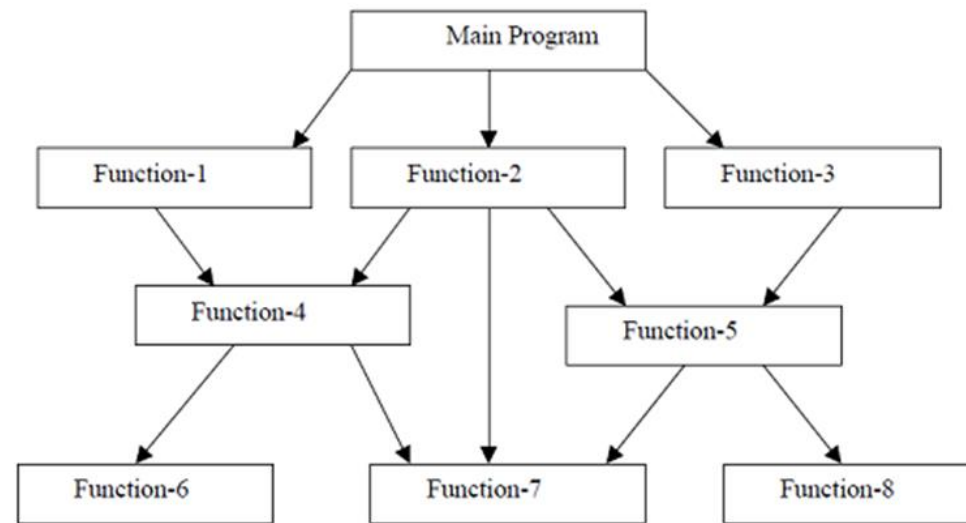
Introduction to C#

- C# is pronounced "C-Sharp".
- It is an object-oriented programming language created by Microsoft that runs on the .NET Framework.
- C# has roots from the C family, and the language is close to other popular languages like C++ and Java.
- The first version was released in year 2002. The latest version, C#10, was released in November 2021, along with .NET 6

Why use C#

- It is one of the most popular programming language in the world
- It is easy to learn and simple to use
- It has a huge community support
- C# is an object-oriented language which gives a clear structure to programs and allows code to be reused, lowering development costs
- As C# is close to C, C++ and Java, it makes it easy for programmers to switch to C# or vice versa

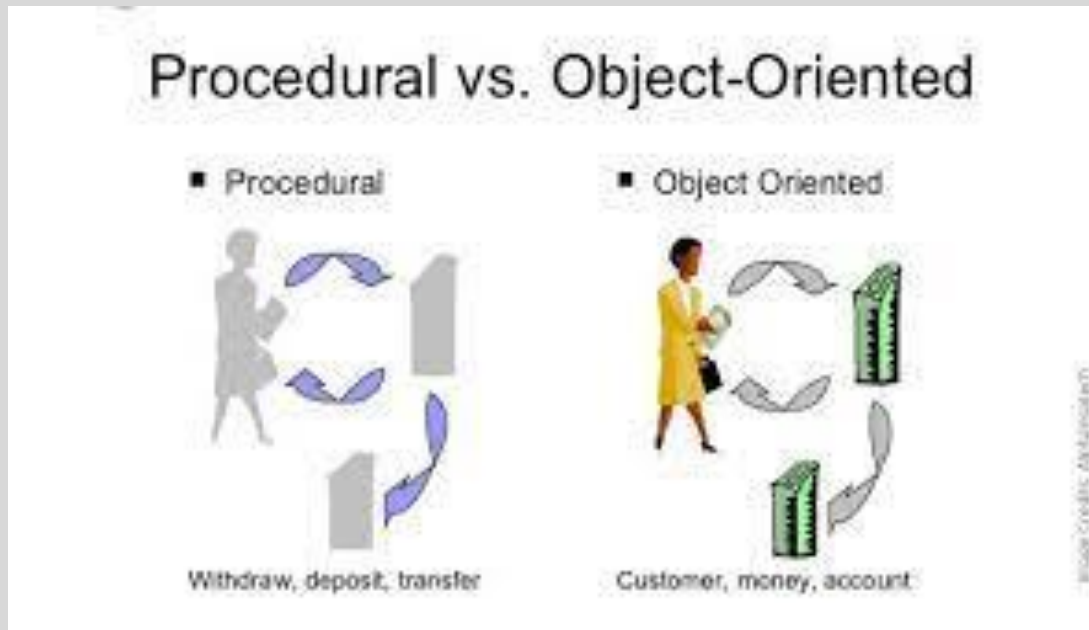
Procedure oriented programming



Structure of procedural oriented programs

- Emphasis on doing things
- Large programs are divided into smaller known functions
- Most functions share Global data
- Data move openly around the system

Object oriented programming Paradigm



- OOP is a programming paradigm based upon objects
 - having both data and methods
- Advantages of modularity and reusability.
- Objects, are instances of classes
- Object are used to interact with one another to design applications and computer programs.

Features of object-oriented programming

- Bottom-up approach in program design
- Programs organized around objects, grouped in classes
- Focus on data with methods to operate upon object's data
- Interaction between objects through functions
- Reusability of design through
 - creation of new classes
 - by adding features to existing classes

Class & Objects

User defined data type for objects are created with help of class
Objects are variables of the type class

Class

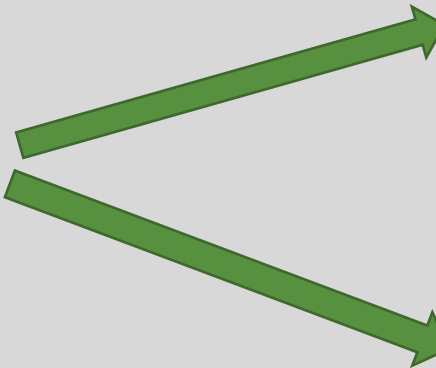
Person

Data
Member

Unique Id
Name
Age
City
Gender

Methods

Eat()
Study()
Sleep()
Play()

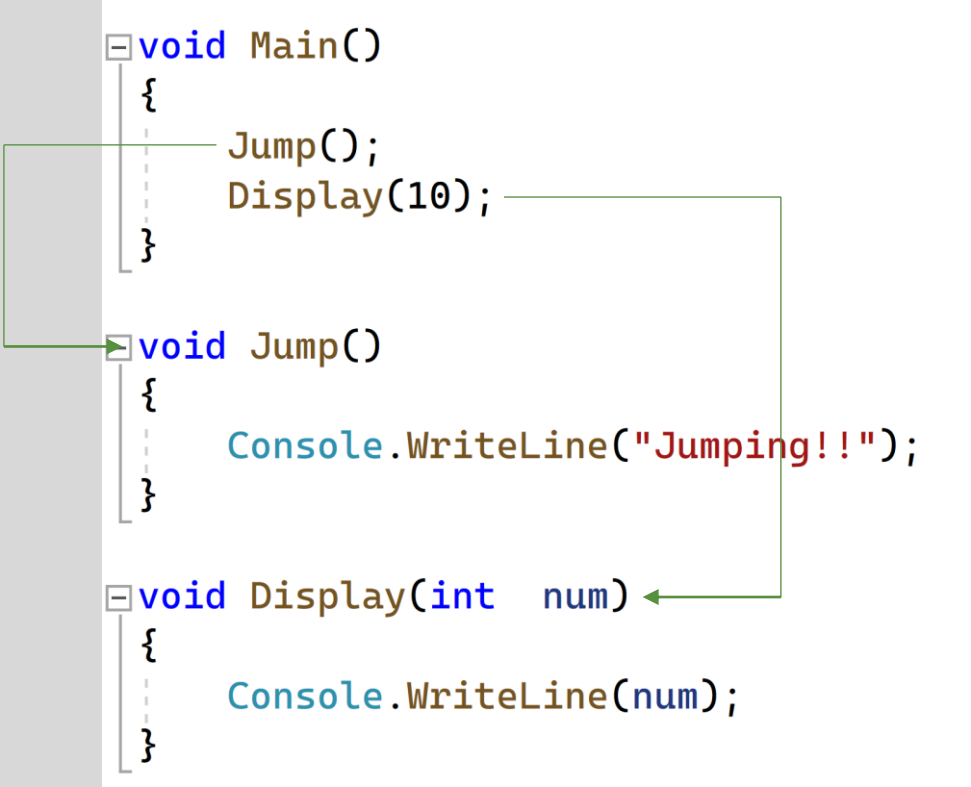


Unique Id: 1
Name: Jag
Age: 28
City: Mumbai
Gender: Male

Unique Id: 2
Name: Ramona
Age: 35
City: Ahmednagar
Gender: Female

Message Passing

- Objects communicate with one another by sending and receiving information from and to each other.
- OO Languages implement message passing with the help of methods.
- A message is simply a call to a method with 0 or more parameters.



```
void Main()
{
    Jump();
    Display(10);
}

void Jump()
{
    Console.WriteLine("Jumping!!");
}

void Display(int num)
{
    Console.WriteLine(num);
}
```

The diagram illustrates message passing between three methods: `Main()`, `Jump()`, and `Display(int num)`. A green line connects the `Jump()` call in `Main()` to the `Jump()` method definition. Another green line connects the `Display(10)` call in `Main()` to the `Display(int num)` method definition. A third green line connects the `Jump()` method definition to the `Display(int num)` method definition, indicating that `Jump()` calls `Display()`.