

## 14. Blocks

Blocks are the class members used for initializing member variables. There are of two types:

1. Static blocks
2. Non-Static blocks

### Static blocks:

Blocks are used to initialize static member variables and will be executed during class loading. It will be executed only once. We can declare any number of static blocks in the class and it gets executed sequentially.

Syntax:

```
static
{
---
----
}
```

### Non-Static blocks

Non-static blocks are used to initialize non-static member variables. These are executed during object creation, can declare any number of non-static blocks in a class it gets executed sequentially.

Syntax:

```
{
---
----
}
```

Inside static block we can access only static members directly. Inside non-static block we can access both static and non-static member directly.

Class A

```
{
1. Member variables(static/ non-static)
2. Member functions(Static/non-static)
3. Static block (Initialize static members)
4. Non-static block (Initialize non-static member variables)
5. Constructor
}
```

### Static Block

**class Block4**

```
{
static int a;

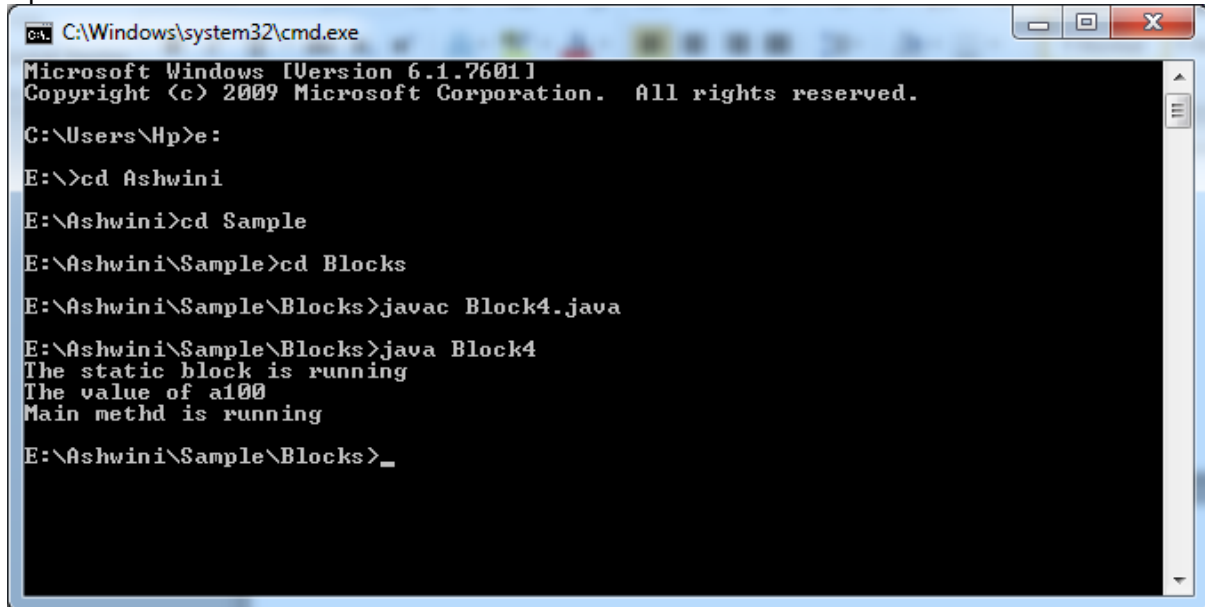
static
{
System.out.println("The static block is running");
a=100;
System.out.println("The value of a"+a);
}
```

```

public static void main(String args[])
{
System.out.println("Main methd is running");
}
}

```

Op



```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Hp>e:
E:\>cd Ashwini
E:\Ashwini>cd Sample
E:\Ashwini\Sample>cd Blocks
E:\Ashwini\Sample\Blocks>javac Block4.java
E:\Ashwini\Sample\Blocks>java Block4
The static block is running
The value of a100
Main methd is running
E:\Ashwini\Sample\Blocks>_

```

If a class contains main method and static block, first static block is called then main method is executed.

```

class Block5
{

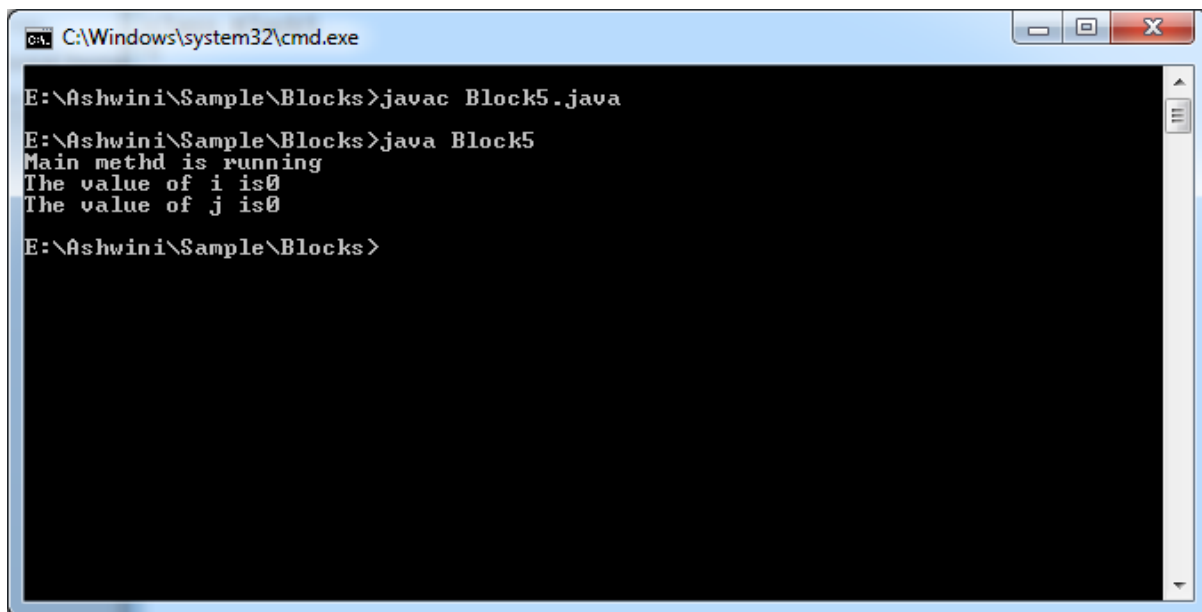
static int i; \\member variable
static int j;

static
{
int i=100; \\local variable
int j=200;
}

public static void main(String args[])
{
System.out.println("Main methd is running");
System.out.println("The value of i is"+i);

System.out.println("The value of j is"+j);
}
}

```



```
C:\Windows\system32\cmd.exe

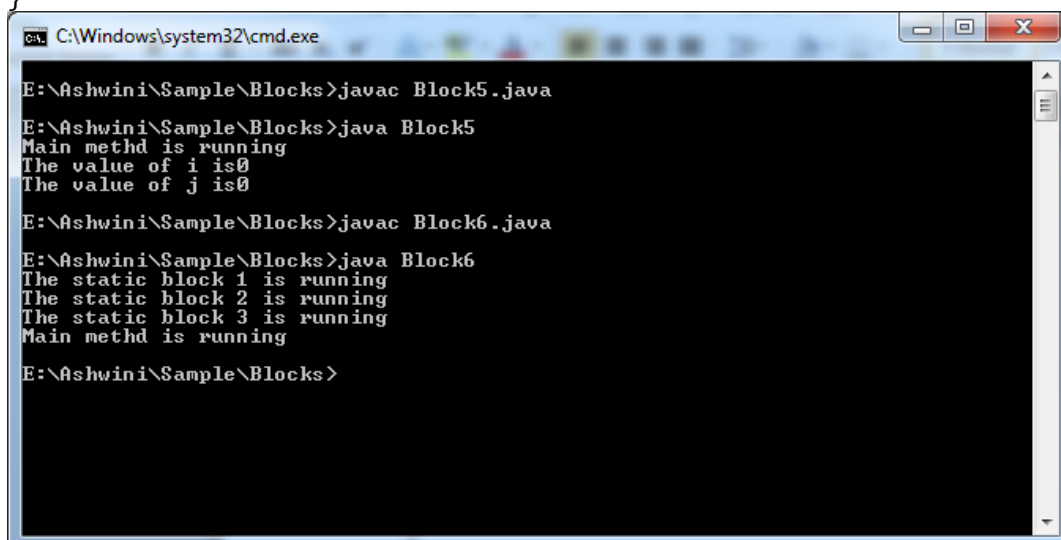
E:\Ashwini\Sample\Blocks>javac Block5.java

E:\Ashwini\Sample\Blocks>java Block5
Main methd is running
The value of i is0
The value of j is0

E:\Ashwini\Sample\Blocks>
```

Multiple static blocks:

```
class Block6
{
    static
    {
        System.out.println("The static block 1 is running");
    }
    static
    {
        System.out.println("The static block 2 is running");
    }
    static
    {
        System.out.println("The static block 3 is running");
    }
    public static void main(String args[])
    {
        System.out.println("Main methd is running");
    }
}
```



```
C:\Windows\system32\cmd.exe

E:\Ashwini\Sample\Blocks>javac Block5.java

E:\Ashwini\Sample\Blocks>java Block5
Main methd is running
The value of i is0
The value of j is0

E:\Ashwini\Sample\Blocks>javac Block6.java

E:\Ashwini\Sample\Blocks>java Block6
The static block 1 is running
The static block 2 is running
The static block 3 is running
Main methd is running

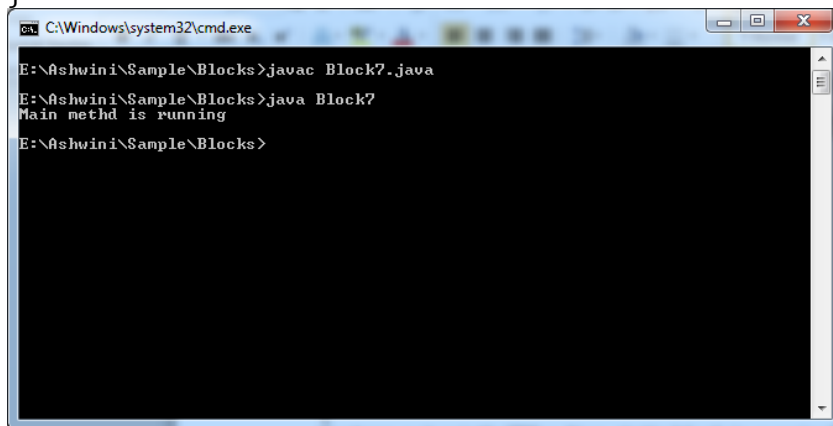
E:\Ashwini\Sample\Blocks>
```

### Non-static block

```
class Block7
{
int a;

{
System.out.println("The Non-static block is running");
a=100;
}

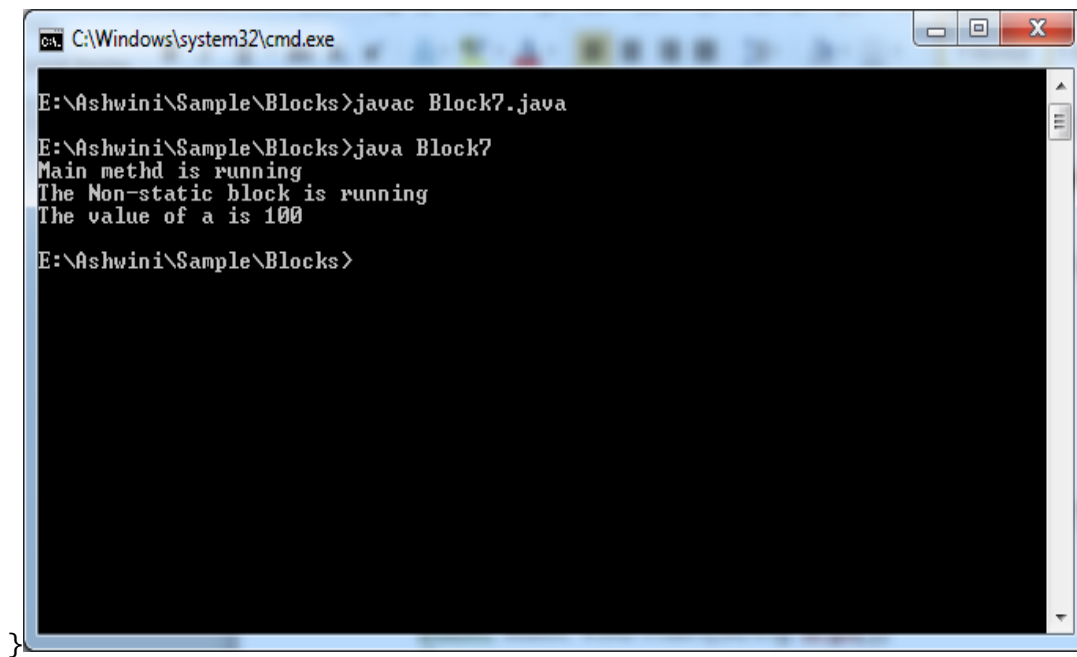
public static void main(String args[])
{
System.out.println("Main methd is running");
}
}
```



Since non-static is executed only on object creation, non-static is not called in the above example.

```
class Block7
{
int a;
{
System.out.println("The Non-static block is running");
a=100;
}
public static void main(String args[])
{
System.out.println("Main methd is running");
Block7 b=new Block7();
System.out.println("The value of a is "+b.a);
}
}
```

The static or non-static blocks need not be called explicitly, JVM will automatically executed the blocks.



```
C:\Windows\system32\cmd.exe

E:\Ashwini\Sample\Blocks>javac Block7.java

E:\Ashwini\Sample\Blocks>java Block7
Main methd is running
The Non-static block is running
The value of a is 100

E:\Ashwini\Sample\Blocks>
```

```
class Block8
{
int i;
int j;

static
{
System.out.println("The static block is running");
}
{
System.out.println("The Non-static block is running");
i=100;
j=200;
}
public static void main(String args[])
{
System.out.println("Main methd is running");
Block8 b=new Block8();
Block8 b1=new Block8();
}
}
```

Every time when an object is created the non-static block is executed, below is the output for the same.

```

C:\Windows\system32\cmd.exe
E:\Ashwini\Sample\Blocks>javac Block8.java
E:\Ashwini\Sample\Blocks>java Block8
The static block is running
Main method is running
The Non-static block is running
The Non-static block is running
E:\Ashwini\Sample\Blocks>

```

### Difference between static and non-static blocks:

Static	Non-static
1. Declared with keyword static	1. Not declared with keyword static
2. Executed only once	2. Executed on every time object creation
3. Executed on class loading	3. Executed on object creation.
4. Used to initialize static member variables.	4. Used to initialize non-static member variables.
5. an access only static variables directly.	5. Can access both non-static and static variables directly.

### Difference between method and blocks

Blocks	Methods
1. Executed explicitly	1. Should be called implicitly
2. cannot pass or return a value	2. Can pass or return a value

Prog to initialize student class variables:

```

class Block9
{
static String School_Name;
int id;
double Marks;
String student_name;

static
{
School_Name="Nirmala";
}

{
id=10;
Marks=70.0;
student_name="Alex";
}

public static void main(String args[])

```

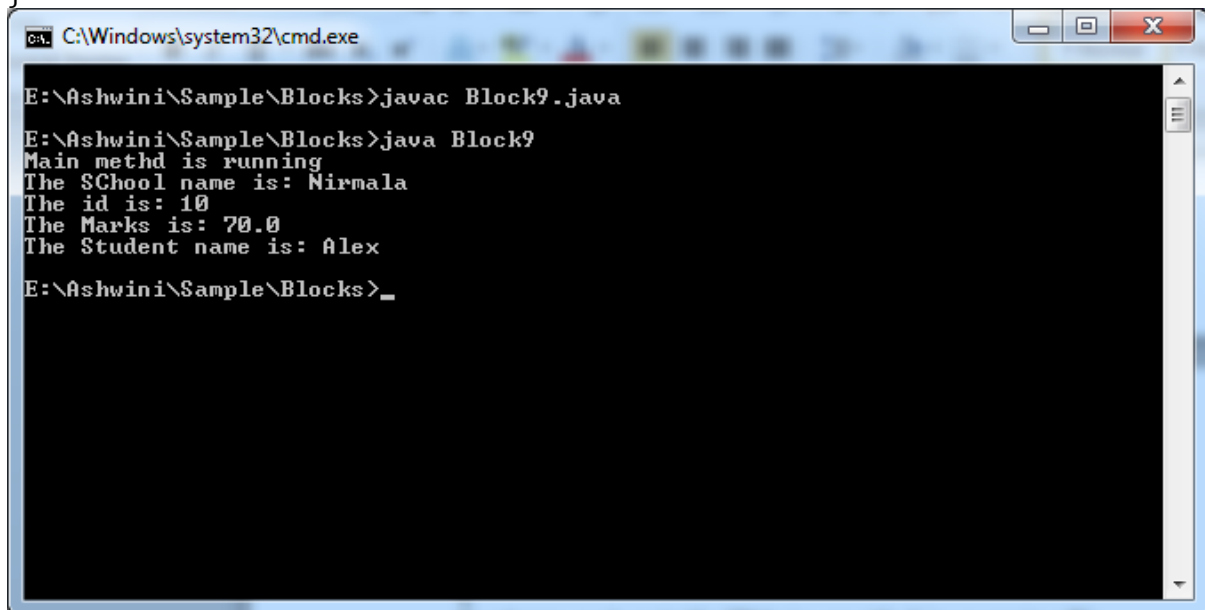
```

{
System.out.println("Main methd is running");

Block9 b=new Block9();
System.out.println("The SChool name is: "+ School_Name);

System.out.println("The id is: "+ b.id);
System.out.println("The Marks is: "+ b.Marks);
System.out.println("The Student name is: "+ b.student_name);
}
}

```



```

C:\Windows\system32\cmd.exe
E:\Ashwini\Sample\Blocks>javac Block9.java
E:\Ashwini\Sample\Blocks>java Block9
Main methd is running
The SChool name is: Nirmala
The id is: 10
The Marks is: 70.0
The Student name is: Alex
E:\Ashwini\Sample\Blocks>_

```

```

class Block1
{

String LaptopName;
double LaptopVersion;
int LaptopRam;

{
LaptopName= "Dell";
LaptopVersion=3.0;
LaptopRam=4;
}

public static void main(String args[])
{

Block1 b=new Block1();

System.out.println(" Name of the laptop: "+b.LaptopName);
System.out.println(" version of the laptop: "+b.LaptopVersion);
System.out.println(" Ram of the laptop: "+b.LaptopRam);
}
}

```

```
class Block2
{

String SongName;
double SongVersion;
String SongLanguage;

{
SongName= "Let it go";
SongVersion=1.0;
SongLanguage="English";
}

public static void main(String args[])
{

Block2 b=new Block2();

System.out.println(" Name of the Song: "+b.SongName);
System.out.println(" version of the Song: "+b.SongVersion);
System.out.println(" Ram of the Song: "+b.SongLanguage);
}
}

class Block3
{

String SmartcardName;
double SmartcardNumber;
String SmartcardType;

{
SmartcardName= "Adhar";
SmartcardNumber=1234232432;
SmartcardType="Digital";
}

public static void main(String args[])
{

Block3 b=new Block3();

System.out.println(" Name of the Smartcard: "+b.SmartcardName);
System.out.println(" Number of the Smartcard: "+b.SmartcardNumber);
System.out.println(" Ram of the Smartcard: "+b.SmartcardType);
}
}
```