

Scope

Definition

- The “Scope” of a variable, method, class, interface or package is the part of a program where it can be used.
- Outside its scope, a named entity does not exist and is not accessible.

Local scope

- Defined by a compound statement, delimited by { }
- Example:

```
public static void main(String[] args)
{
    int n = 2;
    int m = n+7;
    System.out.println("m = "+ m+ ", n = "+n+ ", m+n = "+ (m+n));
}
```

Delimiter of the scope for variables m and n

Example

```
class Factorial
{
    public static void main(String[] args)
    {
        int fact = 1 ;
        for (int n = 1 ; n <= 6 ; n++)
        {
            fact = fact*n;
        }
        System.out.println( "The value of 6! is " + fact);
    }
}
```

Delimiter of the scope for variable fact and the parameter args

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Example

```
class Factorial
{
    public static void main(String[] args)
    {
        int fact = 1 ;
        for (int n = 1 ; n <= 6 ; n++)
        {
            fact = fact*n;
        }
        System.out.println( "The value of 6! is " + fact);
    }
}
```

Delimiter of the scope for variable n

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Example

```
class Factorial
{
    public static void main(String[] args)
    {
        int fact = 1 ;
        for (int n = 1 ; n <= 6 ; n++)
        {
            fact = fact*n;
        }
        System.out.println( "The value of 6! is " + fact);
    }
}
```

Delimiter of the scope for method main

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Could I write?

```
class Factorial
{
    public static void main(String[] args)
    {
        int fact = 1 ;
        for (int n = 1 ; n <= 6 ; n++)
        {
            fact = fact*n;
        }
        System.out.println( "The value of " +(n-1) +"! is " + fact);
    }
}
```

NO!!!!

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Error

```
> javac Factorial.java
Factorial.java:10: Undefined variable: n
    System.out.println("The value of "+ (n-1)+"! is" + fact);
                                   ^
1 error
```

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An other example

```
int[] a2D = {{5,4,89},{7,98,-2},{9,100,4}};
for(int i = 0; i<a2D.length; i++)
{
    for(int j = 0; j<a2D[i].length; j++)
    {
        int k = i+j;
        if(a2D[i][j]==k)
        {
            Keyboard in = new Keyboard();
            System.out.println("Enter an integer");
            a2D[i][j] = in.readInteger();
        }
    }
}
```

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Life of i

```
int[] a2D = {{5,4,89},{7,98,-2},{9,100,4}};
for(int i = 0; i<a2D.length; i++)
{
    for(int j = 0; j<a2D[i].length; j++)
    {
        int k = i+j;
        if(a2D[i][j]==k)
        {
            Keyboard in = new Keyboard();
            System.out.println("Enter an integer");
            a2D[i][j] = in.readInteger();
        }
    }
}
```

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Life of k

```
int[] a2D = {{5,4,89},{7,98,-2},{9,100,4}};
for(int i = 0; i<a2D.length; i++)
{
    for(int j = 0; j<a2D[i].length; j++)
    {
        int k = i+j;
        if(a2D[i][j]==k)
        {
            Keyboard in = new Keyboard();
            System.out.println("Enter an integer");
            a2D[i][j] = in.readInteger();
        }
    }
}
```

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Life of in

```
int[] a2D = {{5,4,89},{7,98,-2},{9,100,4}};
for(int i = 0; i<a2D.length; i++)
{
    for(int j = 0; j<a2D[i].length; j++)
    {
        int k = i+j;
        if(a2D[i][j]==k)
        {
            Keyboard in = new Keyboard();
            System.out.println("Enter an integer");
            a2D[i][j] = in.readInteger();
        }
    }
}
```

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