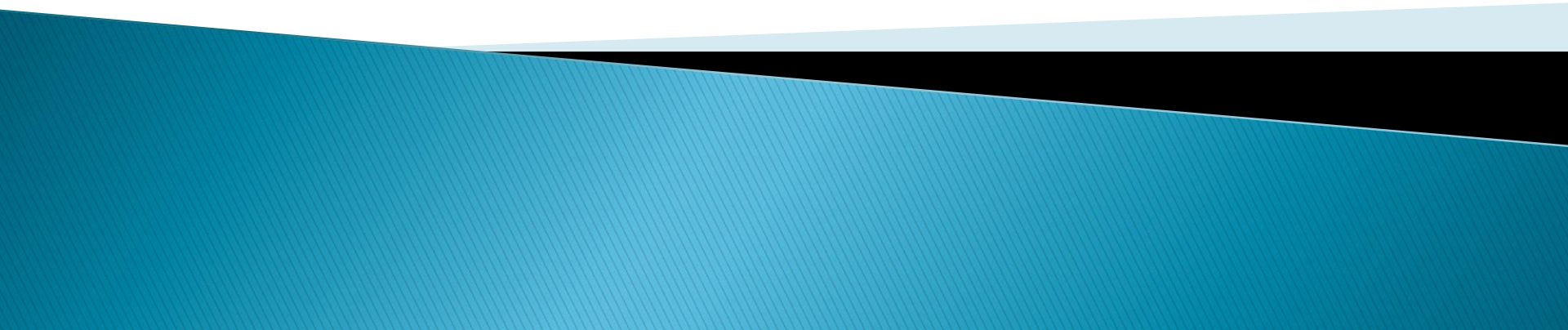


Introduction to Java

week#4

19/05/2023



week	Topic	Calendar
1	JAVA IDE (NetBean) Installation ,Configuration and Compile	3 - 7 April 2023
2	Basic structure of Java ,Data & Variable type, operator & basic logic	17 - 21 April 2023
3	Function(Method) create & calling, Input & output	20 - 24 April 2023
4	Loop statement ,Array variable	27 - 31 April 2023
5	Object-oriented programming (OOP),Class & Object, Encapsulation	1 - 5 May 2023
6	Inheritance, Polymorphism, Interfaces	8 - 12 May 2023
7	Packages, Access Modifiers(Public ,Protected ,Private class)	15 - 19 May 2023
8	Collections (Array list, HashMap, Stack)	22 - 26 May 2023
9	Exception	29 May - 2 June 2023
10	Working with files(Read, Write)	5 - 9 June 2023
11	Thread Programming	12 - 16 June 2023

Loop Statement

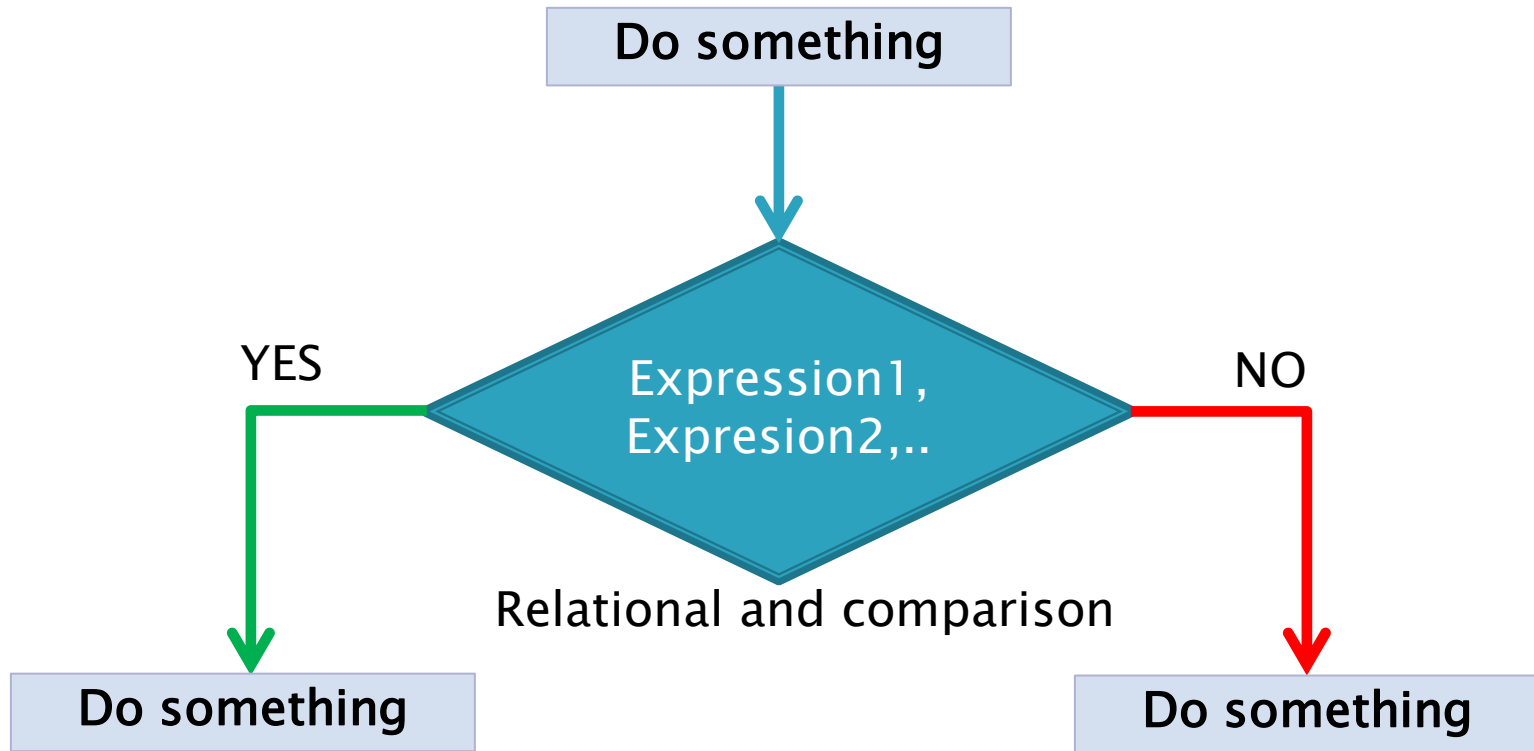
What is loop?

A programming structure that repeats a sequence of instructions until a specific condition is met

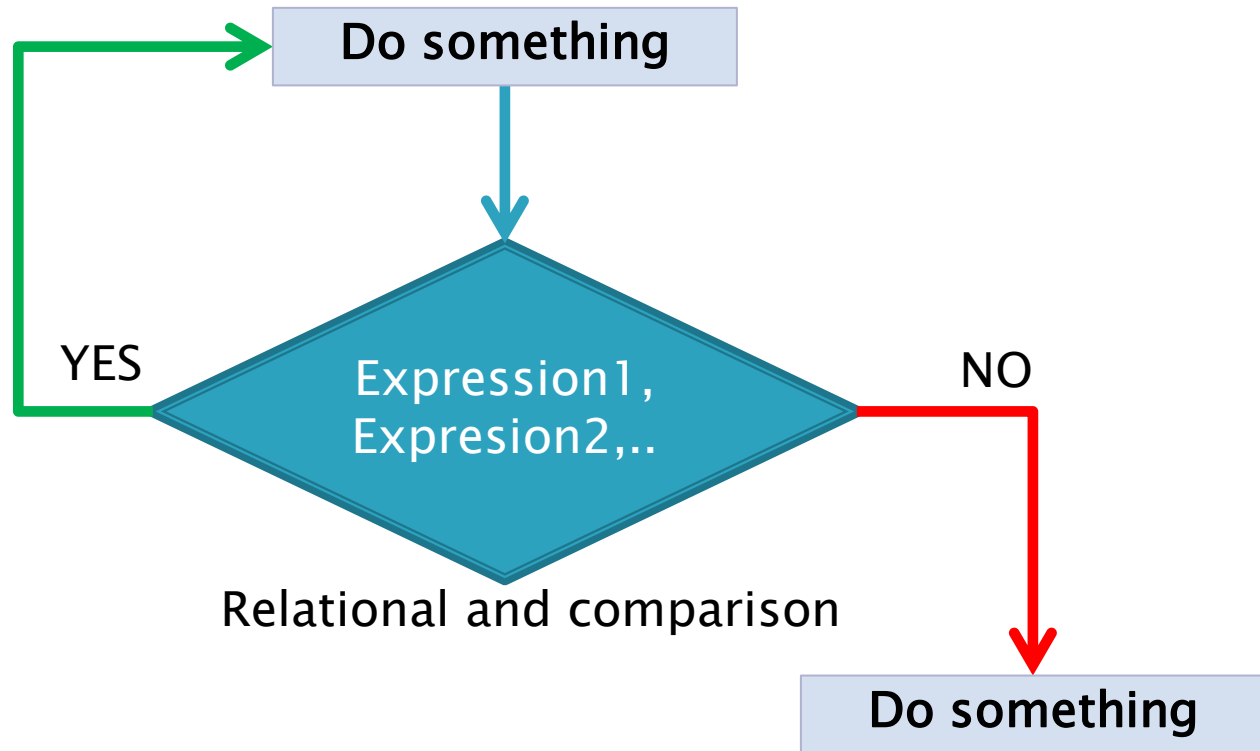


Loop Statement

Basic Logic



Loop Statement



Loop Statement

- While loop
 - Do-while loop
 - For loop
- 

While loop

```
while ( expression ) {  
    // statements  
}
```

While loop

```
public class WhileLoop {  
    public static void main(String[] args) {  
        int i = 1;  
        while ( i <= 10 ) {  
            System.out.print (i + ", ");  
            i++;  
        }  
        System.out.println("End");  
    }  
}
```

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, End

Do-While loop

```
do{  
  
    // statements  
  
}while ( expression );
```

Do-While loop

```
public class DoWhileLoop {  
    public static void main(String[] args) {  
        int i = 1;  
        do {  
            System.out.print (i + ", ");  
            i++;  
        } while ( i <= 10 );  
        System.out.println("End");  
    }  
}
```

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, End

For loop

```
For(initial : condition : update){  
    // statements  
}
```

For loop

```
public class ForLoop {  
    public static void main(String[] args) {  
        for (int i = 1; i <= 10; i++) {  
            System.out.print (i + ", ");  
        }  
        System.out.println("End");  
    }  
}
```

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, End

Nested For loop

```
public class ForLoop {  
    public static void main(String[] args) {  
        int width = 6;  
        int height = 6;  
        System.out.println("\tMatrix program");  
  
        for (int i = 1; i <= height ; i++) {  
            for (int j = 1; j <= width ; j++) {  
                System.out.print("\t" + (i * j));  
            }  
            System.out.println();  
        }  
    }  
}
```

Nested For loop

Matrix program

1	2	3	4	5	6
2	4	6	8	10	12
3	6	9	12	15	18
4	8	12	16	20	24
5	10	15	20	25	30
6	12	18	24	30	36

Loop interrupt & skip

- ▶ **break** statement

"jumps out" of a loop.

- ▶ **continue** statement

- "jumps over" one iteration in the loop.

Break command

```
public class BreakStatement {  
    public static void main(String[] args) {  
        int i = 1;  
        while (i <= 10) {  
            if (i == 7) {  
                break;  
            }  
            System.out.print(i + ", ");  
            i++;  
        }  
        System.out.println(" End");  
    }  
}
```

1, 2, 3, 4, 5, 6, End

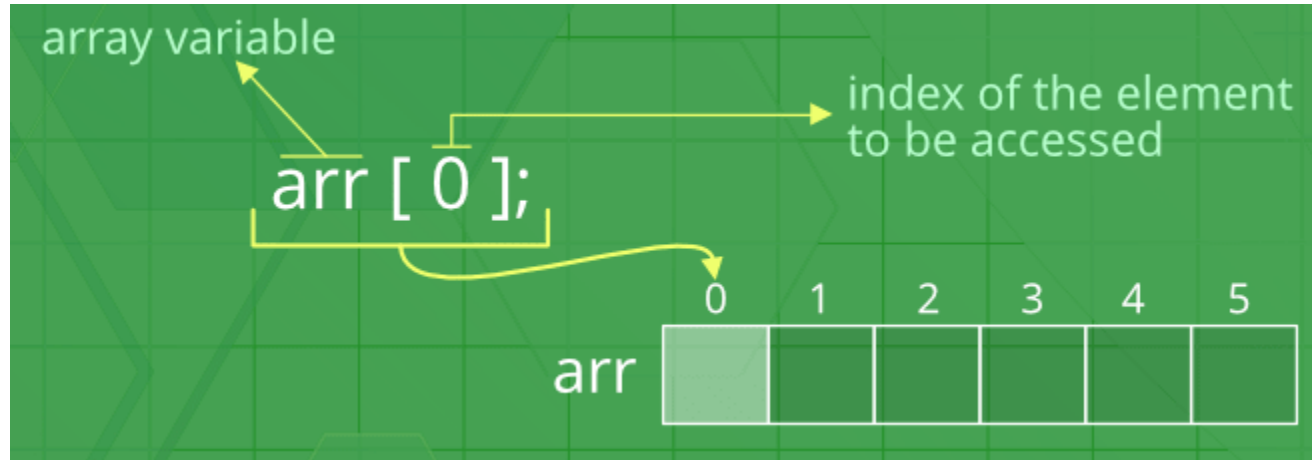
Continue command

```
public class ContinueStatement {  
    public static void main(String[] args) {  
        for (int i = 10; i >= 1; i--) {  
            if (i == 5) {  
                continue;  
            }  
            System.out.print(i + ", ");  
        }  
        System.out.println(" End");  
    }  
}
```

10, 9, 8, 7, 6, 4, 3, 2, 1, End

Array variable

An array is a collection of items of same data type stored at contiguous memory locations.



Array variable

a

5	6	10	13	56	76	1	2	4	8
---	---	----	----	----	----	---	---	---	---



b

'a'	'b'	'c'	'd'	'e'
-----	-----	-----	-----	-----



c

'a'	'b'	1	5.6	'e'	34	2	3
-----	-----	---	-----	-----	----	---	---



Array variable

```
int n1 = 10;  
int n2 = -20;  
int n3 = 30;  
int n4 = 40;  
int n5 = 60
```

 Not use array

Use array



```
int[] number = {10, -20, 30, 40, 60};
```

Array declaration

```
type[] name;
```

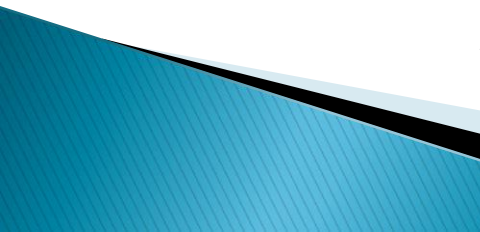
```
type[] name = new type[size];
```

```
type[] name = new type[]{value1, value2, ...};
```



Array usage

```
public class CreateArray {  
    public static void main(String[] args) {  
  
        int[] number = new int[4];  
  
        // assign value to array  
        number[0] = 10;  
        number[1] = 25;  
        number[2] = -8;  
        number[3] = -10;  
        // Get array size  
        System.out.println("Array size is " + number.length);  
  
        // Read values  
        System.out.println("number[0] = " + number[0]);  
        System.out.println("number[1] = " + number[1]);  
        System.out.println("number[2] + number[3] = " + (number[2] + number[3]));  
    }  
}
```



```
Array size is 4  
number[0] = 10  
number[1] = 25  
number[2] + number[3] = -18
```

Array usage

```
String[] names = new String[] { "Mateo", "Danny", "Janifer"};

// Using for loop reading from array
for (int i = 0; i < names.length; i++) {

    System.out.println("names[" + i + "] = " + names[i]);

}
```

```
names[0] = Mateo
names[1] = Danny
names[2] = Jenifer
```

2D Array

```
type [][] name = new type[ROW][COLUMN];
```


2D Array

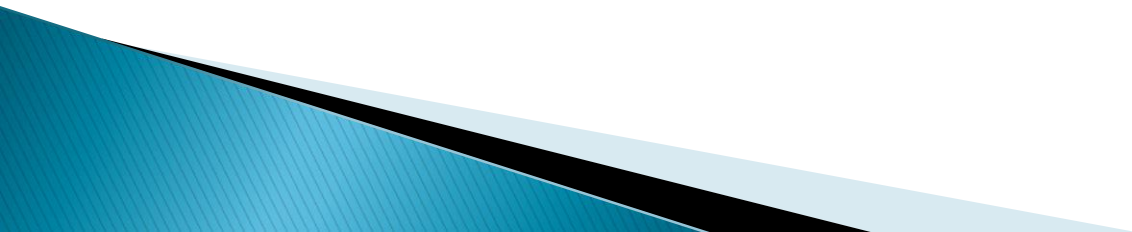
```
int [][] number = new int[4][4];
```

```
char [][] c = new char[][] { {'A', 'B', 'C'}, {'D', 'E', 'F'} };
```

nD Array (multi-dimension)

```
int[][][] threeDimension = new int[3][4][5];
```

```
int[] ... [] multiDimension = new int[dim_1] ... [dim_n];
```



► Assignments

สร้าง loop program ที่แสดงผลดังรูป

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
6 6 6 6 6 6
```

```
8 7 6 5 4 3 2 1
1 2 3 4 5 6 7
6 5 4 3 2 1
1 2 3 4 5
4 3 2 1
1 2 3
2 1
1
```

Thank you

