Flow Control Statements

Agenda

1 **Flow Control**

Flow Control

Control Statements

- Control statements are statements which alter the normal execution flow of a program

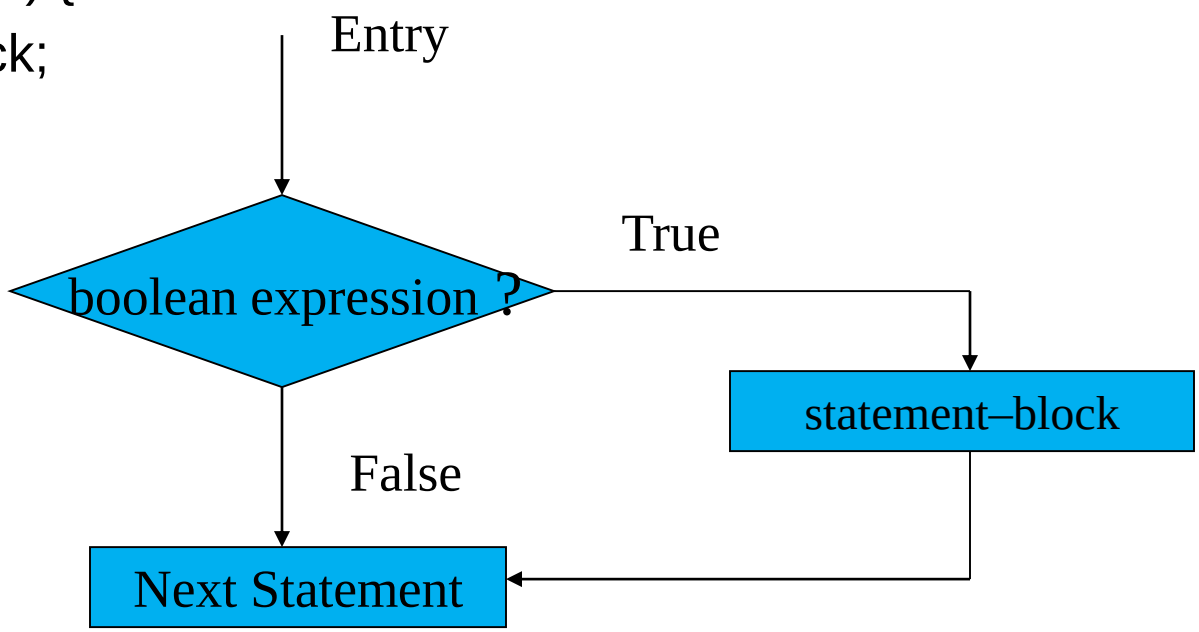
- There are three types of Control Statements in java

Selection statement	Iteration Statement	Jumping Statement
if	while	break
if – else	for	continue
switch	do – while	return

Simple if statement

syntax :

```
if(boolean expression) {
        statement–block;
 }
 Next statement;
```



If - Example

```
/* This is an example of a if statement */

    public class Test {
       public static void main(String args[]) {
            int x = 5;
            if( x < 20 ) {
                 System.out.print("This is if statement");
            }
       }
    }
```

Output:

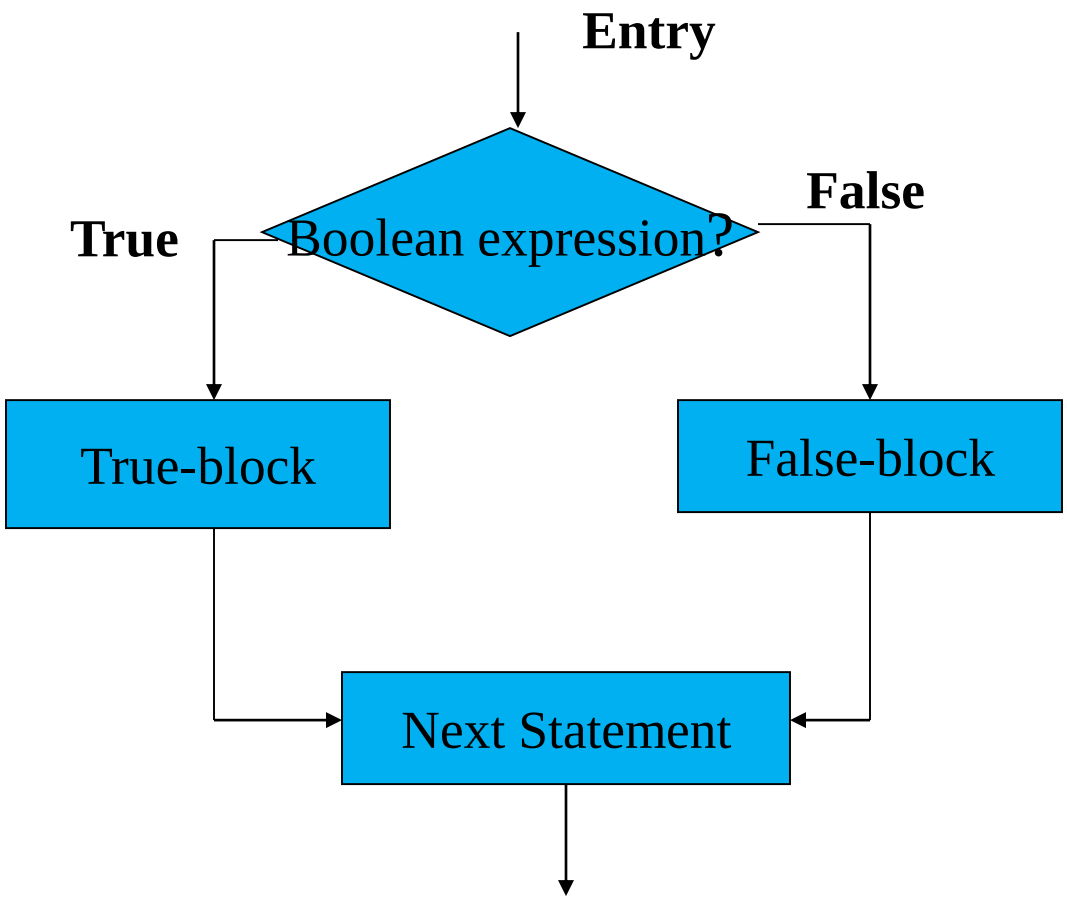
This is if statement

If..else statement

The if….else statement is an extension of simple if statement

Syntax,

```
if(boolean expression)
 {
     True-block statements;
 }
 else
 {
     False-block statements;
 }
 Next statement;
```



If – else Example

```
/* program to check given age input is eligible to vote or not using if-else*/

        public class Check {
            public static void main(String[ ] args) {
                int age;
                age = Integer.parseInt(args[0]);
                if(age>18) {
                    System.out.println("Eligible to vote");
                }
                else {
                    System.out.println("Not eligible to vote");
                }
            }
        }
```

Cascading *if- else*

- **Syntax:**

```
if (condition1)  {
        statement-1
}
….
else if(conditio-n) {
        statement-n
}
else {
        default statement
}
next statement
```

else - if Example

```
/* program to print seasons for a month input using if & else if */
public class ElseIfDemo {
   public static void main(String[] args) {
      int month = Integer.parseInt(args[0]);
      if(month == 12 || month == 1 || month == 2)
            System.out.println("Winter");
      else if(month == 3 || month == 4 || month == 5)
            System.out.println("Spring");
      else if(month == 6 || month == 7 || month == 8)
            System.out.println("Summer");
      else if(month == 9 || month == 10  || month == 11)
            System.out.println("Autumn");
      else
            System.out.println("invalid month");
   }
}
```

If args[0] is 6 then the Output is : Summer

Switch Case

- The switch-case conditional construct is a more structured way of testing for multiple conditions rather than resorting to a multiple if statement

Syntax:

```
switch (expression)       {
            case value-1 : case-1 block
                                    break;
           case value-2 : case-2 block
                                    break;
                default  : default block
                                    break;
        }
statement-x;
```

Switch Case - Example

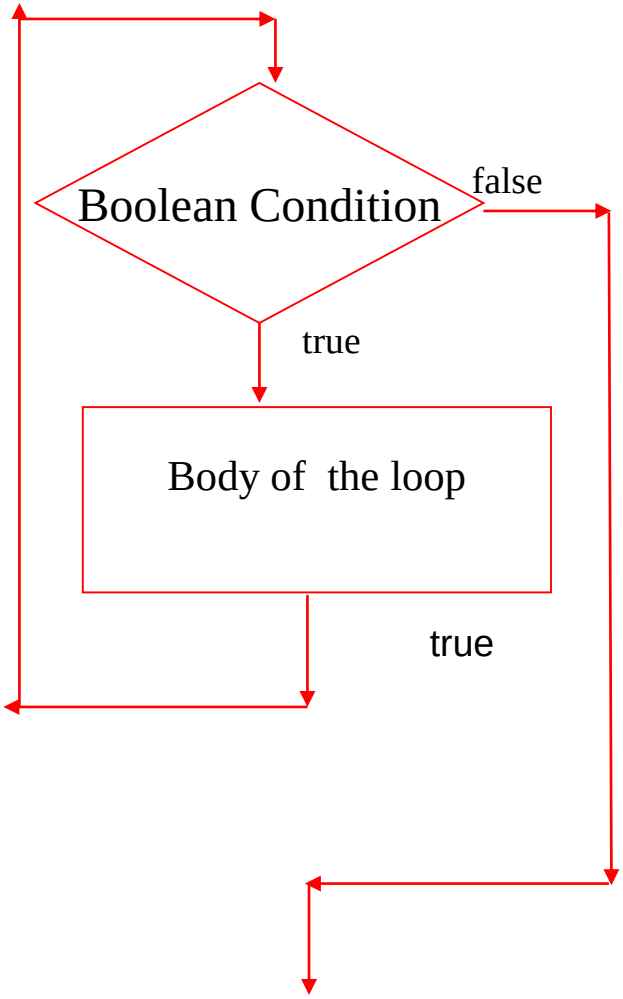
```
/* This is an example of a switch case statement*/
public class SwitchDemo {
    public static void main(String[] args) {
        int weekday = Integer.parseInt(args[0]);
        switch(weekday) {
            case 1:   System.out.println("Sunday");  break;
            case 2:   System.out.println("Monday"); break;
            case 3:   System.out.println("Tuesday"); break;
            case 4:   System.out.println("Wednesday"); break;
            case 5: System.out.println("Thursday");  break;
            case 6:   System.out.println("Friday");  break;
            case 7:   System.out.println("Saturday");  break;
            default:  System.out.println("Invalid day");
        }
    }
}
```

If args[0] is 6 then the Output is : Friday

While loop

- **Syntax**

```
while(condition)
{
    Body of the loop
}
```



while loop – Example

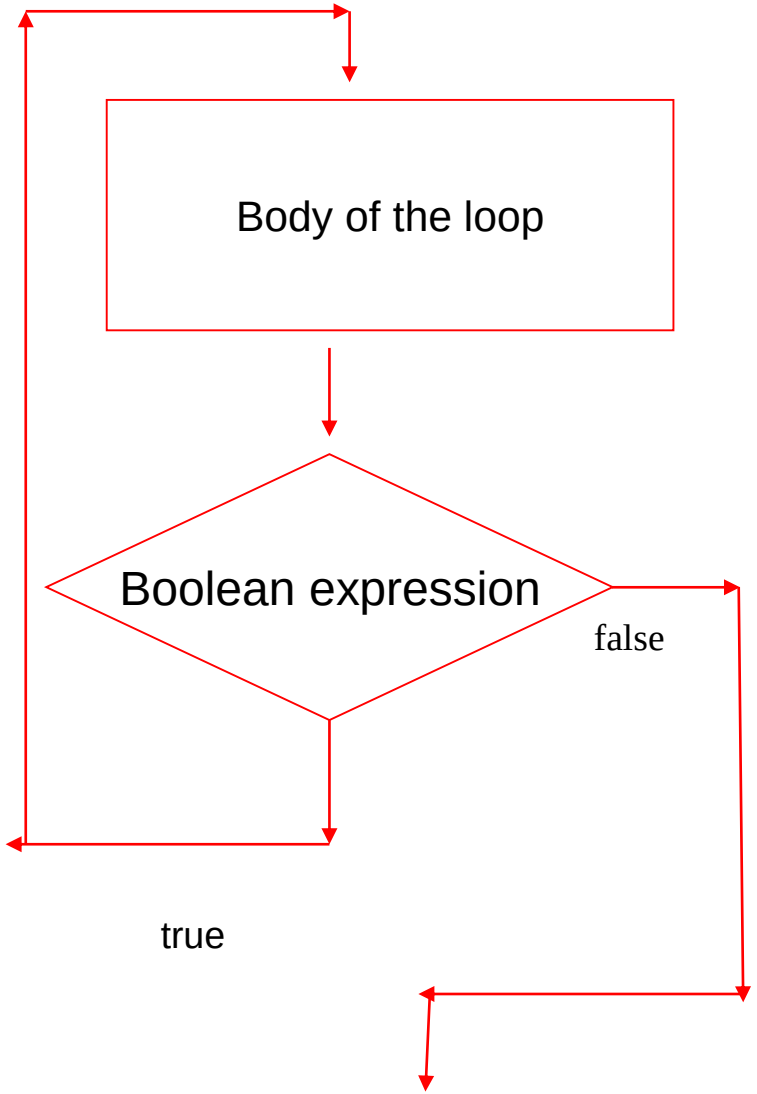
```
/* This is an example for a while loop */
    public class Sample{
        public static void main(String[] args) {
            int i = 0;
            while (i < 5) {
                System.out.println("i: "+i);
                i = i + 1;
            }
        }
}
```

Output:
i: 0
i: 1
i: 2
i: 3
i: 4

do-while loop

- **Syntax:**

```
do
{
    Body of the loop
} while(boolean expression);
```



do…while loop – Example

```
/* This is an example of a do-while loop */
public class Sample {
   public static void main(String[] args) {
      int i =5;
      do {
            System.out.println("i: "+i);
            i = i + 1;
      } while (i < 5);
   }
}
```

Output:
i: 5

For loop

Syntax

```
for(initialization;condition;increment/decrement) {
      Body of the loop
}
```

For loop - Example

```
/* This is an example of a for loop */

public class Sample {
   public static void main(String[] args) {
      for (int  i=1; i<=5; i++ ) {
                  System.out.println("i: "+i);
      }
   }
}
```

Output:
i: 1
i: 2
i: 3
i: 4
i: 5

Enhanced for loop

Syntax:

```
for(declaration : expression)  {
      Body of loop
}
```

Enhanced for loop - Example

```
/* This is an example of a enhanced for loop */

public class Sample {
   public static void main(String[] args) {
      int [] numbers = {10, 20, 30, 40, 50};
      for(int i : numbers ) {
            System.out.println( "i: "+i );
      }
   }
}
```

Output:

```
i:10
i:20
i: 30
i:40
i:50
```

break statement

- While the execution of program, the break statement will terminate the iteration or switch case block
- When a break statement is encountered in a loop, the loop is exited and the program continues with the statements immediately following the loop
- When the loops are nested, the break will only terminate the corresponding loop body

break - Example

```
/* This is an example of a break statement */

public class Sample{
   public static void main(String[] args) {
      for (int  i=1; i<=5; i++ ) {
            if(i==2)
                 break;
            System.out.println("i: "+i);
      }
   }
}
```

Output:
i: 1

continue statement

- The continue statement skips the current iteration of a loop
- In while and do loops, continue causes the control to go directly to the test-condition and then continue the iteration process
- In case of for loop, the increment section of the loop is executed before the test-condition is evaluated

Continue - Example

```
/* This is an example of a continue loop */

public class Sample {
   public static void main(String[] args) {
      int [] numbers = {1, 2, 3, 4, 5};
      for(int i : numbers ) {
            if( i == 3 ) {
                  continue;
            }
            System.out.println( "i: "+i );
      }
   }
}
```

Output:
i: 1
i:2
i:4
i:5

Good Programming Practices

if statement

- Always use {} for if statements
- Avoid the following error prone

```
if (condition)        //ERROR
   statement;
```

switch-case statement

Number per Line

- One declaration per line is recommended

```
int height;
int width;
```

is preferred over

```
int height,width;
```

Do not put different types on the same line

```
int height,width[];     //WRONG
```

Quiz

What will be the result, if we try to compile and execute the following code

```
class Sample{
   public static void main(String[]args) {
          boolean b = true;
        if(b){
          System.out.println(" if block ");
        }
        else {
          System.out.println(“ else block ");
        }
}
}
```

Quiz

What will be the result, if we try to compile and execute the following code snippets

1.
```
class Sample {
    public static void main(String[] args) {
        while(false)
            System.out.println("while loop");
    }
}
```
2.
```
class Sample {
    public static void main(String[] args) {
        for( ; ; )
            System.out.println("For loop");
    }
}
```

Summary

In this session, you were able to :

- Learnt the various Flow control statements

Thank You