Java Course
Lecture 1 - Primitive types and if-else statements

IT Learning &
Outsourcing Center

www.pragmatic.bg

As I said… NO FEAR!

Variables

- Variables in java
  - It's purpose is to hold information
  - Have an unique name
  - Have a type
  - Have a value (can be changed)
- Declaring variable

Primitive Types in Java

- Primitives are basic java type
- Primitives can be used with basic operations
- Primitives' values can be assigned to variables

- Primitive types in java
  - byte, short, int, long
  - float, double
  - boolean
  - char

Numeric Types

- Numeric types are **byte, short, long, int, double, float**
- **byte – 8b (-128 : 127)**

```
byte b = 100;
```

- **short – 16b (-32768 : 32767)**

```
short s = 10000;
```

- **int – from integer, 32b (-2^31 : 2^31-1)**

```
int i = 10000;
```

Numeric Types

- **long – 64b (-2^63 | 2^63-1)**

```
long l = 100;
```

l is added as a suffix to indicate long type

- **float - precision to 32b**

```
float f = 3.14f;
```

f is added as a suffix to indicate float type

- **double – precision to 64b**

```
double d= 3.14;
```

char and boolean

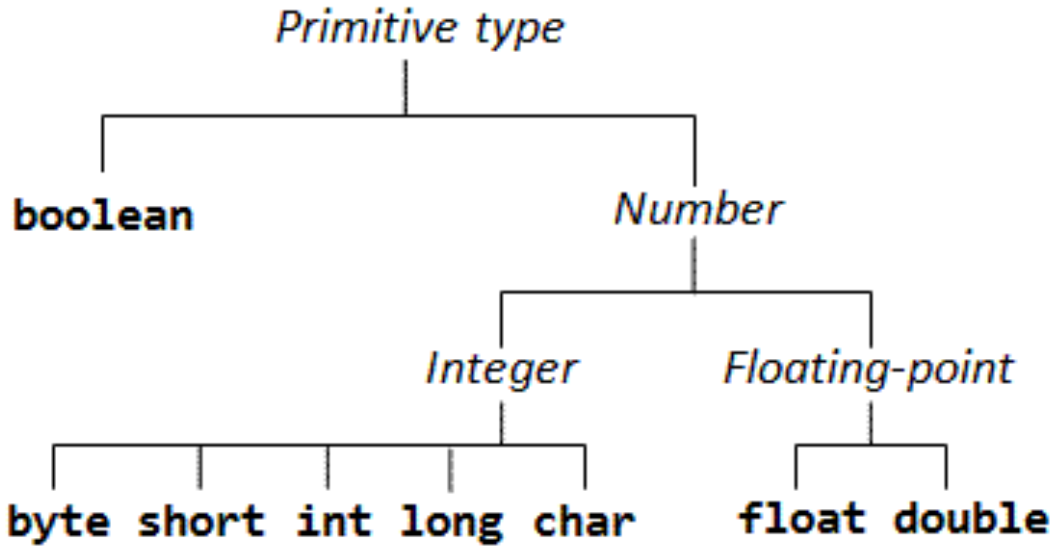
- char is used for 16b unicode character

Char values are embedded in ' '

```
char ch = 'c';
```

- boolean has two values - true or false

```
boolean bool = false;
```



Primitives default values

Data type	Default value
byte	0
short	0
int	0
long	0
float	0.0
double	0.0
char	'\u0000'
boolean	false

Operators

Arithmetic operators

Operator	Result
+	Addition
–	Subtraction (also unary minus)
*	Multiplication
/	Division
%	Modulus
++	Increment
+=	Addition assignment
–=	Subtraction assignment
*=	Multiplication assignment
/=	Division assignment
%=	Modulus assignment
– –	Decrement

Compound assignment operators

Try using some of them and print the result in console

Example:

- Calculate the sum of 2 integers

```
public class  HelloWorld {
      public static void main(String[] args) {
            int firstInt = 2;
            int secondInt = 4;
            int result = firstInt + secondInt;
            System.out.println(result);
            //increase the sum with 1.
            result++;
            //increase the sum with 5.
            result+=5 ; //same as
result=result+5;
            System.out.println(result);
      }
```

Reading from console

Using Scanner

```
Scanner sc = new Scanner(System.in);
```

Read user input with sc.nextXXX();

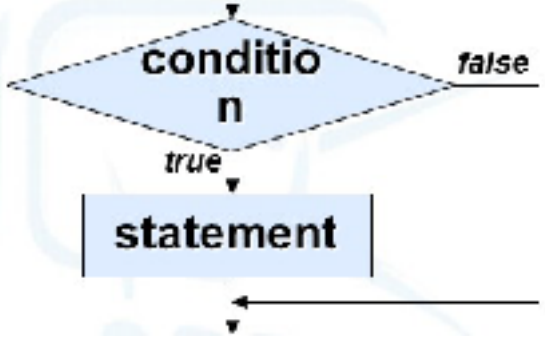
```
sc.nextInt();
sc.nextDouble();
sc.nextLong();
```

Control flow

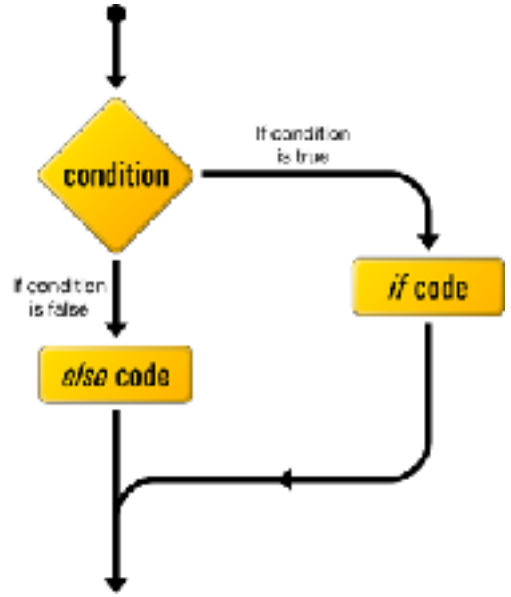
- Control flow is the way a program goes – execution of predefined statements
- Control flow may differ each time in dependence of conditions – either input data, or predefined conditions by the programmer(i.e – time and so on)
- During the program execution decisions are being met – the program flow branches

if-else statement

```
if (condition)  {
statement
}
```




```
if (condition)  {
executionA
} else {
executionB
}
```



if-else statement

- If can exist without else

But

- Else can't exist without if
- Nested if-else statement

```
double a = 7.5;
if (a < 0) {
        System.out.println("a is smaller than 0");
} else {
        if (a == 0) {
        System.out.println("a is 0");
        } else {
        System.out.println("a is bigger than 0");
        }
}
```

Blocks

A block is a group of zero or more statements between balanced braces and can be used anywhere a single statement is allowed

```
if (a > 10) {
        System.out.println("a is " + a);
        System.out.println("a is bigger than 10");
} else {
        System.out.println("a is not bigger than 10");
}
```

Always format your code! Do NOT write code like this:

```
if (a > 10) {
        System.out.println("a is " + a);
        System.out.println("a is bigger than 10");}
else {
        System.out.println("a is not bigger than 10");
}
```

Mistake

```
int a = 7;
if (a > 10); {
    System.out.println("a is " + a);
    System.out.println("a is bigger than 10");
}
```

In these cases println statements will be executed no matter the condition!

```
int a = 7;
if (a > 10);
{
    System.out.println("a is " + a);
    System.out.println("a is bigger than 10");
}
```

Conditional statement & Unary operators

- Unary NOT operator !
- Conditional AND &&
- Conditional OR ||

x	y	x AND y	x OR y	NOT x
TRUE	TRUE	TRUE	TRUE	FALSE
TRUE	FALSE	FALSE	TRUE	
TRUE	NULL	NULL	TRUE	
FALSE	TRUE	FALSE	TRUE	TRUE
FALSE	FALSE	FALSE	FALSE	
FALSE	NULL	FALSE	NULL	
NULL	TRUE	NULL	TRUE	NULL
NULL	FALSE	FALSE	NULL	
NULL	NULL	NULL	NULL	

Conditional statements

Example :

```
int a = 10;
if (a > 10 && a < 100) {
        System.out.println(" >10 && < 100" );
} else if( a > 100 && a < 1000) {
        System.out.println(" >100 && < 1000" );
} else if( a <= 10 || a > 1000 {
        System.out.println(" <=10 || > 0100" );
} else {
        System.out.println("…"); //when we will be here?
}
```

Conditional statements

Example :

```
int a = 10;
if (a > 10 && a < 100) {
        System.out.println(" >10 && < 100" );
} else if( a > 100 && a < 1000) {
        System.out.println(" >100 && < 1000" );
} else if( a <=10 || a > 1000 {
        System.out.println(" <=10 || > 0100" );
} else {
//for example we will hit this else in cases like 100..
and 1000…
}
```

Link to read !

- http://docs.oracle.com/javase/tutorial/java/nutsandbolts/datatypes.html

Q and A ?

Problems

- What's a variable ?
- Name all primitive types in java ?
- What's the difference between char and string ?
- What the difference between logical AND and logical OR ?
- How does java specify a code block ?
- Write a short program that determines the surface of a right triangle ?