Lab 01: Basic Building Blocks of Java

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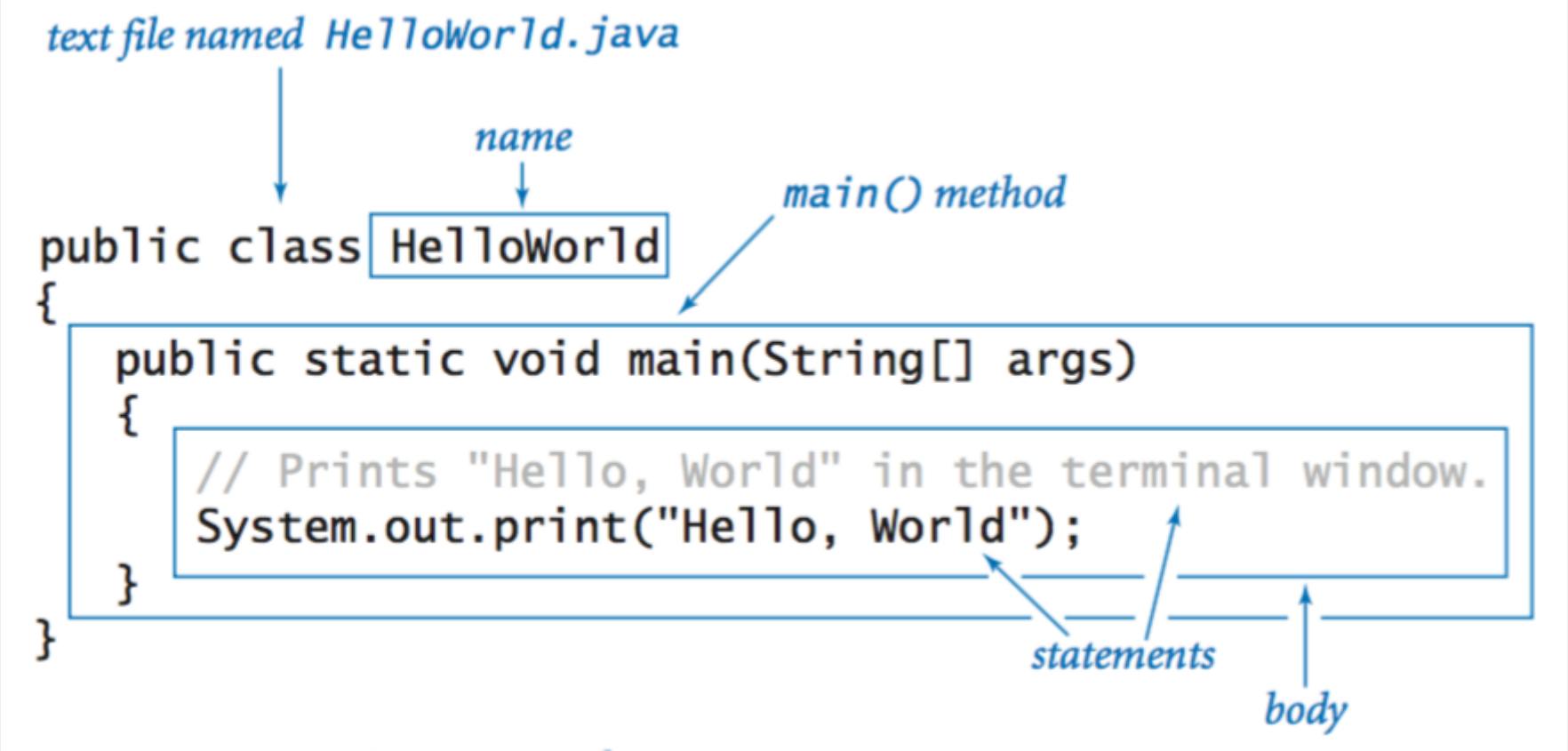
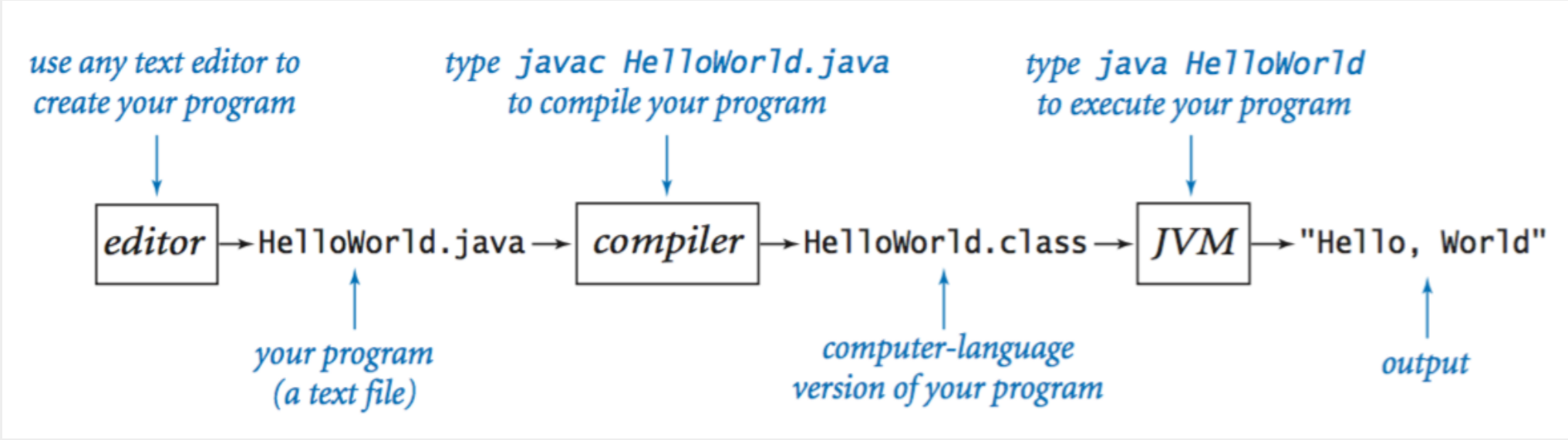
Course webpage
http://www.mkbhandari.com/mkwiki

Sample Hello World prgram

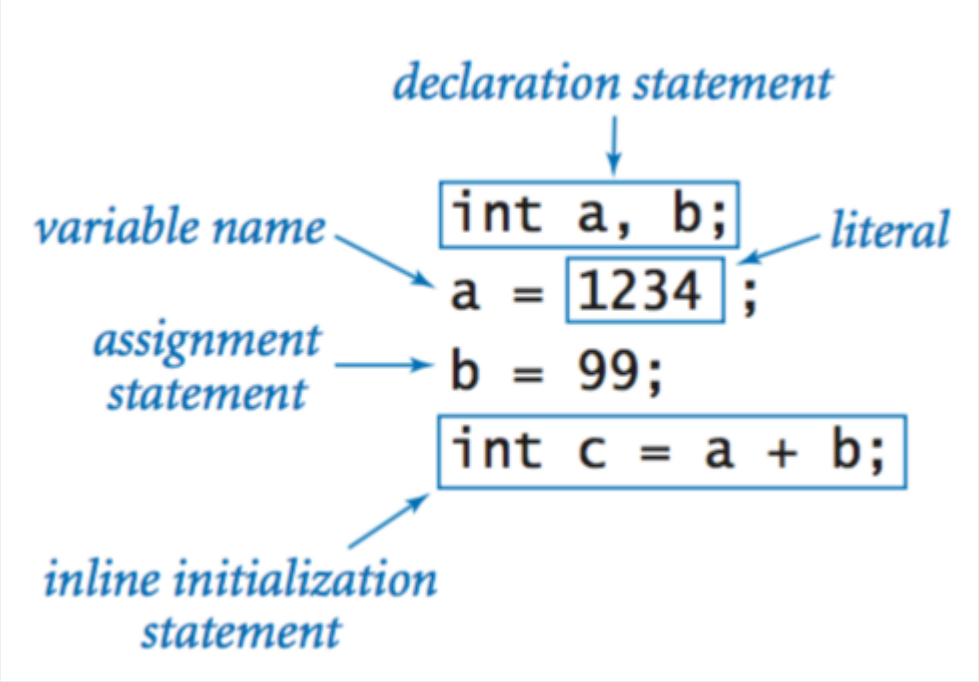


Editing, compiling, and executing

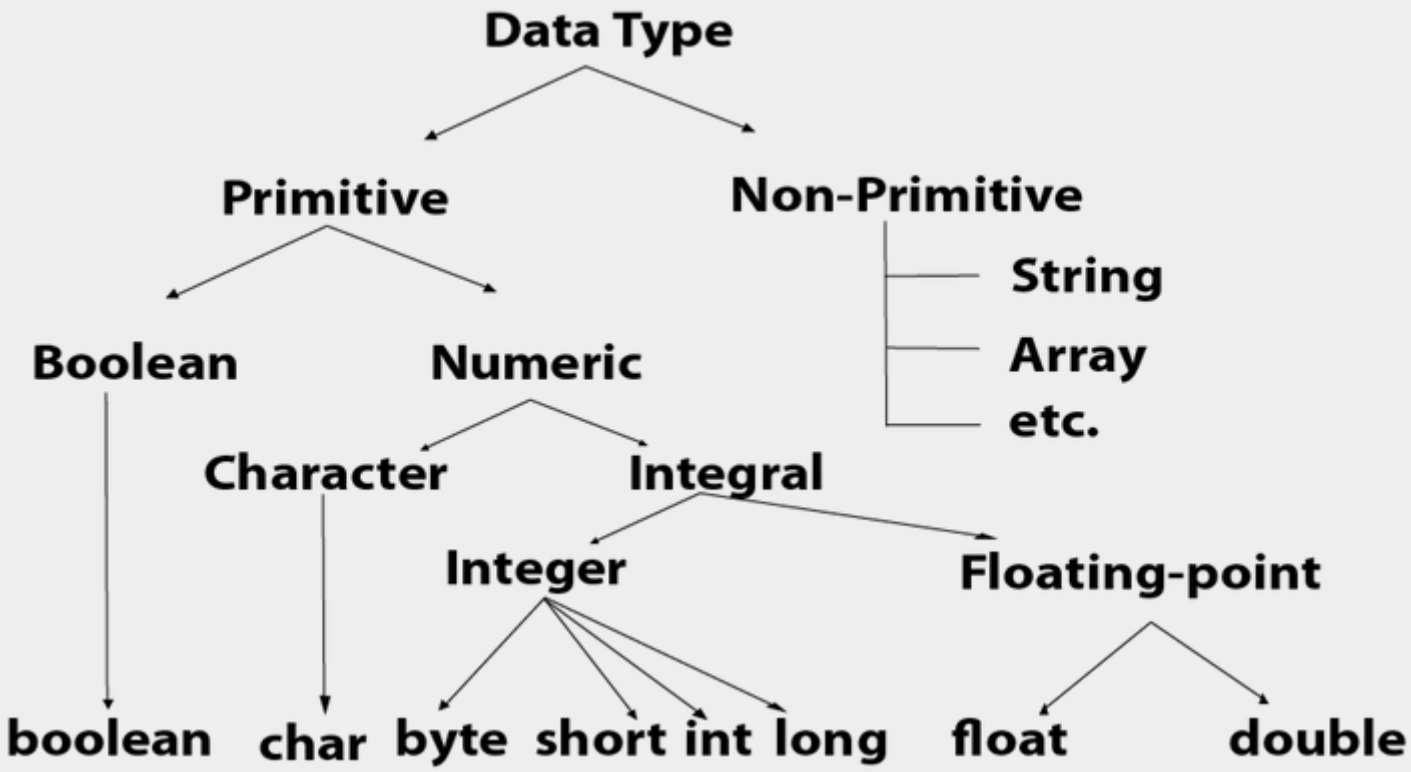


(ByteCode)

Declaration and assignment statements



Data Types


Data Type
Primitive
Non-Primitive
String
Array
etc.
Boolean
Numeric
Character
Integral
Integer
Floating-point
boolean
char
byte
short
int
long
float
double

Default Value and Size of Data Types.

Data Type	Default Value	Default size
boolean	false	1 bit
char	'\u0000'	2 byte
byte	0	1 byte
short	0	2 byte
int	0	4 byte
long	0L	8 byte
float	0.0f	4 byte
double	0.0d	8 byte

Operators

Operator Type	Category	Precedence
Unary	postfix	*expr++ expr--*
	prefix	*++expr --expr +expr -expr* ~ !
Arithmetic	multiplicative	* / %
	additive	+ -
Shift	shift	<< >> >>>
Relational	comparison	< > <= >= instanceof
	equality	== !=
Bitwise	bitwise AND	&
	bitwise exclusive OR	^
	bitwise inclusive OR	|
Logical	logical AND	&&
	logical OR	||
Ternary	ternary	? :
Assignment	assignment	= += -= *= /= %= &= ^= |= <<= >>= >>>=

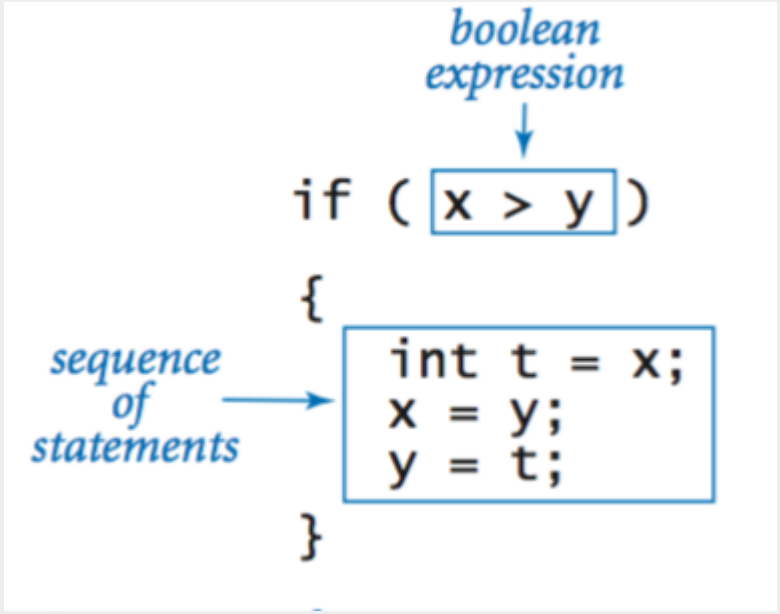
Printing output

`void System.out.print(String s)`	*print s*
`void System.out.println(String s)`	*print s, followed by a newline*
`void System.out.println()`	*print a newline*

Parsing Command-Line Arguments

`int`	`Integer.parseInt(String s)`	*convert* `s` *to an* `int` *value*
`double`	`Double.parseDouble(String s)`	*convert* `s` *to a* `double` *value*
`long`	`Long.parseLong(String s)`	*convert* `s` *to a* `long` *value*

Conditional Statement - if




```
//Java Program to demonstate the use of if statement.
public class IfExample {
public static void main(String[] args) {
    //defining an 'age' variable
    int age=20;
    //checking the age
    if(age>18){
        System.out.print("Age is greater than 18");
    }
}
}
```

Conditional Statement – if and if-else

absolute value	`if (x < 0) x = -x;`

put the smaller value in x and the larger value in y	`if (x > y)`
	`{`
	`  int t = x;`
	`  x = y;`
	`  y = t;`
	`}`

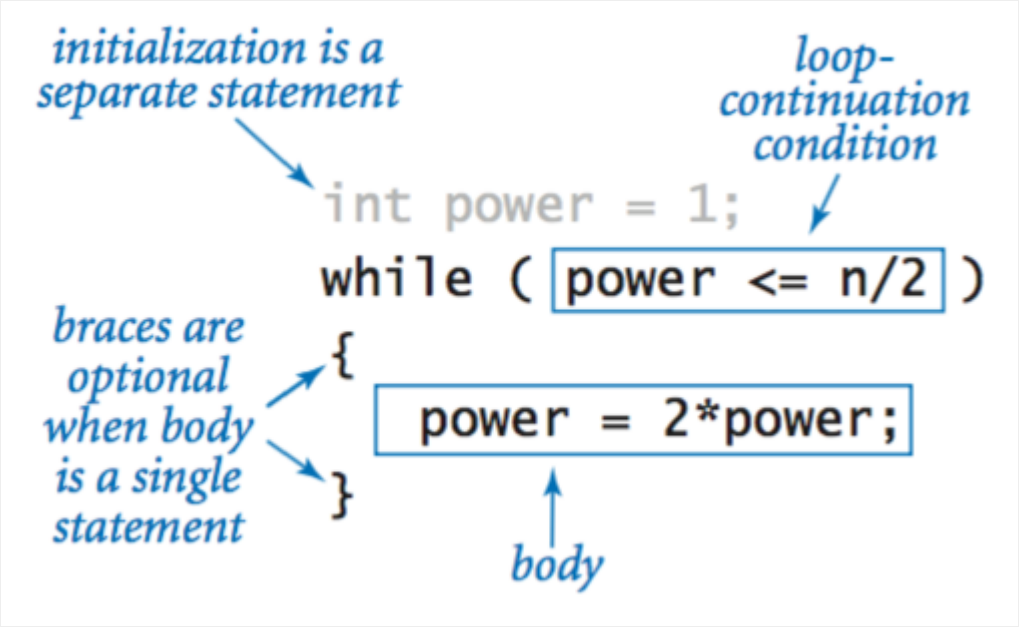
maximum of x and y	`if (x > y) max = x;` `else  max = y;`
error check for division operation	`if (den == 0) System.out.println("Division by zero");` `else  System.out.println("Quotient = " + num/den);`

error check for quadratic formula	`double discriminant = b*b - 4.0*c;`
	`if (discriminant < 0.0)`
	`{`
	`  System.out.println("No real roots");`
	`}`
	`else`
	`{`
	`  System.out.println((-b + Math.sqrt(discriminant))/2.0);`
	`  System.out.println((-b - Math.sqrt(discriminant))/2.0);`
	`}`

Conditional Statement – Nested if-else

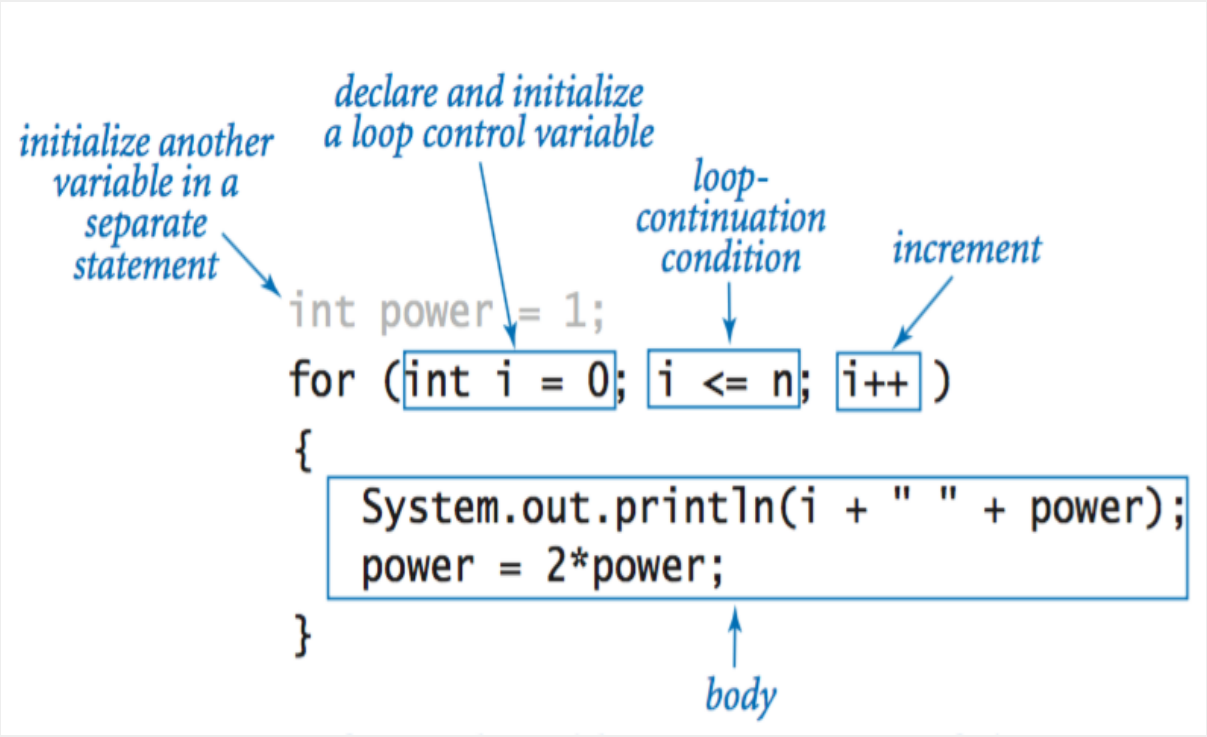
```
if      (income <      0) rate = 0.00;
else if (income <   8925) rate = 0.10;
else if (income <  36250) rate = 0.15;
else if (income <  87850) rate = 0.23;
else if (income < 183250) rate = 0.28;
else if (income < 398350) rate = 0.33;
else if (income < 400000) rate = 0.35;
else                      rate = 0.396;
```

While loop




```
public class WhileExample {

public static void main(String[] args) {

    int i=1;

    while(i <=10 ){

        System.out.println(i);

        i++;

    }

}

}
```

for loop




```
//Java Program to demonstrate the example of for loop

//which prints table of 1

public class ForExample {

public static void main(String[] args) {

   //Code of Java for loop

   for(int i=1;i<=10;i++){

      System.out.println(i);

   }

}

}
```

Lab Assignment no. 1

```
// Assignment no. 1

class CmdSumAll{

        public static void main(String  args[ ]) {

                int sum=0;

                for(int i=0; i<args.length ; i++){

                        sum = sum+Integer.parseInt(args[ i ]);

                }

                System.out.println("sum is = " + sum);

        }

}
```

1. Write your Java program using any editor preferably **gedit**:

2. Compile your Java program using Java compiler:
   Javac CmdSumAll.java

3. To run your Java Program using Java interpreter:
   Java CmdSumAll 12 15 30 20

References

Reference for this topic

- [Princeton Java Cheatsheet]
  https://introcs.cs.princeton.edu/java/11cheatsheet/

- [Java T Point tutorial]
  https://www.javatpoint.com/java-tutorial

- [GeeksforGeeks]
  https://www.geeksforgeeks.org/java/