

## LAB 3

The Div / خارج القسمة and Mod % باقي القسمة operators:

In java, When dividing two integers, we have two operations:

**1) Div / (خارج القسمة) which gives the result of the division without the remainder.**

نأخذ بخارج القسمة أو حاصل القسمة ونهمل الباقي. مثلا عند قسمة 7 على 2 يكون حاصل القسمة 3 والباقي 1 . فيكون الناتج 3.

For example,  $7 / 2 = 3$  (the remainder 1 is discarded)

$5 / 2 = 2$  (the remainder 1 is discarded)

$13 / 5 = 2$  (the remainder 3 is discarded)

$2 / 3 = 0$  (the remainder is 2 and is discarded)

$11 / 10 = 1$

$349 / 100 = 3$  (the remainder 49 is discarded)

$349 / 10 = 34$  (the remainder 9 is discarded)

**Mod % (باقي القسمة) which gives you the remainder of the division only.**

نأخذ بباقي القسمة ونهمل حاصل القسمة.. على سبيل المثال، عند قسمة 7 على 3 فإن باقي القسمة هو 1 وهو الناتج الذي نأخذ به ونهمل حاصل القسمة.

For example,

$7 \% 3 = 1$  (1 is the remainder)

$5 \% 2 = 1$  (1 is the remainder of the division)

$13 \% 5 = 3$  (باقي قسمة 13 على 5 هو 3)

$2 \% 3 = 2$  (باقي قسمة 2 على 3 هو 2)

$11 \% 10 = 1$

$349 \% 100 = 49$

$349 \% 10 = 9$

Q1) Write a Java Program that will read a three digit integer **x** and print the first, middle and last digit separately.

Create a project **Lab03**

Name your class **ThreeDigits**

**Hint:** Use / and % to extract digits.

In Java, the div operator / will give you division result without the remainder.

For example  $386 / 10 = 38$ . (Ignoring the remainder 6)

While the mod operator, %, will give you the remainder of division.

For example  $386 \% 10 = 6$  (The remainder 6 is the result of mod operation )

**Note: Div and Mod applies to integers only!**

Sample Run:

Please Enter X: **486** ↵

**First digit is 4**

**Middle Digit is 8**

**Last Digit is 6**

Q2) Write a Java Program that will read three strings representing first name, middle name and last name of a student. Add the word "AL" to the last name and then combine them in a fourth string using the + operator to form a full name. Finally, print the full name.

Name your class **ThreeNames**

**Hint:** Use `kb.next()` to read a string. `kb.next()` will read a string until a blank or new line.

Sample Run:

Please Enter The First name: **Mohammed** ↵

Please Enter The Middle name: **Saad** ↵

Please Enter The Last name: **Fahad** ↵

The Full Name: Mohammed Saad ALFahad

Q3) Write a Java Program that will read a five digit integer  $x$  and print the first digit and last digit and middle digit. (i.e. if  $x = d_1d_2d_3d_4d_5$  then  $d_5$  is the 5<sup>th</sup> digit or last and  $d_1$  is the first)

Name your class **FiveDigits**

Sample Run:

Please Enter the number: **73295** ↵

First digit is 7

Middle Digit is 2

Last Digit is 5

Q4) Write a Java program that reads a five digit integer x and then change the location of digits 2 and 4 and print the changed number. And then compute and print the square root of the new number. Name your class **SwitchDigits**

Sample Run:

Please Enter the number: 73295 ↵

The changed number is 79235

The square root of 79235 is: 281.48712226316854

Q5) Write a Java program that reads a five digit integer and then reverse the digits of that number and print it.

Finally, compute the square root of the new reversed number and print it.

Name your class **ReverseDigits**

Sample Run:

Please Enter the number: 73295 ↵

The reverse number is 59237

The square root of 59237 is: 243.38652386687312

# Solutions:

Q1)

```
import java.util.Scanner;
public class ThreeDigits{
public static void main(String args[]) {
Scanner kb = new Scanner(System.in);
System.out.print("Please Enter X:");
int x = kb.nextInt();

System.out.println("First Digit is " + (x / 100) );
System.out.println("The Middle Digit is " + ( الطالب ) );
System.out.println("last Digit is " + ( x % 10 ) );

    }
}
```

Q2)

```
import java.util.Scanner;
public class ThreeNames {
public static void main(String args[]) {
Scanner kb = new Scanner(System.in );
System.out.print("Please Enter The First Name:");
String first = kb.next();
System.out.print("Please Enter The Middle Name:");
String middle = kb.next();
System.out.print("Please Enter The Last Name:");
String last = kb.next();
last = "AL"+last;
String full = first + middle + last;
System.out.println("The Full Name: "+full);
    }
}
```