Java - Introduction to Programming
Lecture 2

Output:

Our 1st Program

```
public class Main {

   public static void main(String[] args) {
  // Our 1st Program
       System.out.println("Hello World");
   }
}
```

```
/*print the pattern
        *
        **
        ***
        ****
*/

public class printpattern {
    public static void main(String[] args) {
        System.out.println("*");
        System.out.println("**");
        System.out.println("***");
        System.out.println("****");
    }
}
```

Quiz:

To Print :
*****
*** ***
Which one is true

```
1. System.out.print("*\n**");
2. System.out.print("**\n*");
3. System.out.print("***\n");
```

Variables & Data Types

1. **Variables**

A variable is a container (storage area) used to hold data.
Each variable should be given a unique name (identifier).

```java
//find the perimeter of rectangle
public class Variable {
    public static void main(String[] args) {
        int a = 10;
        double b = 23.3;
        double perimeter = 2*(a+b);
        System.out.println(perimeter);
    }
}
```

Here a, b and perimeter are variables and 2 is a constant. int, double are data types.

2. Data Types

Data types are declarations for variables. This determines the type and size of data associated with variables which is essential to know since different data types occupy different sizes of memory.

There are 2 types of Data Types :

- Primitive Data types : to store simple values
- Non-Primitive Data types : to store complex values

Primitive Data Types

These are the data types of fixed size.

Data Type	Meaning	Size Bytes)	Range
Byte	2's complement integer	1	-128 to 127
Short	2's complement integer	2	-32K to 32K
int	Integer numbers	4	-2B to 2B
Long	2's complement integer (larger values)	8	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807

float	Floating-point	4	Upto 7 decimal digits
double	Double Floating-point	8	Upto 16 decimal digits
char	Character	2	a, b, c .. A, B, C .. @, #, $ ..
bool	Boolean	1	True, false

Non-Primitive Data Types
These are of variable size & are usually declared with a 'new' keyword.

Eg : String, Arrays

```
public class Variable {

    public static void main(String[] args) {
        String name = new String("Aman");
        int[] marks = new int[3];
        marks[0] = 97;
        marks[1] = 98;
        marks[2] = 95;
```

3. Constants

A constant is a variable in Java, which has a fixed value i.e. it cannot be assigned a different value once assigned.

```
public class Main {

    public static void main(String[] args) {
    // Constants
        final float PI = 3.14F;
    }
}
```

Quiz:

To calculate: a=10, b=5 .

a x b

---

a – b

- **int ans = a * b / a – b => *,/,% >+,-**
- **int ans = (a * b) / (a – b)**

Input:

```
import java.util.*;
public class input {

    public static void main(String[] args) {
        //input
        Scanner sc = new Scanner(System.in);
        //next()
        // String name = sc.next();
        // System.out.println(name);
        //nextLine
        String name1 = sc.nextLine();
        System.out.println(name1);
        //nextInt()
        //nextDouble()
        //nextFloat()
    }
}
```

Exercise Problems:

1. **Try to declare meaningful variables of each type. Eg - a variable named age should be a numeric type (int or float) not byte.**
2. **Make a program that takes the radius of a circle as input, calculates its radius and area and prints it as output to the user.**
3. **Make a program that prints the table of a number that is input by the user.**
4. **Take 2 variables a & b and print their sum**

```
5. import java.util.*;
6. public class sum {
7.     public static void main(String[] args) {
8.         Scanner sc = new Scanner(System.in);
9.         int a = sc.nextInt();
10.        int b = sc.nextInt();
11.        int sum = a+b;
12.        System.out.println("Sum of 2 numbers:"+sum);
```

```
13.     }
14.}
```