VARIABLES & DATA TYPES

1. Area of Circle

```java
import java.util.Scanner;

public class Areacircle {
    public static void main (String args[]) {
        Scanner sc = new Scanner (System.in);
        int radius = sc.nextInt();
        double pi = 3.14;
        double area = pi * radius * radius;
        System.out.print(area);
    }
}
```

2. Type Conversion in JAVA

```java
import java.util.Scanner;

public class Conversion {
    public static void main (String args[]) {
        Scanner sc = new Scanner (System.in);

        //Type conversion in java
        //Destination type =  source type
        float num = sc.nextInt();
        System.out.print(num);
    }
}
```

3. Data Types in JAVA

```java
public class DataType {
    public static void main(String args[]) {
        byte b = 8;
        System.out.println(b);
        char ch = 'a';
        System.out.println(ch);
        boolean bo = true;
        System.out.println(bo);

        //For big float numbers we use - double
        float price = 10;
        System.out.println(price);

        //For big integer numbers we use - long
        int num = 25;
        System.out.println(num);
    }

}
```

4. Input in Java

```java
import java.util.Scanner;

public class Input {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);

        // next() ignores the afterspace values or characters
        /* String input = sc.next();
        System.out.println(input);
        */

        // For not ignoring the afterspace value we use nextline()
        /* String name = sc.nextLine();
        System.out.print(name);
        */

        // Input int, we use nextInt()
        int num =  sc.nextInt();
        System.out.print(num);

        // Input float, we use nextFloat()
        float price = sc.nextFloat();
        System.out.print(price);
    }
}
```

5. Java Basics

```java
public class JavaBasics {
    public static void main(String args[]) {
    // We will write our actual code
        // ln after print is used for line ka space after a statement.
        // We can also use \n for next line.
        System.out.println("Hello World");
        System.out.println("Hello World");
        System.out.println("Hello World");

    }
}
// Above is a Boiler plate which we have to write in all the java programs
```

6. Multiplication

```java
import java.util.Scanner;
public class Product {
    public static void main (String args[]) {
        Scanner sc = new Scanner (System.in);        int a = sc.nextInt();
        int b = sc.nextInt();
        int product = a * b;
        System.out.print(product);
    }
}
```

7. Star Pattern

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

8. Sum

```java
public class Sumprogram1 {
    public static void main(String args[]) {
        // code to calculate sum
        int a = 120;
        int b = 50;
        int sum = a + b;
        System.out.print(sum);
    }
}
```

9. Sum (user's input)

```java
import java.util.Scanner;

public class SumProgram2 {
    public static void main (String args[]) {
        Scanner sc = new Scanner (System.in);

        //Sum program (user input)
        int a = sc.nextInt();
        int b = sc.nextInt();
        int sum = a + b;
        System.out.print(sum);
    }
}
```

10. Type Casting in JAVA

```java
import java.util.Scanner;
public class Typecasting {
    public static void main (String args[]) {
        Scanner sc = new Scanner (System.in);
        float a = 25.12f;
        int b = (int) a; // int b = a;
        System.out.println(b); //There is loss of data i.e. .12
        char ch = 'a';
        int number = ch; //Conversion between char and int
        //It will give ASCII value of the a.
        System.out.println(number);
    }
}
```

11. Type Promotion in JAVA

```java
public class TypePromotion {
    public static void main (String args[]) {
    /*
        char a = 'a';
        char b = 'b';
        System.out.println((int)(b));
        System.out.println((int)(a));

        //Type promotion is only applicable for the expressions.
        System.out.println(b-a);
        //Type promotion is not applicable for the single characters or values.
        System.out.println(a);
    */

    //1st Rule
/*
    short a = 5;
    byte b = 25;
    char c = 'c';
    byte bt = (byte) (a + b + c);
    System.out.println(bt);
*/

    //2nd Rule
    int a = 10;
    float b = 20.25f;
    long c = 25;
    double d = 30;
    // If we write int as place of the double then it lossy conversion error.
    double ans = a + b + c + d;
    System.out.println(ans);
    }
}
```

12. Variable

```java
public class Variable {
    public static void main(String args[]) {
        int a = 10;
        int b = 5;
        // If we write variables inside double or single quote it will print the variable as it is.
        System.out.println(a);
        System.out.println(b);
        String name = "Tony Stark";
        System.out.println(name);

        // Changing variales value
        a = 50;
        System.out.println(a);
        a = b;
        System.out.println(a);
    }
}
```