**Assignment 1 & 2**

1. **List data types in java with wrapper class name, memory size, range in tabular format.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Type | Wrapper class name | | Memory size | range |
| byte | Byte | | 8 bits | -128 to 127 |
| short | Short | | 16 bits | -32,768 to 32,767 |
| int | Integer | | 32 bits | -2,147,483,648 to 2,147,483,648 |
| long | Long | | 64 bits | -9,223,372,036,854,775,808 to 9,223,372,036,854,775,808 |
| float | Float | | 32 bits | Up to 7 decimal digits |
| double | Double | | 64 bits | Up to 16 decimal digits |
| char | Character | | 8 bits | 1 byte per character or representation of ASCII values 0 to 255 |
| string | | String | 16 bits | 0 to 65535 |
| bool | | Boolean | 1 bit | True or False |

1. **Write example of increment and decrement operators.**

Increment operators increases the value by 1 and decrement operators decreases the value by 1.

**1)increment operator**

public class Increment

{

public static void main(String[] args)

{

int number=10;

System.out.println(“Number is:” +number);

Number++;

System.out.println(“Incremented number is:” +number);

}

}

**Output:**

Number is: 10

Incremented number is:11

**2)decrement operator**

public class Decrement

{

public static void main(String[] args)

{

int number=50;

System.out.println(“Number is” +number);

Number--;

System.out.println(“decremented number is” +number);

}

}

**Output:**

Number is: 10

Decremented number is:9

1. **a: Factorial of a number.**

Import java.util.Scanner ;

public class Factorial{

public static void main(String args[])

{

int n,i, fact=1;

Scanner sc=new Scanner(System.in);

System.out.println(“enter the number:”);

n=sc.nextInt();

for( i=1; i<=n; i++){

fact=fact\*i;

}

System.out.println("Factorial of the number: "+fact);

}

}

**Output :**

Enter the number: 5

Factorial of the number: 120

**b: nCr and nPr values**

package program;

public class Factorial

{

public static int nCr(int n,int r)

{

int result=(*factorial*(n)/*factorial*(n-r)\*(r));

return result;

}

public static int nPr(int n,int r)

{

int result=*factorial*(n)/*factorial*(n-r);

return result;

}

private static int factorial(int n) {

int i=0;

int fact=1;

for(i=1; i<=n; i++) {

fact=fact\*i;

}

return fact;

}

public static void main(String[] args) {

System.*out*.println(*nPr*(3,2));

System.*out*.println(*nCr*(4,1));

}

}

Output:

6

4

1. **Write concepts discussed about string in class.**

Strings are a sequence of characters. Strings are treated as objects. An [array](https://www.javatpoint.com/array-in-java) of characters works same as Java string. The java.lang.String class is used to create a string object. In java, objects of String are constant and cannot be changed once created. Whenever a change to a String is made, an entirely new String is created.

A String variable contains a collection of characters surrounded by double quotes. The length of a string can be found with the length() method.

1. **Research and write what is string pool in java.**

A string constant pool is a separate place in the heap memory where the values of all the strings which are defined in the program are stored. When we declare a string, an object of type String is created in the stack, while an instance with the value of the string is created in the heap. The main advantage of the string pool in Java is to reduce memory usage. When you create a string literal: String name = "Megha"; Java checks for the same value in the string pool.

1. **Write a java program to read number from user and print multiplication table from user.**

Import java.util.Scanner;

Public class table{

public static void main(String[] args)

{

int i;

Scanner sc=new Scanner(System.in);

System.out.println(“Enter number”);

Int n=sc.nextInt();

For(i=1 ; i<=10 ; i++){

System.out.println(n+ “ \* “ + i +” =n\*i);

}

}

}

**Output:** Enter number: 8

8 \* 1 = 8

8 \* 2 = 16

8 \* 3 = 24

8 \* 4 = 32

8 \* 5 = 40

8 \* 6 = 48

8 \* 7 = 56

8 \* 8 = 64

8 \* 9 =72

8 \* 10 = 80

1. **Research and write which language is faster Java or Python.**

**Java and Python** are the two most popular programming languages. Both are high-level, general-purpose, widely used programming languages. At present, developers use Java programming language to develop **web** and **desktop applications**. While Python is used to develop **machine learning applications** and **data science.** [Python and Java](https://www.snaplogic.com/blog/python-vs-java-an-update-to-a-subjective-speed-comparison) are two of the most popular and robust programming languages. Java is generally faster and more efficient than Python because it is a compiled language. As an interpreted language, Python has simpler, more concise syntax than Java. It can perform the same function as Java in fewer lines of code. Java programs are compiled directly while Python is interpreted, which slows down Python programs during runtime.

In Python, any bugs introduced by the programmer will not be found until that line of code is triggered which can lead to slower down the process. Java is a language that makes compilation easier in contrast to Python. The [JVM](https://www.javatpoint.com/jvm-java-virtual-machine) speed up the execution of code through JIT. The advantage of JIT is that it converts byte code to native machine code more quickly. It is difficult to say which is better. The selection of the language depends upon the type of application a programmer wants to create.