ASSIGNMENT NO.2

Note: Consider the following before starting the assignment:

- A **static field** declared inside a class is called a **class-level variable**. To access this variable, use the class name and the dot operator (e.g., `Integer.MAX_VALUE`).
- A **static method** defined inside a class is called a **class-level method**. To access this method, use the class name and the dot operator (e.g., `Integer.parseInt()`).
- When accessing static members within the same class, you do not need to use the class name.

1. Working with `java.lang.Boolean`

a. Explore the Java API documentation for `java.lang.Boolean` and observe its modifiers and super types.

b. Declare a method-local variable `status` of type `boolean` with the value `true` and convert it to a `String` using the `toString` method. (Hint: Use `Boolean.toString(Boolean)`).

```java
public class assignment2_1b {
        Run | Debug
        public static void main(String[] args) {
                // Q1-b
                boolean status = true;
                System.out.println(status);

                String str = Boolean.toString (status) ;
                System.out.println(str);
```

```
PS D:\Java_cdac\Assignment2> javac assignment2_1b.java
PS D:\Java_cdac\Assignment2> java assignment2_1b
true
true
PS D:\Java_cdac\Assignment2>
```

c. Declare a method-local variable `strStatus` of type `String` with the value `"true"` and convert it to a `boolean` using the `parseBoolean` method. (Hint: Use `Boolean.parseBoolean(String)`).

```java
assignment2_1b.java > assignment2_1b > main(String[])
public class assignment2_1b {
        public static void main(String[] args) {

                //Q1-c
                String strStatus= "true";

                Boolean value = Boolean.parseBoolean(strStatus);
                System.out.println(value);


        }
        //parseBoolean method will not work as expected with "1" or "0"
}
```

```
PS D:\Java_cdac\Assignment2> javac assignment2_1b.java
PS D:\Java_cdac\Assignment2> java assignment2_1b
true
PS D:\Java_cdac\Assignment2>
```

d. Declare a method-local variable `strStatus` of type `String` with the value `"1"` or `"0"` and attempt to convert it to a `boolean`. (Hint: `parseBoolean` method will not work as expected with `"1"` or `"0"`).

```java
public class assignment2_1b {
        public static void main(String[] args) {
                //Q1-d
                String strStatus1= "1";
                System.out.println(strStatus1);

                Boolean value1 = Boolean.parseBoolean(strStatus1);
                System.out.println(value1);
        }
        //parseBoolean method will not work as expected with "1" or "0"
}
```

```
PS D:\Java_cdac\Assignment2> javac assignment2_1b.java
PS D:\Java_cdac\Assignment2> java assignment2_1b
1
false
PS D:\Java_cdac\Assignment2>
```

e. Declare a method-local variable `status` of type `boolean` with the value `true` and convert it to the corresponding wrapper class using `Boolean.valueOf()`. (Hint: Use `Boolean.valueOf(boolean)`).

f. Declare a method-local variable `strStatus` of type `String` with the value `"true"` and convert it to the corresponding wrapper class using `Boolean.valueOf()`. (Hint: Use `Boolean.valueOf(String)`).

g. Experiment with converting a `boolean` value into other primitive types or vice versa and observe the results.

```
Assignment2_1e_g.java > Assignment2_1e_g > main(String[])
1
2   public class Assignment2_1e_g {
            Run | Debug
3           public static void main(String[] args) {
4
5                   //Q1-e
6                   Boolean status= true;
7                   System.out.println("Boolean: " + Boolean.valueOf(status));
8
9                   //Q1-f
10                  String strStatus= "trueee";
11                  System.out.println("String: " + Boolean.valueOf(strStatus));
12
13                  //Q1-g
14                  Boolean status1= true;
15                  System.out.println("Boolean: " + Boolean.valueOf(status1));
16                  System.out.println("String: " + String.valueOf(status1));
17                  // System.out.println("Integer: " + Number.valueOf(status1));
18          }
19
20  }
```

```
PS D:\Java_cdac> javac Assignment2_1e_g.java
PS D:\Java_cdac> java Assignment2_1e_g
Boolean: true
String: false
Boolean: true
String: true
PS D:\Java_cdac> S
```

2. Working with `java.lang.Byte`

a. Explore the Java API documentation for `java.lang.Byte` and observe its modifiers and super types.

b. Write a program to test how many bytes are used to represent a `byte` value using the `BYTES` field. (Hint: Use `Byte.BYTES`).

```java
public class Q2_b {
        Run | Debug
        public static void main(String[] args) {
                byte b = 56;
                System.out.println(Byte.BYTES);

        }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q2_b.java
PS D:\Java_cdac\Assignment2> java Q2_b
1
PS D:\Java_cdac\Assignment2>
```

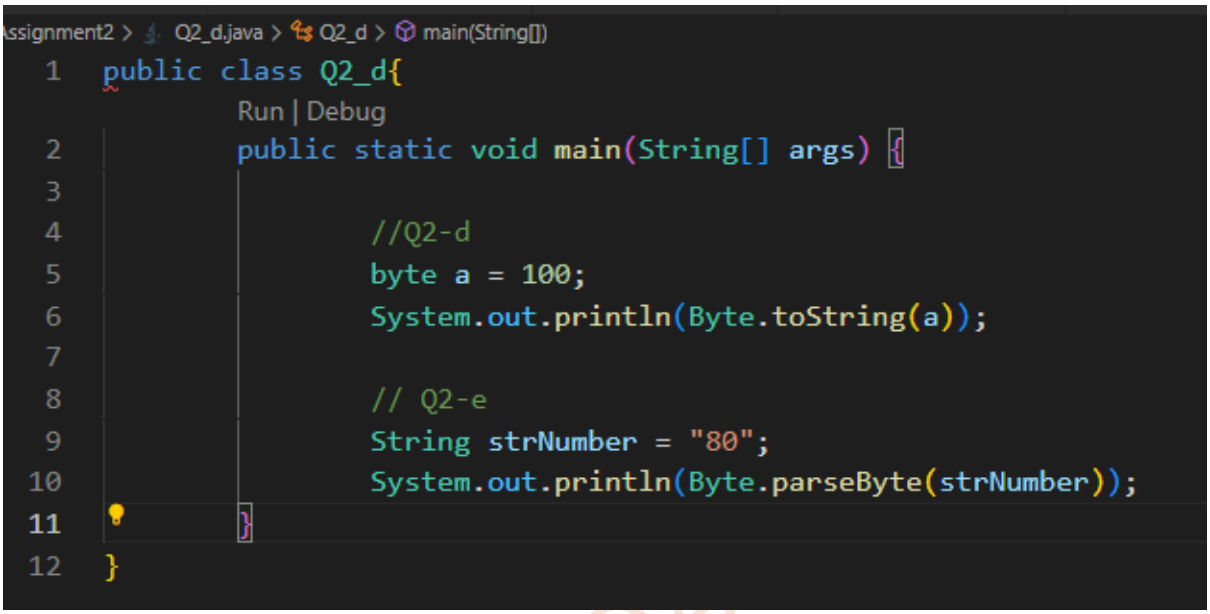
c. Write a program to find the minimum and maximum values of `byte` using the `MIN_VALUE` and `MAX_VALUE` fields. (Hint: Use `Byte.MIN_VALUE` and `Byte.MAX_VALUE`).

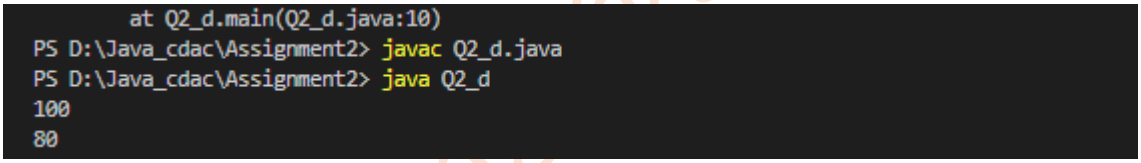
```java
public class Q2_b {
        Run | Debug
        public static void main(String[] args) {
                byte b = 56;
                System.out.println(Byte.BYTES);
                System.out.println(Byte.MIN_VALUE);
                System.out.println(Byte.MAX_VALUE);

        }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q2_b.java
PS D:\Java_cdac\Assignment2> java Q2_b
1
-128
127
PS D:\Java_cdac\Assignment2>
```

d. Declare a method-local variable `number` of type `byte` with some value and convert it to a `String` using the `toString` method. (Hint: Use `Byte.toString(byte)`).

e. Declare a method-local variable `strNumber` of type `String` with some value and convert it to a `byte` value using the `parseByte` method. (Hint: Use `Byte.parseByte(String)`).





f. Declare a method-local variable `strNumber` of type `String` with the value `"Ab12Cd3"` and attempt to convert it to a `byte` value. (Hint: `parseByte` method will throw a `NumberFormatException`).

Ans:-

```
public class Q2_f {

 public static void main(String[] args) {


  //Q2-f

  String strNumber1= "Ab12Cd3";

  System.out.println(Byte.parseByte(strNumber1));

 }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q2_f.java
PS D:\Java_cdac\Assignment2> java Q2_f
Exception in thread "main" java.lang.NumberFormatException: For input string: "Ab12Cd3"
        at java.base/java.lang.NumberFormatException.forInputString(NumberFormatException.java:67)
        at java.base/java.lang.Integer.parseInt(Integer.java:665)
        at java.base/java.lang.Byte.parseByte(Byte.java:193)
        at java.base/java.lang.Byte.parseByte(Byte.java:219)
        at Q2_f.main(Q2_f.java:7)
PS D:\Java_cdac\Assignment2>
```

g. Declare a method-local variable `number` of type `byte` with some value and convert it to the corresponding wrapper class using `Byte.valueOf()`. (Hint: Use `Byte.valueOf(byte)`).

h. Declare a method-local variable `strNumber` of type `String` with some `byte` value and convert it to the corresponding wrapper class using `Byte.valueOf()`. (Hint: Use `Byte.valueOf(String)`).

```
public class Q2_g {
        Run | Debug
        public static void main(String[] args) {

                //Q2-g
                byte b = 40;
                System.out.println(Byte.valueOf(b));

                //Q2-h
                String strNumber= "81";
                System.out.println(Byte.valueOf(strNumber));
        }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q2_g.java
PS D:\Java_cdac\Assignment2> java Q2_g
40
81
```

i. Experiment with converting a `byte` value into other primitive types or vice versa and observe the results.

```java
public class ByteExp {
        Run | Debug
        public static void main(String[] args) {

                byte b = 40;
                System.out.println(Byte.valueOf(b));
                System.out.println(Integer.valueOf(b));
                System.out.println(Double.valueOf(b));
                System.out.println(Long.valueOf(b));
        }
}
```

```
        at Q2_g.main(Q2_g.java:15)
PS D:\Java_cdac\Assignment2> javac ByteExp.java
PS D:\Java_cdac\Assignment2> java ByteExp
40
40
40.0
40
PS D:\Java_cdac\Assignment2>
```

3. Working with `java.lang.Short`

a. Explore the Java API documentation for `java.lang.Short` and observe its modifiers and super types.

b. Write a program to test how many bytes are used to represent a `short` value using the `BYTES` field. (Hint: Use `Short.BYTES`).

```java
public class Q3_b {
        Run | Debug
        public static void main(String[] args) {

                //Q3-b
                short s= 30;
                System.out.println(Short.BYTES);
        }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q3_b.java
PS D:\Java_cdac\Assignment2> java Q3_b
2
PS D:\Java_cdac\Assignment2>
```

c. Write a program to find the minimum and maximum values of `short` using the `MIN_VALUE` and `MAX_VALUE` fields. (Hint: Use `Short.MIN_VALUE` and `Short.MAX_VALUE`).

```java
public class Q3_b {
        Run | Debug
        public static void main(String[] args) {

                //Q3-b
                short s= 30;
                System.out.println(Short.BYTES);

                //Q3-c
                System.out.println(Short.MIN_VALUE);
                System.out.println(Short.MAX_VALUE);
        }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q3_b.java
PS D:\Java_cdac\Assignment2> java Q3_b
2
-32768
32767
PS D:\Java_cdac\Assignment2>
```

d. Declare a method-local variable `number` of type `short` with some value and convert it to a `String` using the `toString` method. (Hint: Use `Short.toString(short)`).

e. Declare a method-local variable `strNumber` of type `String` with some value and convert it to a `short` value using the `parseShort` method. (Hint: Use `Short.parseShort(String)`).

```java
public class Q3_d {
        Run | Debug
        public static void main(String[] args) {

            //Q3-d
            short number = 8081;
            System.out.println(Short.toString(number));

            //Q3-e
            String strNumber = "100";
            System.out.println(Short.parseShort(strNumber));

        }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q3_d.java
PS D:\Java_cdac\Assignment2> java Q3_d
8081
100
PS D:\Java_cdac\Assignment2>
```

f. Declare a method-local variable `strNumber` of type `String` with the value `"Ab12Cd3"` and attempt to convert it to a `short` value. (Hint: `parseShort` method will throw a `NumberFormatException`).

Ans:-

```
public class Q3_f {

public static void main(String[] args) {


//Q2-f

String strNumber1= "Ab12Cd3";

System.out.println(Short.parseShort(strNumber1));

}

}
```

```
        at Q2_f.main(Q2_f.java:7)
PS D:\Java_cdac\Assignment2> javac Q3_f.java
PS D:\Java_cdac\Assignment2> java Q3_f
Exception in thread "main" java.lang.NumberFormatException: For input string: "Ab12Cd3"
        at java.base/java.lang.NumberFormatException.forInputString(NumberFormatException.java:67)
        at java.base/java.lang.Integer.parseInt(Integer.java:665)
        at java.base/java.lang.Short.parseShort(Short.java:137)
        at java.base/java.lang.Short.parseShort(Short.java:163)
        at Q3_f.main(Q3_f.java:6)
PS D:\Java_cdac\Assignment2>
```

g. Declare a method-local variable `number` of type `short` with some value and convert it to the corresponding wrapper class using `Short.valueOf()`. (Hint: Use `Short.valueOf(short)`).

h. Declare a method-local variable `strNumber` of type `String` with some `short` value and convert it to the corresponding wrapper class using `Short.valueOf()`. (Hint: Use `Short.valueOf(String)`).

i. Experiment with converting a `short` value into other primitive types or vice versa and observe the results.

Assignment2 > Q3_g.java > Q3_g > main(String[])

```java
public class Q3_g {
    Run | Debug
    public static void main(String[] args) {

        //Q3-g
        short number = 808;
        System.out.println(Short.valueOf(number));

        //Q3-h
        String strNumber = "1051";
        System.out.println(Short.valueOf(strNumber));

        //Q3-i
        short number1 = 200;
        System.out.println("Short " + Short.valueOf(number1));
        System.out.println("Integer " + Integer.toString(number1));
        System.out.println("Long " + Long.valueOf(number1));
        System.out.println("Double " + Double.valueOf(number1));;
    }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q3_g.java
PS D:\Java_cdac\Assignment2> java Q3_g
808
1051
Short 200
Integer 200
Long 200
Double 200.0
PS D:\Java_cdac\Assignment2>
```

4. Working with `java.lang.Integer`

a. Explore the Java API documentation for `java.lang.Integer` and observe its modifiers and super types.

b. Write a program to test how many bytes are used to represent an `int` value using the `BYTES` field. (Hint: Use `Integer.BYTES`).

c. Write a program to find the minimum and maximum values of `int` using the `MIN_VALUE` and `MAX_VALUE` fields. (Hint: Use `Integer.MIN_VALUE` and `Integer.MAX_VALUE`).

Ans:- b, c

```
public class Q4_b {

 public static void main(String[] args) {


  //Q4-b

  int i = 2345;

  System.out.println(Integer.BYTES);


  //Q4-c

  System.out.println(Integer.MIN_VALUE);

  System.out.println(Integer.MAX_VALUE);

 }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q4_b.java
PS D:\Java_cdac\Assignment2> java Q4_b
4
-2147483648
2147483647
PS D:\Java_cdac\Assignment2>
```

d. Declare a method-local variable `number` of type `int` with some value and convert it to a `String` using the `toString` method. (Hint: Use `Integer.toString(int)`).

e. Declare a method-local variable `strNumber` of type `String` with some value and convert it to an `int` value using the `parseInt` method. (Hint: Use `Integer.parseInt(String)`).

Ans :- d, e

```
public class Q4_d {

public static void main(String[] args) {



//Q4-d

int i = 2345;

System.out.println("String " + Integer.toString(i));



//Q4-e

String strNumber = "987567";

System.out.println("Integer " + Integer.parseInt(strNumber));

}

}
```

```
PS D:\Java_cdac\Assignment2> javac Q4_d.java
PS D:\Java_cdac\Assignment2> java Q4_d
String 2345
Integer 987567
PS D:\Java_cdac\Assignment2>
```

f. Declare a method-local variable `strNumber` of type `String` with the value `"Ab12Cd3"` and attempt to convert it to an `int` value. (Hint: `parseInt` method will throw a `NumberFormatException`).

Ans:-

```
public class Q4_f {

public static void main(String[] args) {

String strNumber = "Ab12Cd3";

int number = Integer.parseInt(strNumber);
```

```
        System.out.println(number);

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q4_f.java
PS D:\Java_cdac\Assignment2> java Q4_f
Exception in thread "main" java.lang.NumberFormatException: For input string: "Ab12Cd3"
        at java.base/java.lang.NumberFormatException.forInputString(NumberFormatException.java:67)
        at java.base/java.lang.Integer.parseInt(Integer.java:665)
        at java.base/java.lang.Integer.parseInt(Integer.java:781)
        at Q4_f.main(Q4_f.java:5)
PS D:\Java_cdac\Assignment2>
```

g. Declare a method-local variable `number` of type `int` with some value and convert it to the corresponding wrapper class using `Integer.valueOf()`. (Hint: Use `Integer.valueOf(int)`).

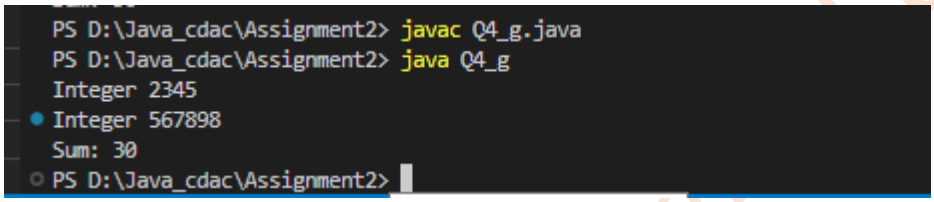
h. Declare a method-local variable `strNumber` of type `String` with some integer value and convert it to the corresponding wrapper class using `Integer.valueOf()`. (Hint: Use `Integer.valueOf(String)`).

i. Declare two integer variables with values `10` and `20`, and add them using a method from the `Integer` class. (Hint: Use `Integer.sum(int, int)`).

Ans:- g, h, i

```
public class Q4_g {

public static void main(String[] args) {


    //Q4-g

    int number = 2345;

    System.out.println("Integer " + Integer.valueOf(number));



    //Q4-h

    String strNumber = "567898";

    System.out.println("Integer " + Integer.valueOf(strNumber));
```

```
        //Q4-i

        int a = 10;

        int b = 20;

        System.out.println("Sum: " + Integer.sum(a, b));


    }

}
```



j. Declare two integer variables with values `10` and `20`, and find the minimum and maximum values using the `Integer` class. (Hint: Use `Integer.min(int, int)` and `Integer.max(int, int)`).

k. Declare an integer variable with the value `7`. Convert it to binary, octal, and hexadecimal strings using methods from the `Integer` class. (Hint: Use `Integer.toBinaryString(int)`, `Integer.toOctalString(int)`, and `Integer.toHexString(int)`).

l. Experiment with converting an `int` value into other primitive types or vice versa and observe the results.

Ans:- j, k ,l

```
public class Q4_j {

    public static void main(String[] args) {


        //Q4-j

        int a = 10;

        int b = 20;

        System.out.println(Integer.min(a, b));
```

```
        System.out.println(Integer.max(a, b) );


        //Q4-k
        int num = 7;
        System.out.println("Binary: " + Integer.toBinaryString(num));
        System.out.println("String: " + Integer.toOctalString(num));
        System.out.println("HexString: " + Integer.toHexString(num));


       //Q4-l
        int number = 78;
       //  System.out.println(Short.valueOf(number)); //it doesn't run
        System.out.println(Long.valueOf(number));
        System.out.println(Double.valueOf(number));
        System.out.println(Float.valueOf(number));
        System.out.println(String.valueOf(number));
    }
}
```

```
PS D:\Java_cdac\Assignment2> java Q4_j
10
20
Binary: 111
String: 7
HexString: 7
78
78.0
78.0
78
PS D:\Java_cdac\Assignment2>
```

5. Working with `java.lang.Long`

a. Explore the Java API documentation for `java.lang.Long` and observe its modifiers and super types.

b. Write a program to test how many bytes are used to represent a `long` value using the `BYTES` field. (Hint: Use `Long.BYTES`).

Ans :-

```
public class Q5_b {

public static void main(String[] args) {

    //Q5-b

    long l = 456;

    System.out.println(Long.BYTES);

}

}
```

```
PS D:\Java_cdac\Assignment2> javac Q5_b.java
PS D:\Java_cdac\Assignment2> java Q5_b
8
PS D:\Java_cdac\Assignment2>
```

c. Write a program to find the minimum and maximum values of `long` using the `MIN_VALUE` and `MAX_VALUE` fields. (Hint: Use `Long.MIN_VALUE` and `Long.MAX_VALUE`).

Ans:-

```
public class Q5_b {

public static void main(String[] args) {

    //Q5-b

    long l = 456;

    System.out.println(Long.BYTES);

    //Q5-c

    System.out.println(Long.MIN_VALUE);

    System.out.println(Long.MAX_VALUE);
```

```
    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q5_b.java
PS D:\Java_cdac\Assignment2> java Q5_b
8
-9223372036854775808
9223372036854775807
PS D:\Java_cdac\Assignment2>
```

d. Declare a method-local variable `number` of type `long` with some value and convert it to a `String` using the `toString` method. (Hint: Use `Long.toString(long)`).

e. Declare a method-local variable `strNumber` of type `String` with some value and convert it to a `long` value using the `parseLong` method. (Hint: Use `Long.parseLong(String)`).

Ans:- d, e

```
public class Q5_d {

    public static void main(String[] args) {

        //Q5-d

        long l = 67456;

        System.out.println(Long.toString(l));



        //Q5-e

        String str = "34555";

        System.out.println(Long.parseLong(str));

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q4_d.java
PS D:\Java_cdac\Assignment2> javac Q5_d.java
PS D:\Java_cdac\Assignment2> java Q5_d
67456
34555
PS D:\Java_cdac\Assignment2>
```

f. Declare a method-local variable `strNumber` of type `String` with the value `"Ab12Cd3"` and attempt to convert it to a `long` value. (Hint: `parseLong` method will throw a `NumberFormatException`).

Ans :-

```
public class Q5_f {

    public static void main(String[] args) {


        String strNumber = "Ab12Cd3";

        long number = Long.parseLong(strNumber);

        System.out.println(number);

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q5_f.java
PS D:\Java_cdac\Assignment2> java Q5_f
Exception in thread "main" java.lang.NumberFormatException: For input string: "Ab12Cd3"
        at java.base/java.lang.NumberFormatException.forInputString(NumberFormatException.java:67)
        at java.base/java.lang.Long.parseLong(Long.java:708)
        at java.base/java.lang.Long.parseLong(Long.java:831)
        at Q5_f.main(Q5_f.java:5)
PS D:\Java_cdac\Assignment2>
```

g. Declare a method-local variable `number` of type `long` with some value and convert it to the corresponding wrapper class using `Long.valueOf()`. (Hint: Use `Long.valueOf(long)`).

h. Declare a method-local variable `strNumber` of type `String` with some `long` value and convert it to the corresponding wrapper class using `Long.valueOf()`. (Hint: Use `Long.valueOf(String)`).

i. Declare two long variables with values `1123` and `9845`, and add them using a method from the `Long` class. (Hint: Use `Long.sum(long, long)`).

Ans:- g, h, i

```
public class Q5_g {

public static void main(String[] args) {
```

```
        //Q5-g

        long num = 67456;

        System.out.println(Long.valueOf(num));


        //Q5-h

        String strnum = "4555";

        System.out.println(Long.valueOf(strnum));


        //Q5-i

        long a = 1123;

        long b = 9845;

        System.out.println("Sum: " + Long.sum(a, b));


    }
}
```

```
PS D:\Java_cdac\Assignment2> javac Q5_g.java
PS D:\Java_cdac\Assignment2> java Q5_g
67456
4555
Sum: 10968
PS D:\Java_cdac\Assignment2>
```

j. Declare two long variables with values `1122` and `5566`, and find the minimum and maximum values using the `Long` class. (Hint: Use `Long.min(long, long)` and `Long.max(long, long)`).

k. Declare a long variable with the value `7`. Convert it to binary, octal, and hexadecimal strings using methods from the `Long` class. (Hint: Use `Long.toBinaryString(long)`, `Long.toOctalString(long)`, and `Long.toHexString(long)`).

l. Experiment with converting a `long` value into other primitive types or vice versa and observe the results.

Ans:- j, k, l

```
public class Q5_j {

 public static void main(String[] args) {


        //Q5-j

        long a = 1122;

        long b = 5566;

        System.out.println("Min: " + Long.min(a, b));

        System.out.println("Max: " + Long.max(a, b) );


        //Q5-k

        long num = 78990;

        System.out.println("Binary: " + Long.toBinaryString(num));

        System.out.println("String: " + Long.toOctalString(num));

        System.out.println("HexString: " + Long.toHexString(num));


       //Q5-l

        long number = 234567;

        System.out.println("Double: " + Double.valueOf(number));

        System.out.println("Float: " + Float.valueOf(number));

        System.out.println("String: " + String.valueOf(number));

   }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q5_j.java
PS D:\Java_cdac\Assignment2> java Q5_j
Min: 1122
Max: 5566
Binary: 10011010010001110
String: 232216
HexString: 1348e
Double: 234567.0
Float: 234567.0
String: 234567
PS D:\Java_cdac\Assignment2>
```

6. Working with `java.lang.Float`

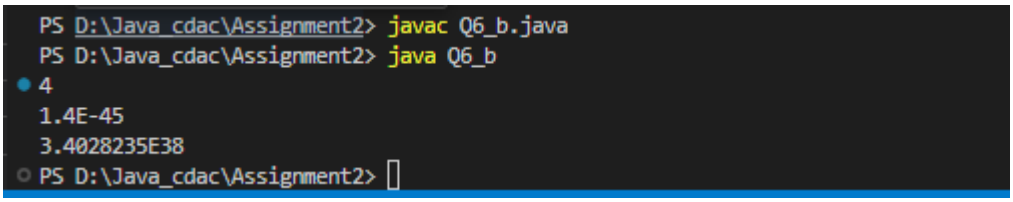
a. Explore the Java API documentation for `java.lang.Float` and observe its modifiers and super types.

b. Write a program to test how many bytes are used to represent a `float` value using the `BYTES` field. (Hint: Use `Float.BYTES`).

c. Write a program to find the minimum and maximum values of `float` using the `MIN_VALUE` and `MAX_VALUE` fields. (Hint: Use `Float.MIN_VALUE` and `Float.MAX_VALUE`).

Ans:- b, c

```
public class Q6_b {

 public static void main(String[] args) {


     //Q6-b

     float f = 567.8f;

     System.out.println(Float.BYTES);


     //Q6-c

     System.out.println(Float.MIN_VALUE);

     System.out.println(Float.MAX_VALUE);

 }

}
```



d. Declare a method-local variable `number` of type `float` with some value and convert it to a `String` using the `toString` method. (Hint: Use `Float.toString(float)`).

e. Declare a method-local variable `strNumber` of type `String` with some value and convert it to a `float` value using the `parseFloat` method. (Hint: Use `Float.parseFloat(String)`).

f. Declare a method-local variable `strNumber` of type `String` with the value `"Ab12Cd3"` and attempt to convert it to a `float` value. (Hint: `parseFloat` method will throw a `NumberFormatException`).

Ans:- d, e, f

```
public class Q6_d {

public static void main(String[] args) {


    //Q6-d

    float f = 67456.6f;

    System.out.println(Float.toString(f));


    //Q6-e

    String str = "34555";

    System.out.println(Float.parseFloat(str));


    //Q6-f

     String strNumber = "Ab12Cd3";

     float number = Float.parseFloat(strNumber);
```

```
        System.out.println(number);

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q6_d.java
PS D:\Java_cdac\Assignment2> java Q6_d
67456.6
34555.0
PS D:\Java_cdac\Assignment2>
```

```
Exception in thread "main" java.lang.NumberFormatException: For input string: "Ab12Cd3"
        at java.base/jdk.internal.math.FloatingDecimal.readJavaFormatString(FloatingDecimal.java:2054)
        at java.base/jdk.internal.math.FloatingDecimal.parseFloat(FloatingDecimal.java:122)
        at java.base/java.lang.Float.parseFloat(Float.java:556)
        at Q6_d.main(Q6_d.java:15)
```

g. Declare a method-local variable `number` of type `float` with some value and convert it to the corresponding wrapper class using `Float.valueOf()`. (Hint: Use `Float.valueOf(float)`).

h. Declare a method-local variable `strNumber` of type `String` with some `float` value and convert it to the corresponding wrapper class using `Float.valueOf()`. (Hint: Use `Float.valueOf(String)`).

i. Declare two float variables with values `112.3` and `984.5`, and add them using a method from the `Float` class. (Hint: Use `Float.sum(float, float)`).

Ans :- g, h,i

```
public class Q6_g{

    public static void main(String[] args) {

        //Q6-g

        float num = 67456;

        System.out.println(Float.valueOf(num));



        //Q6-h

        String strnum = "4555.78";

        System.out.println(Float.valueOf(strnum));
```

```
        //Q6-i

        float a = 112.3f;

        float b = 984.5f;

        System.out.println("Sum: " + Float.sum(a, b));

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q6_g.java
PS D:\Java_cdac\Assignment2> java Q6_g
67456.0
4555.78
Sum: 1096.8
PS D:\Java_cdac\Assignment2>
```

j. Declare two float variables with values `112.2` and `556.6`, and find the minimum and maximum values using the `Float` class. (Hint: Use `Float.min(float, float)` and `Float.max(float, float)`).

k. Declare a float variable with the value `-25.0f`. Find the square root of this value. (Hint: Use `Math.sqrt()` method).

l. Declare two float variables with the same value, `0.0f`, and divide them. (Hint: Observe the result and any special floating-point behavior).

m. Experiment with converting a `float` value into other primitive types or vice versa and observe the results.

Ans :- j, k, l, m

```
import java.math.*;


public class Q6_j {

    public static void main(String[] args) {


        //Q6-j

        float a = 112.6f;

        float b = 556.6f;
```

```
        System.out.println("Min: " + Float.min(a, b));

        System.out.println("Max: " + Float.max(a, b) );


        //Q6-k

        float num = -25.0f;

        System.out.println("Squareroot: " + Math.sqrt(num));


        //Q6-l

        float i = 0.0f;

        float j = 0.0f;

        System.out.println("Division: " + i/j);


       //Q6-m

        float number = 567.8f;

        System.out.println(Double.valueOf(number));

        System.out.println(String.valueOf(number));

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q6_j.java
PS D:\Java_cdac\Assignment2> java Q6_j
Min: 112.6
Max: 556.6
Squareroot: NaN
Division: NaN
567.7999877929688
567.8
PS D:\Java_cdac\Assignment2>
```

7. Working with `java.lang.Double`

ASSIGNMENT NO.2

a. Explore the Java API documentation for `java.lang.Double` and observe its modifiers and super types.

b. Write a program to test how many bytes are used to represent a `double` value using the `BYTES` field. (Hint: Use `Double.BYTES`).

c. Write a program to find the minimum and maximum values of `double` using the `MIN_VALUE` and `MAX_VALUE` fields. (Hint: Use `Double.MIN_VALUE` and `Double.MAX_VALUE`).

Ans:- b, c

```
public class Q7_b {

public static void main(String[] args) {


    //Q7-b

    double d = 567.8;

    System.out.println(Double.BYTES);


   //Q7-c

    System.out.println(Double.MIN_VALUE);

    System.out.println(Double.MAX_VALUE);

}

}
```

```
PS D:\Java_cdac\Assignment2> javac Q7_b.java
PS D:\Java_cdac\Assignment2> java Q7_b
8
4.9E-324
1.7976931348623157E308
PS D:\Java_cdac\Assignment2>
```

d. Declare a method-local variable `number` of type `double` with some value and convert it to a `String` using the `toString` method. (Hint: Use `Double.toString(double)`).

e. Declare a method-local variable `strNumber` of type `String` with some value and convert it to a `double` value using the `parseDouble` method. (Hint: Use `Double.parseDouble(String)`).

f. Declare a method-local variable `strNumber` of type `String` with the value `"Ab12Cd3"` and attempt to convert it to a `double` value. (Hint: `parseDouble` method will throw a `NumberFormatException`).

Ans:- d, e, f

```
public class Q7_d {

    public static void main(String[] args) {

        //Q7-d

        double d = 67456.8;

        System.out.println(Double.toString(d));



        //Q7-e

        String strNumber = "34555";

        System.out.println(Double.parseDouble(strNumber));



        //Q7-f

        String strNumber1 = "Ab12Cd3";

        double number = Double.parseDouble(strNumber1);

        System.out.println(number);

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q7_d.java
PS D:\Java_cdac\Assignment2> java Q7_d
67456.8
34555.0
PS D:\Java_cdac\Assignment2>
```

```
PS D:\Java_cdac\Assignment2> javac Q7_d.java
PS D:\Java_cdac\Assignment2> java Q7_d
Exception in thread "main" java.lang.NumberFormatException: For input string: "Ab12Cd3"
        at java.base/jdk.internal.math.FloatingDecimal.readJavaFormatString(FloatingDecimal.java:2054)
        at java.base/jdk.internal.math.FloatingDecimal.parseDouble(FloatingDecimal.java:110)
        at java.base/java.lang.Double.parseDouble(Double.java:792)
        at Q7_d.main(Q7_d.java:14)
PS D:\Java_cdac\Assignment2>
```

g. Declare a method-local variable `number` of type `double` with some value and convert it to the corresponding wrapper class using `Double.valueOf()`. (Hint: Use `Double.valueOf(double)`).

h. Declare a method-local variable `strNumber` of type `String` with some `double` value and convert it to the corresponding wrapper class using `Double.valueOf()`. (Hint: Use `Double.valueOf(String)`).

i. Declare two double variables with values `112.3` and `984.5`, and add them using a method from the `Double` class. (Hint: Use `Double.sum(double, double)`).

Ans:- g, h, i

```
public class Q7_g {

public static void main(String[] args) {


    //Q7-g

    double num = 67456;

    System.out.println(Double.valueOf(num));


    //Q7-h

    String strnum = "4555.78";

    System.out.println(Double.valueOf(strnum));


    //Q7-i

    double a = 112.3;

    double b = 984.5;
```

```
        System.out.println("Sum: " + Double.sum(a, b));

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q7_g.java
PS D:\Java_cdac\Assignment2> java Q7_g
67456.0
4555.78
Sum: 1096.8
PS D:\Java_cdac\Assignment2>
```

j. Declare two double variables with values `112.2` and `556.6`, and find the minimum and maximum values using the `Double` class. (Hint: Use `Double.min(double, double)` and `Double.max(double, double)`).

k. Declare a double variable with the value `-25.0`. Find the square root of this value. (Hint: Use `Math.sqrt()` method).

l. Declare two double variables with the same value, `0.0`, and divide them. (Hint: Observe the result and any special floating-point behavior).

m. Experiment with converting a `double` value into other primitive types or vice versa and observe the results.

Ans:- j, k, l, m

```
 import java.math.*;

public class Q7_j {

public static void main(String[] args) {


        //Q6-j

        double a = 112.6;

        double b = 556.6;

        System.out.println("Min: " + Double.min(a, b));

        System.out.println("Max: " + Double.max(a, b) );



        //Q6-k
```

```
        double num = -25.0;

        System.out.println("Squareroot: " + Math.sqrt(num));


        //Q6-l

        double i = 0.0;

        double j = 0.0;

        System.out.println("Division: " + i/j);


       //Q6-m

        double number = 5678;

        System.out.println(Double.valueOf(number));

        System.out.println(String.valueOf(number));

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q7_j.java
PS D:\Java_cdac\Assignment2> java Q7_j
Min: 112.6
Max: 556.6
Squareroot: NaN
Division: NaN
5678.0
5678.0
PS D:\Java_cdac\Assignment2>
```

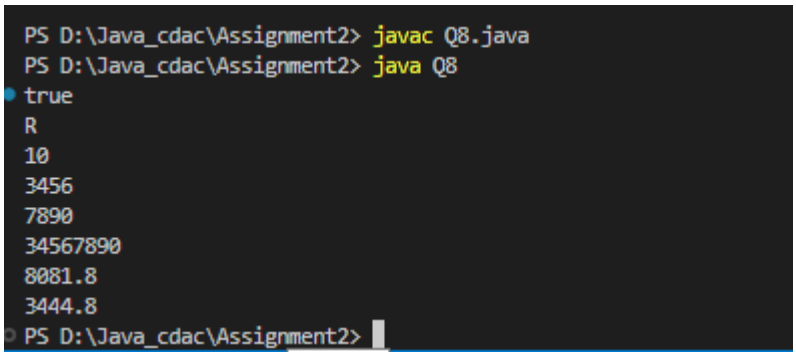
8. Conversion between Primitive Types and Strings

Initialize a variable of each primitive type with a user-defined value and convert it into `String`:

- First, use the `toString` method of the corresponding wrapper class. (e.g., `Integer.toString()`).

Ans:-

```
public class Q8 {

public static void main(String[] args) {


    //Primitive datatypes  Boolean, char, byte, int, short, long, float, and double

    Boolean b = true;

    char c = 'R';

    Byte bi = 10;

    int i = 3456;

    short s = 7890;

    long l = 34567890;

    float f = 8081.8f;

    double d = 3444.80;


    System.out.println(Boolean.toString(b));

    System.out.println(Character.toString(c));

    System.out.println(Byte.toString(bi));

    System.out.println(Integer.toString(i));

    System.out.println(Short.toString(s));

    System.out.println(Long.toString(l));

    System.out.println(Float.toString(f));

    System.out.println(Double.toString(d));

}

}
```



- Then, use the `valueOf` method of the `String` class. (e.g., `String.valueOf()`).

Ans:-

```
public class Q8 {

public static void main(String[] args) {


    //Primitive datatypes  Boolean, char, byte, int, short, long, float, and double

    Boolean b = true;

    char c = 'R';

    Byte bi = 10;

    int i = 3456;

    short s = 7890;

    long l = 34567890;

    float f = 8081.8f;

    double d = 3444.80;


    System.out.println(Boolean.toString(b));

    System.out.println(Character.toString(c));

    System.out.println(Byte.toString(bi));
```

```
        System.out.println(Integer.toString(i));

        System.out.println(Short.toString(s));

        System.out.println(Long.toString(l));

        System.out.println(Float.toString(f));

        System.out.println(Double.toString(d));


        System.out.println(String.valueOf(b));

        System.out.println(String.valueOf(c));

        System.out.println(String.valueOf(bi));

        System.out.println(String.valueOf(i));

        System.out.println(String.valueOf(s));

        System.out.println(String.valueOf(l));

        System.out.println(String.valueOf(f));

        System.out.println(String.valueOf(d));

    }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q8.java
PS D:\Java_cdac\Assignment2> java Q8
true
R
10
3456
7890
34567890
8081.8
3444.8
PS D:\Java_cdac\Assignment2>
```


9. Default Values of Primitive Types

Declare variables of each primitive type as fields of a class and check their default values. (Note: Default values depend on whether the variables are instance variables or static variables).

Ans:-

```
public class Q9 {

    static Boolean b ;

    static char c ;

    static Byte bi;

    static int i ;

    static short s ;

    static long l ;

    static float f ;

    static double d ;


    public static void main(String[] args) {


        System.out.println("Default value of Boolean: " + b);

        System.out.println("Default value of char: " + c);

        System.out.println("Default value of Byte: " + bi);

        System.out.println("Default value of int: " + i);

        System.out.println("Default value of Short: " + s);

        System.out.println("Default value of long: " + l);

        System.out.println("Default value of float: " + f);

        System.out.println("Default value of double: " + d);

    }


}
```

```
PS D:\Java_cdac\Assignment2> javac Q9.java
PS D:\Java_cdac\Assignment2> java Q9
Default value of Boolean: null
Default value of char:
Default value of Byte: null
Default value of int: 0
Default value of Short: 0
Default value of long: 0
Default value of float: 0.0
Default value of double: 0.0
PS D:\Java_cdac\Assignment2>
```

10. Arithmetic Operations with Command Line Input

Write a program that accepts two integers and an arithmetic operator (`+`, `-`, `*`, `/`) from the command line. Perform the specified arithmetic operation based on the operator provided. (Hint: Use `switch-case` for operations).

Ans:-

```
import java.util.Scanner;

public class Q10 {



    Scanner sc = new Scanner(System.in);

    public static void main(String[] args) {

   Scanner sc = new Scanner(System.in);//defined scanner object to take input from user



        System.out.println("Enter first number: ");

        int i = sc.nextInt();



        System.out.println("Enter second number: ");

        int j = sc.nextInt();



System.out.println("Choose an operator :  +,  -,  *,  /");// ask users to enter operator
```

```
// int operator = sc.nextInt();

char op1 = sc.next().charAt(0);

// String op1 = sc.nextLine();


switch (op1) {

    case '+':

        int sum = i+j;

        System.out.println("Sum: " + (i+j));

        break;

    case '-':

        int sub = i-j;

        System.out.println("Substaction: " + (i-j));

        break;


    case '*':

        float mul = i*j;

        System.out.println("Multiplicaton: " + (i*j));

        break;

    case '/':

        float div = i/j;

        System.out.println("Division: " + (i/j));

        break;


    default:
```

```
                System.out.println("Invalid operator, Enter any number from 1 to 4");

                    break;

            }

        }

}
```

```
PS D:\Java_cdac\Assignment2> javac Q10.java
PS D:\Java_cdac\Assignment2> java Q10
Enter first number:
5
Enter second number:
7
Choose an operator as specified number:  +,  -,  *,  /
*
Multiplicaton: 35
PS D:\Java_cdac\Assignment2>
```