Q4] Working with java.lang.Integer

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

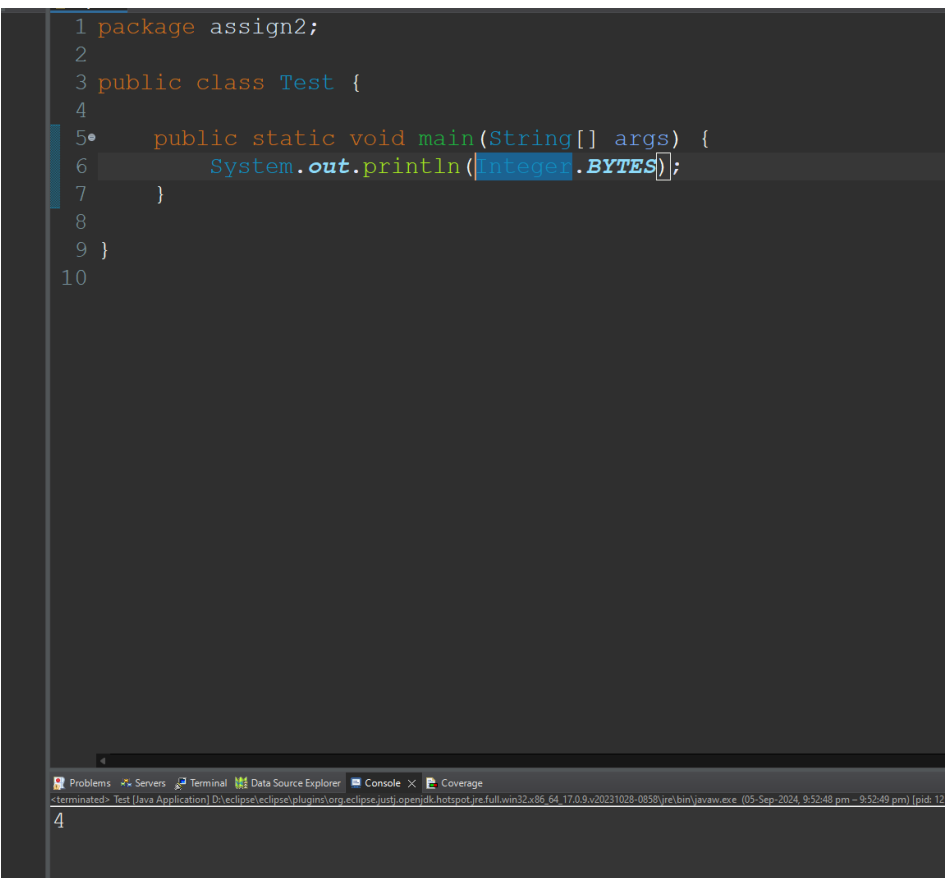$\Rightarrow$ static int → MAX_VALUE

static int → MIN_VALUE

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

$\Rightarrow$

```java
1 package assign2;
2
3 public class Test {
4
5     public static void main(String[] args) {
6         System.out.println(Integer.BYTES);
7     }
8
9 }
10
```
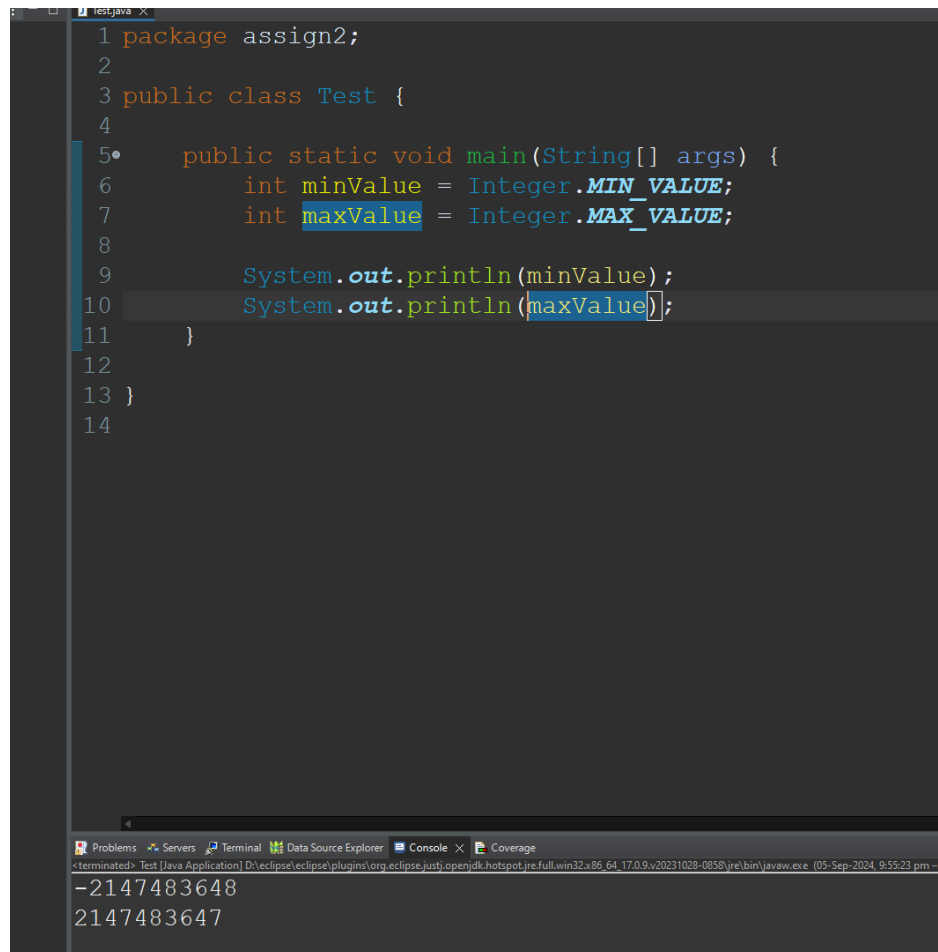
Problems Servers Terminal Data Source Explorer Console × Coverage
<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 9:52:48 pm – 9:52:49 pm) [pid: 12

4

$\Rightarrow$

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).

$\Rightarrow$

```java
package assign2;

public class Test {

    public static void main(String[] args) {
        int minValue = Integer.MIN_VALUE;
        int maxValue = Integer.MAX_VALUE;

        System.out.println(minValue);
        System.out.println(maxValue);
    }
}
```

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<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 9:55:23 pm – 9

```
-2147483648
2147483647
```

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)).

⟹

```java
1 package assign2;
2
3 public class Test {
4
5•    public static void main(String[] args) {
6            int number = 12345;
7            String strNumber = Integer.toString(number);
8            System.out.println(strNumber);
9        }
10
11 }
12
```

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<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 9:58:06 pm – 9:58:07 pm) [pid: 2436]

12345

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: UseInteger.parseInt(String)).

$\Rightarrow$

```java
1 package assign2;
2
3 public class Test {
4
5•     public static void main(String[] args) {
6         String strNumber = "67890";
7         int number = Integer.parseInt(strNumber);
8         System.out.println(number);
9     }
10
11 }
12
```

Problems   Servers   Terminal   Data Source Explorer   ■ Console ×   Coverage
<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 9:59:35 pm – 9:59:36 pm) [pid: 9380]

67890

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).

$\Rightarrow$

```java
1  package assign2;
2
3  public class Test {
4
5      public static void main(String[] args) {
6          String strNumber = "Ab12Cd3";
7          int number = Integer.parseInt(strNumber);
8          System.out.println(number);
9      }
10
11 }
12
```

Problems Servers Terminal Data Source Explorer ■ Console × Coverage

`<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 10:02:34 pm – 10:02:35 pm) [pid: 10660]`

```
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:668)
        at java.base/java.lang.Integer.parseInt(Integer.java:786)
        at assign2.Test.main(Test.java:7)
```

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:UseInteger.valueOf(int)).

$\Rightarrow$

```java
1 package assign2;
2
3 public class Test {
4
5•     public static void main(String[] args) {
6             int number = 123;
7             Integer wrapperNumber = Integer.valueOf(number);
8             System.out.println(wrapperNumber);
9         }
10
11 }
12
```

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<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 10:10:54 pm – 10:10:56 pm) [pid: 15020]
123

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)).

⇒

```java
1 package assign2;
2
3 public class Test {
4
5    public static void main(String[] args) {
6        String strNumber = "456";
7        Integer wrapperNumber = Integer.valueOf(strNumber);
8        System.out.println(wrapperNumber);
9    }
10
11 }
12
```

456

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)).

⟹

```java
1 package assign2;
2
3 public class Test {
4
5     public static void main(String[] args) {
6         int a = 10;
7         int b = 20;
8         int sum = Integer.sum(a, b);
9         System.out.println(sum);
10    }
11
12 }
13
```

Problems Servers Terminal Data Source Explorer Console × Coverage
<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 10:14:34 pm – 10:14:35 pm) [pid: 11108]

30

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)).

⟹

```java
1 package assign2;
2
3 public class Test {
4
5   public static void main(String[] args) {
6       int a = 10;
7       int b = 20;
8       int min = Integer.min(a, b);
9       int max = Integer.max(a, b);
10      System.out.println("Minimum value: " + min);
11      System.out.println("Maximum value: " + max);
12  }
13
14 }
15
```

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<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 10:16:25 pm – 10:16:2

```
Minimum value: 10
Maximum value: 20
```

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

$\Rightarrow$

```java
package assign2;

public class Test {

    public static void main(String[] args) {
        int number = 7;
        String binaryString = Integer.toBinaryString(number);
        String octalString = Integer.toOctalString(number);
        String hexString = Integer.toHexString(number);

        System.out.println("Binary representation: " + binaryString);
        System.out.println("Octal representation: " + octalString);
        System.out.println("Hexadecimal representation: " + hexString);
    }

}
```

```
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<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe  (05-Sep-2024, 10:22:17 pm – 10:22:18 pm) [pid: 17268]
Binary representation: 111
Octal representation: 7
Hexadecimal representation: 7
```

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

⟹

```java
1 package assign2;
2
3 public class Test {
4
5    public static void main(String[] args) {
6        int intValue = 12345;
7        double doubleValue = intValue;
8        System.out.println("Converted to double: " + doubleValue);
9    }
10
11 }
12
```

Problems   Servers   Terminal   Data Source Explorer   Console ✕   Coverage

<terminated> Test [Java Application] D:\eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (05-Sep-2024, 10:27:06 pm – 10:27:07 pm) [pid: 9480]

```
Converted to double: 12345.0
```