LAB # 01

INTRODUCTION TO STRING POOL, LITERALS, AND WRAPPER CLASSES

OBJECTIVE: To study the concepts of String Constant Pool, String literals, String immutability and Wrapper classes.

LAB TASKS:

1. Write a program that initialize five different strings using all the above mentioned ways, i.e.,

   a) string literals

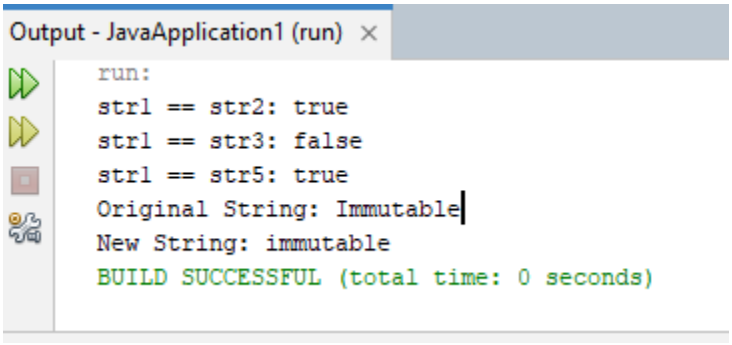
   b) new keyword

also use intern method and show string immutability.

CODE:

```
public class JavaApplication1 {
   public static void main(String[] args) {
      String str1 = "Kashaf";
      String str2 = "Kashaf";
      String str3 = new String("Kashaf");
      String str4 = new String("Kashaf");
      String str5 = str4.intern();
      System.out.println("str1 == str2: " + (str1 == str2));
      System.out.println("str1 == str3: " + (str1 == str3));
      System.out.println("str1 == str5: " + (str1 == str5));
      String immutableString = "Immutable";
      String newString = immutableString.replace("I", "i");
      System.out.println("Original String: " + immutableString);
      System.out.println("New String: " + newString);
```

OUTPUT:



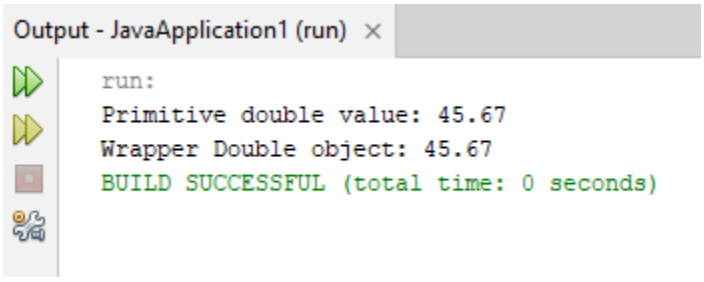
2. Write a program to convert primitive data type Double into its respective wrapper object.

CODE:

```
public class JavaApplication1 {


  /**
   * @param args the command line arguments
   */
  public static void main(String[] args) {
     double primitiveDouble = 45.67;
     Double wrapperDouble = Double.valueOf(primitiveDouble);
     System.out.println("Primitive double value: " + primitiveDouble);
     System.out.println("Wrapper Double object: " + wrapperDouble);
```

OUTPUT:



3. Write a program that initialize five different strings and perform the following operations.

a. Concatenate all five stings.
b. Convert fourth string to uppercase.
c. Find the substring from the concatenated string from 8 to onward.

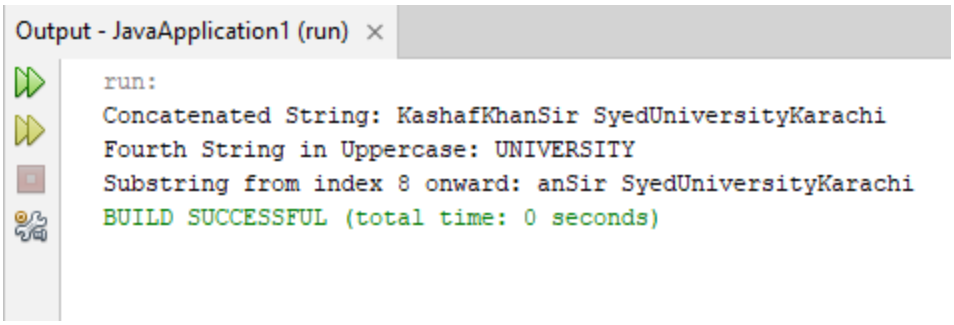
CODE:

```
public class JavaApplication1 {
   /**
    * @param args the command line arguments
    */
   public static void main(String[] args) {

     String str1 = "Kashaf";
       String str2 = "Khan";
       String str3 = "Sir Syed";
       String str4 = "University";
       String str5 = "Karachi";

       String concatenatedString = str1 + str2 + str3 + str4 + str5;
       System.out.println("Concatenated String: " + concatenatedString);
       String str4Uppercase = str4.toUpperCase();
       System.out.println("Fourth String in Uppercase: " + str4Uppercase);
       String substringFromConcatenated = concatenatedString.substring(8);
       System.out.println("Substring from index 8 onward: " + substringFromConcatenated);
   }
}
```

OUTPUT:



HOME TASK:

1. Write a JAVA program to perform Autoboxing and also implement different methods of wrapper class.

CODE:

```
public class JavaApplication1 {


  /**
   * @param args the command line arguments
   */
  public static void main(String[] args)
     int primitiveInt = 50;
     Integer wrappedInt = primitiveInt;
     System.out.println("Autoboxed Integer: " + wrappedInt);
     double primitiveDouble = 23.45;
     Double wrappedDouble = primitiveDouble;
     System.out.println("Autoboxed Double: " + wrappedDouble);
     String strNumber = "123";
     int parsedInt = Integer.parseInt(strNumber);
     System.out.println("Parsed Integer from String: " + parsedInt);


     String intToString = Integer.toString(wrappedInt);
```

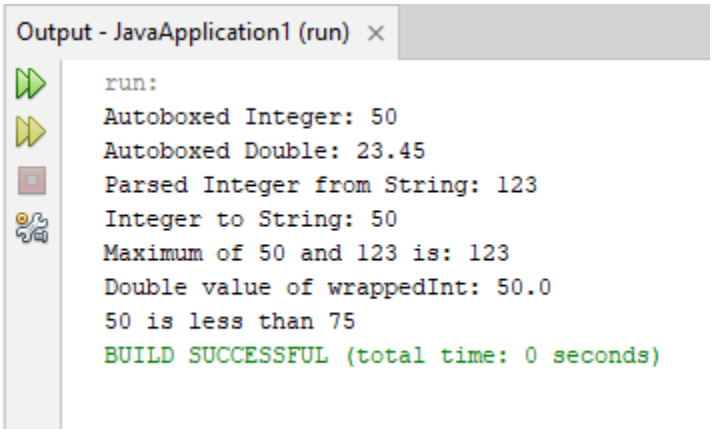
```
System.out.println("Integer to String: " + intToString);


int maxNumber = Integer.max(primitiveInt, parsedInt);
System.out.println("Maximum of " + primitiveInt + " and " + parsedInt + " is: " + maxNumber);


double doubleFromInt = wrappedInt.doubleValue();
System.out.println("Double value of wrappedInt: " + doubleFromInt);


Integer anotherInt = 75;
int comparisonResult = wrappedInt.compareTo(anotherInt);
if (comparisonResult > 0) {
   System.out.println(wrappedInt + " is greater than " + anotherInt);
} else if (comparisonResult < 0) {
   System.out.println(wrappedInt + " is less than " + anotherInt);
} else {
   System.out.println(wrappedInt + " is equal to " + anotherInt);
}
```

OUTPUT:



2. Write a JAVA program that takes 3 strings and show that strings are immutable.

CODE:

```
public class JavaApplication1 {

  /**
   * @param args the command line arguments
   */
  public static void main(String[] args) {
     Scanner scanner = new Scanner(System.in);
     System.out.print("Enter first string: ");
     String str1 = scanner.nextLine();
     System.out.print("Enter second string: ");
     String str2 = scanner.nextLine();
     System.out.print("Enter third string: ");
     String str3 = scanner.nextLine();
     System.out.println("\nOriginal Strings:");
     System.out.println("str1: " + str1);
     System.out.println("str2: " + str2);
     System.out.println("str3: " + str3);

     String modifiedStr1 = str1.concat(" is immutable");
     String modifiedStr2 = str2.concat(" shows immutability");
     String modifiedStr3 = str3.toUpperCase();

     System.out.println("\nModified Strings:");
     System.out.println("modifiedStr1: " + modifiedStr1);
     System.out.println("modifiedStr2: " + modifiedStr2);
     System.out.println("modifiedStr3: " + modifiedStr3);
     System.out.println("\nOriginal Strings After Modification Attempts:");
     System.out.println("str1: " + str1); // unchanged
     System.out.println("str2: " + str2); // unchanged
```

```
        System.out.println("str3: " + str3); // unchanged
    }


}
```

OUTPUT: