**Lab # 01**

**Lab Tasks:**

**Task #1: Write a program that initialize five different strings using string literals, new keyword also use intern method and show string immutability.**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

//\*\*Task #1\*\*

//Using Literals

String a="Hassan Junaid";

String b= "Under Graduate";

//Using New Keyword

String c=new String("Software Engineering");

String d=new String("Batch 2023");

//Using Intern

String e =new String("3rd Semester").intern();

System.out.println("a:"+a);

System.out.println("b:"+b);

System.out.println("c:"+c);

System.out.println("d:"+d);

System.out.println("e:"+e);

// Demonstrating immutability

String var = "Java";

System.out.println("\nOriginal String: " + var);

// Trying to modify the string

String modified = var.replace('J', 'K');

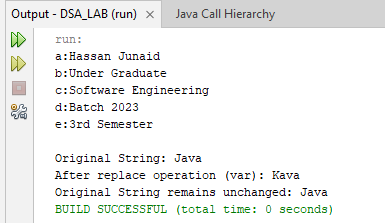
System.out.println("After replace operation (var): " + modified);

System.out.println("Original String remains unchanged: " + var);

}

**}**

**Output:**

****

**Task # 02:** **Write a program to convert primitive data type Double into its respective wrapper object.**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

//Task 2

double var=908;

//Conversion

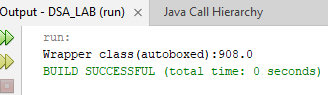
Double var1=var;

System.out.println("Wrapper class(autoboxed):"+var1);

}

**}**

**Output:**

****

**Task # 03** **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 DSA\_LAB1 {

public static void main(String[] args) {

//\*Task3\*

//Initialize String

String s1="Atif";

String s2="Hassan";

String s3="Jameel";

String s4="Yamin";

String s5="Basil";

//Concantate

String con1=s1.concat(" "+s2);

String con2=s2.concat(" "+s3);

String con3=(s3+" "+s4);

String con4=(s4+" "+s5);

String con5=s5.concat(" Haris");

System.out.println("Concantate s1 and s2: "+con1);

System.out.println("Concantate s2 and s3: "+con2);

System.out.println("Concantate s3 and s4: "+con3);

System.out.println("Concantate s4 and s5: "+con4);

System.out.println("Concantate s5 and s1: "+con5);

//Fourth String Conversion

String upper =s4.toUpperCase();

System.out.println("\nFourth String: "+s4+"\nUpper Case: "+upper);

//SubString from index 8

System.out.println("\nSubstring con1: "+con1.substring(8));

System.out.println("Substring con2: "+con2.substring(8));

System.out.println("Substring con3: "+con3.substring(8));

System.out.println("Substring con4: "+con4.substring(8));

System.out.println("Substring con5: "+con5.substring(8));

}

**}**

**Output:**

**A screenshot of a computer

Description automatically generated**

**Task # 04 You are given two strings word1 and word2. Merge the strings by adding letters in alternating order, starting with word1. If a string is longer than the other, append the additional letters onto the end of the merged string. Return the merged string.**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

//Task 4

String word1="Hmla";

String word2="iai";

System.out.println("Word1: "+word1+"\nWord2: "+word2+"\nMerged Words: "+merged(word1,word2));

}

public static String merged(String a,String b){

String m="";

int maxlength=Math.max(a.length(), b.length());

for(int i=0;i<maxlength;i++){

if(i<a.length()){

m+=a.charAt(i);

}

if(i<b.length()){

m+=b.charAt(i);

}

}

return m;

**}**

**Output:**

**A screenshot of a computer

Description automatically generated**

**Task # 05:** **Write a Java program to find the minimum and maximum values of Integer, Float, and Double using the respective wrapper class constants.**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

//Task 5

//Integer

System.out.println("Max Integer:"+Integer.MAX\_VALUE);

System.out.println("Min Integer:"+Integer.MIN\_VALUE);

//FLoat

System.out.println("\nMax Float:"+Float.MAX\_VALUE);

System.out.println("Min Float:"+Float.MIN\_VALUE);

//Double

System.out.println("\nMax Double:"+Double.MAX\_VALUE);

System.out.println("Min Double:"+Double.MIN\_VALUE); }

**}**

**Output:**

**A screenshot of a computer

Description automatically generated**

**Home Tasks:**

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

**Code:**

package dsa\_lab;

public class Dsa\_lab1\_home {

public static void main(String[] args){

int value=596;

//Autoboxing

Integer val=value;

//Using Methods

//Conversion String into Integer

String a="12345";

Integer b=Integer.valueOf(a);

System.out.println(b+6);

//Convert Integer to int

double c=new Integer(b).doubleValue();

System.out.println(c);

//Convert to String

String str=b.toString();

System.out.println(str+" "+str);

Double d=Double.valueOf("NaN");

//Chk if value is Not a number (NaN)

boolean bl=d.isNaN();

System.out.println(bl);

Double e=Double.valueOf("Infinity");

//Chk if value is Infinite

boolean ch=e.isInfinite();

System.out.println(ch);

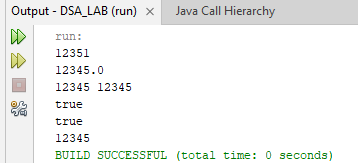
//Convert to hashCode

System.out.println(b.hashCode());

}

}

**Output:**

****

**Task #2 Write a Java program to count the number of even and odd digits in an integer using Autoboxing and Unboxing.**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

int ceven=0;

int codd=0;

int i1 = 1234789080;

// Autoboxing: converting primitive int to Integer

Integer i2 = i1;

// Convert Integer to String

String s = String.valueOf(i2);

// Loop through each character in the string

for (int i = 0; i < s.length(); i++) {

int o = Character.getNumericValue(s.charAt(i)); // Get numeric value of each character

if (o % 2 == 0) {

ceven++; // Count even digits

}

else {

codd++; // Count odd digits

}

}

// Display the count of even and odd digits

System.out.println("Even No: " + ceven);

System.out.println("Odd No: " + codd);

// Unboxing: converting Integer back to primitive int

int i3 = i2;

System.out.println("Unboxed: " + i3);

}

**}**

**Output:**

**A screenshot of a computer

Description automatically generated**

**Task #3 Write a Java program to find the absolute value, square root, and power of a number using Math class methods, while utilizing Autoboxing and Wrapper classes.**

**Code:**

public class Dsa\_lab1\_home {

public static void main(String[] args){

//initialize double value

double no=-439.05;

//Autoboxing

Double number =no;

System.out.println("Absolute vlaue of"+no+"is: "+Math.abs(number));

System.out.println("Square Root of"+no+"is: "+Math.sqrt(number));

System.out.println("2th Power of"+no+"is: "+Math.pow(number,2));

//Unboxing

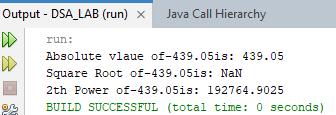
double no1=number;

System.out.println(no1);

}

}

**Output:**

****

**Task # 04:** **Write a Java program to reverse only the vowels in a string.**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

int count = 0;

String vowels = "aeiouAEIOU";

String str1 = "Jamal Khurram";

String addedVowel = "";

// Iterate through the characters of str1

for (int i = 0; i < str1.length(); i++) {

String str2 = String.valueOf(str1.charAt(i));

// Check if the current character is a vowel

if (vowels.contains(str2)) {

count = count + 1;

addedVowel = addedVowel.concat(str2);

}

}

//To reverse the addedVowel string

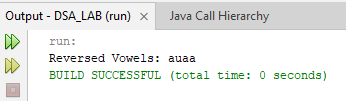
StringBuilder sb = new StringBuilder(addedVowel);

String reversedVowel = sb.reverse().toString();

System.out.println("Reversed Vowels: " + reversedVowel); }

**}**

**Output:**

****

**Task # 05:** **Write a Java program to find the longest word in a sentence**

**Code:**

public class DSA\_LAB1 {

public static void main(String[] args) {

String sentence ="Jawa is vast used Programming Language";

String[] arr=sentence.split(" ");

String longest="";

int length=0;

for(int i =0;i<arr.length;i++){

if(arr[i].length()>length){

length=arr[i].length();

longest=arr[i];

}

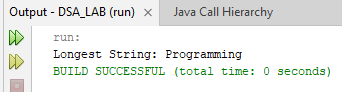
}

System.out.println("Longest String: "+ longest);

}

**}**

**Output:**

****