CS2304 JAVA PROGRAMMING

Primitive Data types in Java

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5.1 Code

```
import java.util.Arrays;

public class Ex {

   public static void main(String[] args) {

      String s1 = "Welcome to Java";

      String s2 = s1;

      String s3 = new String("Welcome to Java");

      String s4 = s1.intern();

      System.out.println("Name:Satlas Rohit B\nRegno:2024503305");

      System.out.println("s1 == s2 : " + (s1 == s2));

      System.out.println("s1 == s3 : " + (s1 == s3));

      System.out.println("s1 == s4 : " + (s1 == s4));

      System.out.println("s2 == s3 : " + (s2 == s3));

      System.out.println("s2 == s4 : " + (s2 == s4));

      System.out.println("s3 == s4 : " + (s3 == s4));
```

```
System.out.println("s1.equals(s2) : " + s1.equals(s2));

System.out.println("s1.equals(s3) : " + s1.equals(s3));

System.out.println("s1.equals(s4) : " + s1.equals(s4));

System.out.println("s1.equalsIgnoreCase(s2) : " + s1.equalsIgnoreCase(s2));

System.out.println("s1.compareTo(s2) : " + s1.compareTo(s2));

System.out.println("s2.compareTo(s3) : " + s2.compareTo(s3));

System.out.println("s1.substring(3) : " + s1.substring(3));

System.out.println("s1.substring(1,3) : " + s1.substring(1, 3));

System.out.println("s1.startsWith(\"Wel\") : " + s1.startsWith("Wel"));

System.out.println("s1.endsWith(\"Java\") : " + s1.endsWith("Java"));

System.out.println("s1.toLowerCase() : " + s1.toLowerCase());

System.out.println("s1.toUpperCase() : " + s1.toUpperCase());

System.out.println("\"    Hi\".trim() : " + "    Hi".trim());

System.out.println("s1.replace('o','O') : " + s1.replace('o', 'O'));

System.out.println("s1.replaceAll(\"o\",\"O\") : " + s1.replaceAll("o", "O"));

System.out.println("s1.replaceFirst(\"o\",\"O\") : " + s1.replaceFirst("o", "O"));

System.out.println("s1.split(\"O\") : " + Arrays.toString(s1.split("O")));

System.out.println("s1.split(\"O\",4) : " + Arrays.toString(s1.split("O", 4)));

System.out.println("s1.toCharArray() : " + Arrays.toString(s1.toCharArray()));
```

```
        System.out.println("s1.codePointAt(0) : " + s1.codePointAt(0));

        System.out.println("s1.contains(\"or\") : " + s1.contains("or"));

        System.out.println("System.identityHashCode(s1) : "
+System.identityHashCode(s1));

        System.out.println("System.identityHashCode(s2) : " +
System.identityHashCode(s2));

        System.out.println("System.identityHashCode(s3) : " +
System.identityHashCode(s3));

        System.out.println("System.identityHashCode(s4) : " +
System.identityHashCode(s4));

}

}
```

Output:

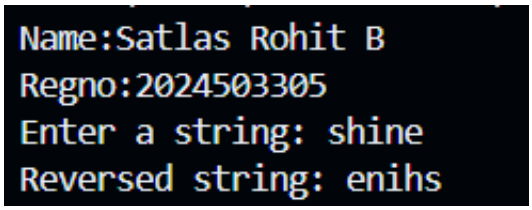
```
Name:Satlas Rohit B
Regno:2024503305
s1 == s2 : true
s1 == s3 : false
s1 == s4 : true
s2 == s3 : false
s2 == s4 : true
s3 == s4 : false
s1.equals(s2) : true
s1.equals(s3) : true
s1.equals(s4) : true
s1.equalsIgnoreCase(s2) : true
s1.compareTo(s2) : 0
s2.compareTo(s3) : 0
s1.substring(3) : come to Java
s1.substring(1,3) : el
s1.startsWith("Wel") : true
s1.endsWith("Java") : true
s1.toLowerCase() : welcome to java
s1.toUpperCase() : WELCOME TO JAVA
"    Hi".trim() : Hi
s1.replace('o','O') : WelcOme tO Java
s1.replaceAll("o","O") : WelcOme tO Java
s1.replaceFirst("o","O") : WelcOme to Java
s1.split("O") : [Welcome to Java]
s1.split("O",4) : [Welcome to Java]
s1.toCharArray() : [W, e, l, c, o, m, e,  , t, o,  , J, a, v, a]
s1.codePointAt(0) : 87
s1.contains("or") : false
System.identityHashCode(s1) : 112810359
System.identityHashCode(s2) : 112810359
System.identityHashCode(s3) : 2124308362
System.identityHashCode(s4) : 112810359
```

5.2 Code

```
import java.util.Scanner;

public class Ex2 {

	public static void main(String[] args) {

		Scanner sc = new Scanner(System.in);

		System.out.println("Name:Satlas Rohit B\nRegno:2024503305");

		System.out.print("Enter a string: ");

		String str = sc.nextLine();

		StringBuilder sb = new StringBuilder(str);

		int left = 0, right = sb.length() - 1;

		while (left < right) {

			char temp = sb.charAt(left);

			sb.setCharAt(left, sb.charAt(right));

			sb.setCharAt(right, temp);

			left++;

			right--;

		}

		System.out.println("Reversed string: " + sb.toString());

		sc.close();

	}
```

```
}
```

Output:



5.3 Code

```
import java.util.Scanner;

public class Ex{

   public static void main(String[] args) {

      Scanner sc = new Scanner(System.in);

      System.out.println("Name:Satlas Rohit B\nRegno:2024503305");

      System.out.print("Enter a string: ");

      String str = sc.nextLine().toLowerCase();

      int[] freq = new int[26];

      for (char c : str.toCharArray()) {

         if (Character.isLetter(c)) {

            freq[c - 'a']++;

            System.out.println("Character: " + c + ", Frequency: " + freq[c - 'a']);

         }

      }
```

```
        System.out.println(3+'b');

        System.out.println("Letter occurrences:");

        for (int i = 0; i < 26; i++) {

            if (freq[i] > 0) {

                System.out.println((char)(i + 'a') + " : " + freq[i]);

            }

        }

        sc.close();

    }

}
```

Output:

```
Name:Satlas Rohit B
Regno:2024503305
Enter a string: ramesh
Character: r, Frequency: 1
Character: a, Frequency: 1
Character: m, Frequency: 1
Character: e, Frequency: 1
Character: s, Frequency: 1
Character: h, Frequency: 1
Letter occurrences:
a : 1
e : 1
h : 1
m : 1
r : 1
s : 1
```

5.4 Code

```
import java.util.Scanner;

public class Ex {

   public static void main(String[] args) {

      Scanner sc = new Scanner(System.in);

      System.out.print("Enter a string: ");

      String str = sc.nextLine();

      String[] words = str.trim().split("\\s+");

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

         System.out.println(words[i]);

      }

      System.out.println("Number of words: " + words.length);

      sc.close();

   }

}
```

Output:

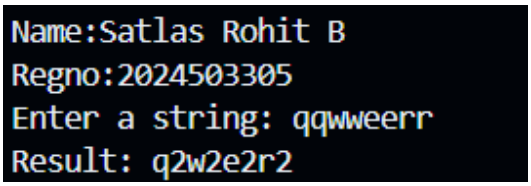
```
Name:Satlas Rohit B
Regno:2024503305
Enter a string: s a r d a a
Number of words: 6
```

5.5 Code

```
import java.util.Scanner;

public class Ex {

   public static String compress(String s) {

      if (s == null || s.isEmpty()) return s;

      StringBuilder out = new StringBuilder();

      char prev = s.charAt(0);

      int run = 1;

      for (int i = 1; i < s.length(); i++) {

         char c = s.charAt(i);

         if (c == prev) {

            run++;

         } else {

            out.append(prev).append(run);

            prev = c;

            run = 1;

         }

      }

      out.append(prev).append(run);

      return out.toString();
```

```
    }
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println("Name:Satlas Rohit B\nRegno:2024503305");
        System.out.print("Enter a string: ");
        String input = sc.nextLine();
        String result = compress(input);
        System.out.println("Result: " + result);
        sc.close();
    }
}
```

Output:

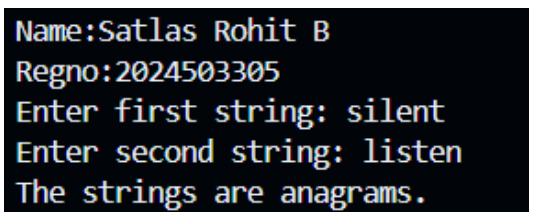


5.6 Code

```
import java.util.Arrays;
import java.util.Scanner;
public class Ex {
    public static void main(String[] args) {
```

```
        Scanner sc = new Scanner(System.in);
        System.out.println("Name:Satlas Rohit B\nRegno:2024503305");
        System.out.print("Enter first string: ");
        String s1 = sc.nextLine().toLowerCase().replaceAll("\\s+", "");
        System.out.print("Enter second string: ");
        String s2 = sc.nextLine().toLowerCase().replaceAll("\\s+", "");
        char[] a1 = s1.toCharArray();
        char[] a2 = s2.toCharArray();
        Arrays.sort(a1);
        Arrays.sort(a2);
        if (Arrays.equals(a1, a2)) {
            System.out.println("The strings are anagrams.");
        } else {
            System.out.println("The strings are not anagrams.");
        }
        sc.close();
    }
}
```

Output:



5.7 Code

```
import java.util.Scanner;

public class Ex {

   public static int compareVersion(String v1, String v2) {

      String[] arr1 = v1.split("\\.");

      String[] arr2 = v2.split("\\.");

      for (int i = 0; i < Math.max(arr1.length, arr2.length); i++) {

         int num1 = i < arr1.length ? Integer.parseInt(arr1[i]) : 0;

         int num2 = i < arr2.length ? Integer.parseInt(arr2[i]) : 0;

         if (num1 > num2) return 1;

         if (num1 < num2) return -1;

      }

      return 0;

   }

   public static void main(String[] args) {

      Scanner sc = new Scanner(System.in);

      System.out.println("Name:Satlas Rohit B\nRegno:2024503305");

      System.out.print("Enter first version: ");

      String v1 = sc.nextLine();

      System.out.print("Enter second version: ");
```

```
        String v2 = sc.nextLine();
        int result = compareVersion(v1, v2);
        if (result > 0)
            System.out.println(v1 + " is greater than " + v2);
        else if (result < 0)
            System.out.println(v2 + " is greater than " + v1);
        else
            System.out.println("Both versions are equal.");
        sc.close();
    }
}
```

Output:

```
Name:Satlas Rohit B
Regno:2024503305
Enter first version: 12.4.22
Enter second version: 43.32.443
43.32.443 is greater than 12.4.22
```

5.8 Code

```
import java.util.Scanner;
import java.util.regex.*;
public class Ex {
    public static void main(String[] args) {
```

```
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter email: ");
        String email = sc.nextLine();
        String regex = "^[A-Za-z0-9._%+-]{1,25}@[A-Za-z0-9.-]+\\.(com|in|edu)$";
        Pattern pattern = Pattern.compile(regex);
        Matcher matcher = pattern.matcher(email);
        if (matcher.matches()) {
            String[] parts = email.split("@");
            System.out.println("Valid email");
            System.out.println("Username: " + parts[0]);
            System.out.println("Domain: " + parts[1]);
        } else {
            System.out.println("Invalid email");
        }
        sc.close();
    }
}
```

Output:

```
Name:Satlas Rohit B
Regno:2024503305
Enter email: satlasrohit7@gmail.com
Valid email
Username: satlasrohit7
Domain: gmail.com
```