

## Assignment Week 2 Strings

**Program 1: Write a program that computes your initials from your full name and displays them**

```
import java.util.Scanner;

public class Program1_NameInitials {
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter your name:");
        String s = scanner.nextLine();
        String[] name = s.split(" ");
        String nameInitials = "";
        for (String n : name) {
            nameInitials += n.charAt(0);
        }
        System.out.println("Your initials are: " + nameInitials);
        scanner.close();
    }
}
```

### Output

```
Enter your name:
Ayush Singh
Your initials are: AS
```

**Program 2: Show two ways to concatenate the following two strings together to get the string "Incture Tech"**

- String str1 = "Incture"
- String str2 = "Tech"

```
public class Program2_Concatenate2Strings {
    public static void main(String[] args) {
        String str1 = "Incture", str2 = "Tech";
        String str3 = str1 + str2;
        System.out.println("Using '+': " + str3);
        String str4 = str1.concat(str2);
        System.out.println("Using concat: " + str4);
    }
}
```

### Output-

```
Using '+': InctureTech
Using concat: InctureTech
```

**Program 3: String sam = "Did Sam see bees? Sam did.";**

**Q: What is the value displayed by the expression sam.length()?**

**Q: What is the value returned by the method call `sam.charAt(12)`?**

**Q: Write an expression that refers to the letter b in the string referred to by `sam`.**

```
public class Program3_StringFuncs {
    public static void main(String[] args) {
        String sam = "Did Sam see bees? Sam did.";

        System.out.println("The length of the string is: " + sam.length());
        System.out.println("The character at index 12 is: " + sam.charAt(12));
        System.out.println("The index of the letter b is: " + sam.indexOf("b"));
    }
}
```

### Output-

```
The length of the string is: 26
The character at index 12 is: b
The index of the letter b is: 12
```

**Program 4: Write a small program to find if a string is palindrome.e.g. Amma, 1221**

```
import java.util.Scanner;

public class Program4_PalindromeString {
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a string: ");
        String string = scanner.nextLine();
        scanner.close();

        if (isPalindrome(string)) {
            System.out.println(string + " is a palindrome");
        } else {
            System.out.println(string + " is not a palindrome");
        }
    }

    private static boolean isPalindrome(String string) {
        int start = 0, end = string.length() - 1;
        while (start < end) {
            if (string.charAt(start) != string.charAt(end)) {
                return false;
            }
            start++;
            end--;
        }
        return true;
    }
}
```

## Output-

```
Enter a string:
abbba
abbba is a palindrome

Enter a string:
abbch
abbch is not a palindrome
```

## Program 5: Print duplicate characters from a string

```
import java.util.Scanner;
import java.util.HashMap;
import java.util.Map;

public class Program5_PrintDuplicateCharacters {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a string: ");
        String string = scanner.nextLine();
        scanner.close();

        // print duplicate characters in the string
        printDuplicateCharacters(string);
    }

    private static void printDuplicateCharacters(String string) {
        // using hashmap, print duplicate characters
        HashMap<Character, Integer> map = new HashMap<>();
        int n = string.length();

        for (int i = 0; i < n; i++) {
            char ch = string.charAt(i);
            map.put(ch, map.getOrDefault(ch, 0) + 1);
        }
        System.out.println("Duplicate characters are: ");
        for (Map.Entry<Character, Integer> entry : map.entrySet()) {
            if (entry.getValue() > 1) {
                System.out.print(entry.getKey() + " ");
            }
        }
    }
}
```

## Output-

```
Program5_PrintDuplicateCharacters.java 5, 11 \4
Enter a string:
abbcbbdhakehkfg
Duplicate characters are:
a b h k
```