# Assignment 1:

## 1) Source Code:

```java
import java.util.*;

public class Sort {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        String[] strArr = new String[n];
        for (int i = 0; i < n; i++) {
            String input = sc.next();
            strArr[i] = input;
        }
        sc.close();
        bubbleSort(strArr);
        insertionSort(strArr);
    }

    public static void bubbleSort(String[] strArr) {
        String temp;
        for (int i = 0; i < strArr.length - 1; i++) {
            for (int j = i + 1; j < strArr.length; j++) {
                if (strArr[j].compareTo(strArr[i]) < 0) {
                    temp = strArr[j];
                    strArr[j] = strArr[i];
                    strArr[i] = temp;
                }
            }
        }

        System.out.println("Array after Bubble Sort is : ");
        for (int i = 0; i < strArr.length; i++) {
            System.out.println(strArr[i]);
        }
    }

    public static void insertionSort(String[] strArr) {
        System.out.println("Array after Insertion Sort is : ");
        for (int i = 1; i < strArr.length; i++) {
            String temp = strArr[i];
            int j = i - 1;
            while (j >= 0) {
                if (temp.compareTo(strArr[j]) > 0) {
                    break;
                }
                strArr[j + 1] = strArr[j];
                j--;
            }
            strArr[j + 1] = temp;
        }
        for (int i = 0; i < 5; i++) {
            System.out.println(strArr[i]);
```

```
        }
    }

}
```

### 2) Source Code:

```
import java.util.*;

class Initials {
    static void printInitials(String name) {
        if (name.length() == 0)
            return;
        String words[] = name.split(" ");

        if (words.length == 1) { // For Case: AkshitMangotra
            for (int i = 0; i < words[0].length(); i++) {
                if (words[0].charAt(i) >= 'A' && words[0].charAt(i) <= 'Z') {
                    System.out.print(words[0].charAt(i));
                }
            }
        } else { // For case: Akshit Mangotra
            for (String word : words) {
                System.out.print(Character.toUpperCase(word.charAt(0)));
            }
        }
    }

    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        String name = sc.nextLine();
        printInitials(name);
        sc.close();
    }
}
```

### 3) Source Code:

```
import java.util.Scanner;

public class PasswordGenerator {
    public static void main(String[] args) {
        String n;
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter your full name:");
        n = sc.nextLine();
        System.out.print("Enter your age:");
        int age = sc.nextInt();
        String[] t = n.split(" ");
        int l = t.length;
        System.out.print("Your password is:");
        for (int i = 0; i < l - 1; i++) {
            System.out.print(t[i].charAt(0) + "#");
        }
        System.out.print(t[l - 1] + "^" + age);
```

```
    }
}
```

### 4) Source Code:

```
import java.util.*;

public class SwapNames {

    public static void swapLastNames(String person1, String person2){
        String[] name1 = person1.split(" ");
        String[] name2 = person2.split(" ");
        String temp1 = name1[name1.length - 1];
        String temp2 = name2[name2.length - 1];

        if(!temp1.equals(temp2)){
            System.out.println("The last names are the same! Sorry Cant Marry");
            name2[name2.length-1] = temp1;
            name1[name1.length-1] = temp2;
        }
        System.out.println("The new names are: ");
        System.out.println(name1[0] + " " + name1[1]);
        System.out.println(name2[0] + " " + name2[1]);

    }
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String name1 = sc.nextLine();
        String name2 = sc.nextLine();
        swapLastNames(name1, name2);
        sc.close();

    }
}
```

### 5) Source Code:

```
import java.util.*;
public class usn {
    public static boolean isValidUSN(char[] ch) {
        int l = ch.length;
        if (l == 10 && (ch[0] >= 48 && ch[0] <= 57 &&
                (ch[0] == '1' || ch[0] == '2') &&
                Character.isUpperCase(ch[1]) && Character.isUpperCase(ch[2]) &&
                ch[3] >= '0' && ch[3] <= '9' && ch[4] >= '0' && ch[4] <= '9' &&
                Character.isUpperCase(ch[5]) && Character.isUpperCase(ch[6]) &&
                (ch[5] == 'C' && ch[6] == 'S') && ch[7] >= '0' && ch[7] <= '9' &&
                ch[8] >= '0' && ch[8] <= '9' && ch[9] >= '0' && ch[9] <= '9'))
            return true;
        return false;
    }
```

```
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String s = sc.nextLine();
        sc.close();
        int l = s.length();
        char[] ch = new char[l];
        for (int i = 0; i < l; i++) {
            ch[i] = s.charAt(i);
        }
        if(isValidUSN(ch){
            System.out.println("Succes");
        } else {
            System.out.println("Failure");
        }
    }
}
```

## 6) Source Code:

```
public class Usn2 {
    static String reverseWords(String inputString) {
        String[] words = inputString.split(" ");
        String reverseString = "";
        for (int i = 0; i < words.length; i++) {
            String word = words[i];
            String reverseWord = "";
            for (int j = word.length() - 1; j >= 0; j--) {
                reverseWord = reverseWord + word.charAt(j);
            }
            reverseString = reverseString + reverseWord + " ";
        }
        return reverseString;
    }

    public static void main(String[] args) {
        String str1 = "1 cup of hot coffee costs 8.00, whereas cold coffee costs 45.00.";
        System.out.println(reverseWords(str1));
        String str2 = "It Costs 25000rs for 1 LCD Projector.";
        System.out.println(reverseWords(str2));
        String str3 = "8990.33";
        System.out.println(reverseWords(str3));
    }

}
```

## 7) Source Code:

```
public class Usn3 {
    static void printRLE(String s) {
        String s1 = s.toLowerCase();
        for (int i = 0; i < s1.length(); i++) {
            int count = 1;
            while (i + 1 < s1.length() && s1.charAt(i) == s1.charAt(i
                    + 1)) {
                i++;
                count++;
            }
            System.out.print(s1.charAt(i) + "" + count + " ");
        }
        System.out.println();
    }

    public static void main(String args[]) {
        printRLE("aAbccccccaaA");
        printRLE("BBBBbbb");
    }

}
```

## 8) Source Code:

```
import java.util.Arrays;

public class CountTriplets {

    static int count_Triplets(int[] A, int N) {
        int count = 0;
        Arrays.sort(A);
        for (int i = 0; i < N; i++) {
            for (int j = i + 1; j < N; j++) {
                for (int k = j + 1; k < N; k++) {
                    if (A[i] + A[j] == A[k]) {
                        System.out.println(A[i] + "," + A[j] + "," + A[k]);
                        count++;
                    }
                }
            }
        }
        return count;
    }

    public static void main(String args[]) {
        int[] A = { 1, 2, 3, 4, 5, 7, 9 };
        int N = A.length;
        System.out.print(count_Triplets(A, N));
    }
}
```