Assignment 3

1. Implement transpose of a given matrix

file.java

```java

import java.util.*;

public class file{

    public static int[][] transpose(int[][] a, int n, int m){
        int[][] res = new int[m][n];
        for(int i = 0; i < m; i++){
            for(int j = 0; j < n; j++){
                res[i][j] = a[j][i];
            }
        }
        return res;
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        int m = input.nextInt();

        int[][] a = new int[n][m];

        for(int i = 0; i < n; i++){
            for(int j = 0; j < m; j++){
                a[i][j] = input.nextInt();
            }
        }

        int ans[][] = transpose(a, n, m);
        for(int i = 0; i < m; i++){
            for(int j = 0; j < n; j++){
                System.out.print(ans[i][j] + "  ");
            }
            System.out.println();
        }

    }
}


```

2. Implement multiplication of two Matrix

file.java

```java
//start coding a new Program


import java.util.*;

public class file{

    public static int[][] matrixMuliplication(int[][] a, int[][] b, int n, int m, int o, int p){
        int[][] res = new int[n][p];
        for(int i = 0; i < n; i++){
            for(int j = 0; j < p; j++){
                res[i][j] = 0;

                for(int k = 0; k < m; k++){
                    res[i][j] += a[i][k] * b[k][j];
                }
            }
        }
        return res;
    }
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        int m = input.nextInt();
        int o = input.nextInt();
        int p = input.nextInt();

        if(m == o){
            int[][] a = new int[n][m];
            int[][] b = new int[o][p];

            for(int i = 0; i < n; i++){
                for(int j = 0; j < m; j++){
                    a[i][j] = input.nextInt();
                }
            }
            for(int i = 0; i < o; i++){
                for(int j = 0; j < p; j++){
                    b[i][j] = input.nextInt();
                }
            }

            int ans[][] = matrixMuliplication(a, b, n, m, o, p);
            for(int i = 0; i < n; i++){
                for(int j = 0; j < p; j++){
                    System.out.print(ans[i][j] + "  ");
                }
                System.out.println();
            }
        }
        else{
            System.out.println("Matrix multiplication is not possible");
        }

    }
}
```

3. Implement a program to generate random password based on customer name, age and id for banking applications

file.java

```java
import java.util.*;

public class Main{

    public static char[] generatePassword(){
        Scanner input = new Scanner(System.in);
        String name = input.next();
        String age = input.next();
        String id = input.next();

        Random random = new Random();

        char[] password = new char[8];

        String all = name + age + id;
        for(int i = 0; i < 8; i++){
            password[i] = all.charAt(random.nextInt(all.length()));
        }

        return password;

    }

    public static void main(String[] args) {
        System.out.println(generatePassword());
    }
}
```