

Assignment 3

1. Implement transpose of a given matrix

```
file.java

1
2 import java.util.*;
3
4 public class file{
5
6     public static int[][] transpose(int[][] a, int n, int m){
7         int[][] res = new int[m][n];
8         for(int i = 0; i < m; i++){
9             for(int j = 0; j < n; j++){
10                 res[i][j] = a[j][i];
11             }
12         }
13         return res;
14     }
15     public static void main(String[] args) {
16         Scanner input = new Scanner(System.in);
17         int n = input.nextInt();
18         int m = input.nextInt();
19
20         int[][] a = new int[n][m];
21
22         for(int i = 0; i < n; i++){
23             for(int j = 0; j < m; j++){
24                 a[i][j] = input.nextInt();
25             }
26         }
27
28         int ans[][] = transpose(a, n, m);
29         for(int i = 0; i < m; i++){
30             for(int j = 0; j < n; j++){
31                 System.out.print(ans[i][j] + " ");
32             }
33             System.out.println();
34         }
35     }
36 }
37 }
38
39
```

2. Implement multiplication of two Matrix

```
file.java

1 //start coding a new Program
2
3
4 import java.util.*;
5
6 public class file{
7
8     public static int[][] matrixMultiplication(int[][] a, int[][] b, int n, int m, int o, int p){
9         int[][] res = new int[n][p];
10        for(int i = 0; i < n; i++){
11            for(int j = 0; j < p; j++){
12                res[i][j] = 0;
13
14                for(int k = 0; k < m; k++){
15                    res[i][j] += a[i][k] * b[k][j];
16                }
17            }
18        }
19        return res;
20    }
21    public static void main(String[] args) {
22        Scanner input = new Scanner(System.in);
23        int n = input.nextInt();
24        int m = input.nextInt();
25        int o = input.nextInt();
26        int p = input.nextInt();
27
28        if(m == o){
29            int[][] a = new int[n][m];
30            int[][] b = new int[o][p];
31
32            for(int i = 0; i < n; i++){
33                for(int j = 0; j < m; j++){
34                    a[i][j] = input.nextInt();
35                }
36            }
37            for(int i = 0; i < o; i++){
38                for(int j = 0; j < p; j++){
39                    b[i][j] = input.nextInt();
40                }
41            }
42
43            int ans[][] = matrixMultiplication(a, b, n, m, o, p);
44            for(int i = 0; i < n; i++){
45                for(int j = 0; j < p; j++){
46                    System.out.print(ans[i][j] + " ");
47                }
48                System.out.println();
49            }
50        }
51        else{
52            System.out.println("Matrix multiplication is not possible");
53        }
54    }
55 }
56 }
57
58
```

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

```
file.java

1 import java.util.*;
2
3 public class Main{
4
5     public static char[] generatePassword(){
6         Scanner input = new Scanner(System.in);
7         String name = input.next();
8         String age = input.next();
9         String id = input.next();
10
11         Random random = new Random();
12
13         char[] password = new char[8];
14
15         String all = name + age + id;
16         for(int i = 0; i < 8; i++){
17             password[i] = all.charAt(random.nextInt(all.length()));
18         }
19
20         return password;
21     }
22 }
23
24 public static void main(String[] args) {
25     System.out.println(generatePassword());
26 }
27 }
```