

Assignment:

```
package com.Assignment;

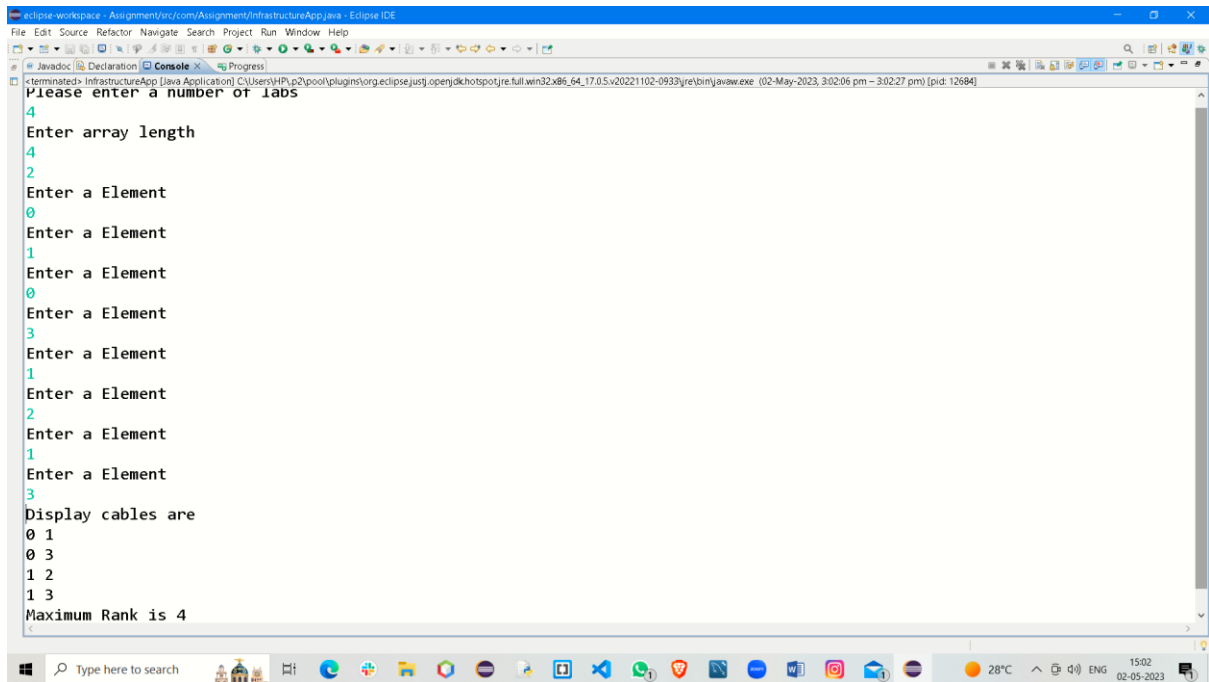
public class Infrastructure {

    public static int maxRank(int n, int[][] cables) {
        int[] labCount = new int[n];
        boolean[][] directlyConnected = new boolean[n][n];
        // count the number of cables connected to each lab
        for (int[] cable : cables) {
            int lab1 = cable[0];
            int lab2 = cable[1];
            labCount[lab1]++;
            labCount[lab2]++;
            directlyConnected[lab1][lab2] = true;
            directlyConnected[lab2][lab1] = true;
        }
        int maxRank = 0;
        // calculate the network rank of each pair of labs
        for (int i = 0; i < n; i++) {
            for (int j = i + 1; j < n; j++) {
                int networkRank = labCount[i] + labCount[j];
                if (directlyConnected[i][j]) {
                    networkRank--;
                }
            }
        }
        return maxRank;
    }
}
```

```
}  
  
if (networkRank > maxRank) {  
    maxRank = networkRank;  
}  
  
}  
  
}  
  
return maxRank;  
  
}  
  
}  
  
package com.Assignment;  
  
import java.util.Scanner;  
  
public class InfrastructureApp {  
  
    public static void main(String[] args) {  
  
        System.out.println("Please enter a number of  
        labs");  
  
        Scanner scan=new Scanner(System.in);  
  
        int n=scan.nextInt();  
  
        System.out.println("Enter array length");  
  
        //Creating 2D array by taking input from the user  
  
        int [][]cables=new int  
        [scan.nextInt()][scan.nextInt()];  
  
        for(int i=0;i<=cables.length-1;i++)
```

```
{  
    for(int j=0;j<=cables[i].length-1;j++)  
    {  
        System.out.println("Enter a Element");  
        cables[i][j]=scan.nextInt();  
    }  
}  
  
//Display array contents  
System.out.println("Display array are");  
for(int i=0;i<=cables.length-1;i++)  
{  
    for(int j=0;j<=cables[i].length-1;j++)  
    {  
        System.out.print(cables[i][j] + " ");  
    }  
    System.out.println();  
}  
  
int maxRank = Infrastructure.maxRank(n, cables);  
System.out.println("Maximum Rank is "+maxRank);  
}  
}
```

Output:



The screenshot shows the Eclipse IDE interface with the console window open. The console displays the output of a Java application named InfrastructureApp. The output starts with a prompt 'Please enter a number of labs' followed by the user input '4'. Then, it prompts 'Enter array length' with input '4', and then 'Enter a Element' five times with inputs '0', '1', '0', '3', and '1' respectively. After that, it prompts 'Enter a Element' three more times with inputs '2', '1', and '3'. Finally, it displays 'Display cables are' followed by a list of numbers: '0 1', '0 3', '1 2', and '1 3'. The last line of output is 'Maximum Rank is 4'. The console window title is 'InfrastructureApp [Java Application]'. The taskbar at the bottom shows the Windows Start button, a search bar, and various application icons including Edge, File Explorer, and several development tools. The system tray on the right shows the temperature as 28°C, the time as 15:02, and the date as 02-05-2023.

```
<terminated> InfrastructureApp [Java Application] C:\Users\HP\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64.17.0.5.v20221102-0933\jre\bin\java.exe (02-May-2023, 3:02:06 pm) [pid: 12684]
Please enter a number of labs
4
Enter array length
4
Enter a Element
0
Enter a Element
1
Enter a Element
0
Enter a Element
3
Enter a Element
1
Enter a Element
2
Enter a Element
1
Enter a Element
3
Display cables are
0 1
0 3
1 2
1 3
Maximum Rank is 4
```