# PROJECT (ESFP-2)

## Computer Network Management System.

DONE by:

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The idea is to manage a computer network. Implement a class CNMS having variables such as Lab_Id, No_of_computers, No_of_software_required, name_of_softwares, No_of_software_installed, No_of_system_working, Problem_type, Problem_status,Comp_id(variables must be taken according to their type such as lab_id in integers, name_of_softwares_installed in string). Now Make a class for Network Incharge, In_id, In_name, In_Contact_no, In_presence_status. Now make a database for 6 labs and 6 incharges and stores assumed problems accordingly and please check hardware for comp_id and installed software(or please install ------ these software)".

## CODE:

```cpp
#include <iostream>
#include <string.h>
#include <vector>
using namespace std;
class NI;
class CNMS
{
private:
```

```
    int Lab_Id[6], No_of_computers, No_of_software_required,
No_of_software_installed[6], No_of_system_working[6],
Comp_id[60];

   vector<vector<string>> str1{

     {"Vs-Code", "Adobe-Photoshop", "Multisim", "Logisim",
"Cisco-Packet-Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"Vs-Code", "VLC-Mediaplayer", "Multisim", "Logisim",
"Cisco-Packet-Tracer", "VMware-Workstation", "Microsoft-
office"},

     {"Vs-Code", "Adobe-Photoshop", "Turbo-C++", "Logisim",
"Cisco-Packet-Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"Sublime-Text-3", "Adobe-Photoshop", "Multisim", "Logisim",
"Cisco-Packet-Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"Vs-Code", "Adobe-Photoshop", "Multisim", "Notepad++",
"Cisco-Packet-Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"Vs-Code", "Adobe-Photoshop", "Multisim", "Logisim",
"Avast-Antivirus", "WinRAR", "Cisco-Webex"}};
//name_of_softwares_requier

   vector<vector<string>> str2{

     {"Vs-Code", "Adobe-Photoshop", "Multisim", "Logisim", "\0",
"VMware-Workstation", "Cisco-Webex"},

     {"Vs-Code", "\0", "Multisim", "Logisim", "Cisco-Packet-
Tracer", "VMware-Workstation", "\0"},

     {"Vs-Code", "Adobe-Photoshop", "Turbo-c++", "Logisim",
"Cisco-Packet-Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"\0", "Adobe-Photoshop", "\0", "Logisim", "Cisco-Packet-
Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"Vs-Code", "\0", "Multisim", "Notepad++", "Cisco-Packet-
Tracer", "VMware-Workstation", "Cisco-Webex"},

     {"Vs-Code", "Adobe-Photoshop", "Multisim", "Logisim",
"Avast-Antivirus", "WinRAR", "Cisco-Webex"}};
//name_of_softwares_Installed

   vector<vector<string>> str3{
```

```cpp
    {"Networking-issue", "10", "10", "10", "10", "10", "10", "10",
"Slow-computer", "10"},
    {"10", "Slow-computer", "10", "10", "10", "10", "10", "10", "10",
"10"},
    {"10", "10", "10", "10", "10", "10", "10", "10", "10", "10"},
    {"10", "10", "10", "10", "10", "Networking-issue", "10", "10", "10",
"10"},
    {"10", "Slow-computer", "10", "10", "10", "10", "Networking-
issue", "10", "10", "10"},
    {"10", "10", "10", "10", "10", "10", "10", "Networking-issue", "10",
"10"}}; //Problem_type
  vector<vector<string>> str4{
    {"Pending", "10", "10", "10", "10", "10", "10", "10", "Complete",
"10"},
    {"10", "Pending", "10", "10", "10", "10", "10", "10", "10", "10"},
    {"10", "10", "10", "10", "10", "10", "10", "10", "10", "10"},
    {"10", "10", "10", "10", "10", "Complete", "10", "10", "10", "10"},
    {"10", "Complete", "10", "10", "10", "10", "Pending", "10", "10",
"10"},
    {"10", "10", "10", "10", "10", "10", "10", "Complete", "10", "10"}};
//Problem_status
public:
  void A();
  friend void B(CNMS Lab, NI In);
  friend void C(CNMS Lab, NI In);
  void D();
  CNMS()
  {
    No_of_computers = 10;
    No_of_software_required = 7;
```

```
for (int i = 0; i < 6; i++)
{
    Lab_Id[i] = i + 1;
}
//for lab 1
No_of_software_installed[0] = 6;
No_of_system_working[0] = 8;
for (int j = 0; j < 10; j++)
{
    Comp_id[j] = j + 1;
}
//for lab 2
No_of_software_installed[1] = 5;
No_of_system_working[1] = 9;
for (int j = 10; j < 20; j++)
{
    Comp_id[j] = j + 1;
}
//for lab 3
No_of_software_installed[2] = 7;
No_of_system_working[2] = 10;
for (int j = 20; j < 30; j++)
{
    Comp_id[j] = j + 1;
}
//for lab 4
No_of_software_installed[3] = 5;
```

```cpp
      No_of_system_working[3] = 9;
      for (int j = 30; j < 40; j++)
      {
        Comp_id[j] = j + 1;
      }
      //for lab 5
      No_of_software_installed[4] = 6;
      No_of_system_working[4] = 8;
      for (int j = 40; j < 50; j++)
      {
        Comp_id[j] = j + 1;
      }
      //for lab 6
      No_of_software_installed[5] = 7;
      No_of_system_working[5] = 9;
      for (int j = 50; j < 60; j++)
      {
        Comp_id[j] = j + 1;
      }
    }
};
class NI
{
private:
   int In_id[6], In_Contact_no[6];
   string In_name[6] = {"Incharge1", "Incharge2", "Incharge3",
"Incharge4", "Incharge5", "Incharge6"},
```

```cpp
        In_presence_status[6] = {"Inactive", "Active", "Inactive",
"Active", "Active", "Active"};


public:
    NI()
    {
        for (int i = 0; i < 6; i++)
        {
            In_id[i] = i + 1;
        }
        for (int j = 0; j < 6; j++)
        {
            In_Contact_no[j] = 1234567890 + j;
        }
    }
    friend void B(CNMS Lab, NI In);
    friend void C(CNMS Lab, NI In);
    void E();
};
void CNMS ::A()
{
    string softwere;
    cout << "Enter which softwere do yo check:-";
    cin >> softwere;
    cout << "Your Entered Softwere installed in :-" << endl;
    for (int i = 0; i < 6; i++)
    {
        for (int j = 0; j < 7; j++)
```

```cpp
        {
            if (str2[i][j].compare(softwere) == 0)
            {
                cout << "LAB-" << Lab_Id[i] << endl;
            }
        }
    }
    cout << endl;
    cout << endl;
}
void B(CNMS Lab, NI In)
{
    int lab;
    cout << "Enter lab id to check require softwere:-";
    cin >> lab;
    for (int j = 0; j < 7; j++)
    {
        if (lab == j + 1)
        {
            cout << "Lab-" << Lab.Lab_Id[j] << " requier " <<
Lab.No_of_software_required << " softwere:-" << endl;
            for (int i = 0; i < 7; i++)
            {
                cout << "\t" << Lab.str1[j][i] << endl;
            }
            cout << "-----INCHARG DETAIL------" << endl;
            cout << "Incharg Name :- " << In.In_name[j] << endl;
            cout << "Incharg Id :- " << In.In_id[j] << endl;
```

```cpp
        cout << "Incharg Contact Number :- " << In.In_Contact_no[j] << endl;
        cout << "Incharg presence status :- " << In.In_presence_status[j] << endl;
        cout << endl;
        cout << endl;
        break;
      }
    }
}
void C(CNMS Lab, NI In)
{
   int problem;
   for (;;)
   {
     cout << endl;
     cout << "1.To check systems which is not working properly in perticuler lab." << endl;
     cout << "2.To chechk problem in systems by it's name." << endl;
     cout << "3.check status of problem in systems." << endl;
     cout << "4.Exit" << endl;
     cout << "Enter your choice:-";
     cin >> problem;
     switch (problem)
     {
     case 1:
     {
         int p1, p2 = 0;
```

```cpp
        cout << "Enter in which lab do you check systems:-";
        cin >> p1;
        for (int j = 0; j < 7; j++)
        {
           if (p1 == j + 1)
           {
               cout << "In Incharg " << In.In_id[j] << " and Lab " <<
Lab.Lab_Id[j] << " this systems not working:-" << endl;
               for (int i = 0; i < 10; i++)
               {
                  if (Lab.str3[j][i] != "\0")
                  {
                      cout << "Computer " << Lab.Comp_id[i] << " has " <<
Lab.str3[j][i] << "." << endl;
                  }
                  else
                  {
                     p2++;
                  }
               }
               if (p2 == 10)
               {
                   cout << "In this lab 0 systems are not working." <<
endl;
               }
               break;
            }
        }
```

```cpp
        }
        break;
        case 2:
        {
            string problem1;
            cout << "Enter what problem do you check:-";
            cin >> problem1;
            for (int i = 0; i < 6; i++)
            {
                for (int j = 0; j < 10; j++)
                {
                    if (Lab.str3[i][j] == problem1)
                    {
                        cout << "Compute " << Lab.Comp_id[i * 10 + j] << " has
" << Lab.str3[i][j] << "." << endl;
                    }
                }
            }
        }
        break;
        case 3:
        {
            string problem2;
            cout << "Enter to check status of problems in system:-";
            cin >> problem2;
            for (int i = 0; i < 6; i++)
            {
                for (int j = 0; j < 10; j++)
```

```cpp
                {
                    if (Lab.str4[i][j] == problem2)
                    {
                        cout << "Computer " << Lab.Comp_id[i * 10 + j] << " "
<< Lab.str3[i][j] << " problem is " << Lab.str4[i][j] << "." << endl;
                    }
                }
            }
        }
        break;
        case 4:
        {
            goto x;
        }
        break;
        }
    }
x:;
}
void CNMS ::D()
{
    int d;
    for (;;)
    {
        cout << endl;
        cout << "1.Check Installed softwere in all labs." << endl;
        cout << "2.Check Installed softwere in perticuler lab." << endl;
        cout << "3.Exit" << endl;
```

```cpp
cout << "Enter your choice:";
cin >> d;
switch (d)
{
case 1:
{
    for (int j = 0; j < 6; j++)
    {
        cout << "Lab " << Lab_Id[j] << " have " <<
No_of_software_installed[j] << " Softwere Installed:-" << endl;
        for (int i = 0; i < 7; i++)
        {
            if (str2[j][i] == "\0")
            {
                continue;
            }
            cout << str2[j][i] << endl;
        }
        cout << "Lab " << Lab_Id[j] << " requier " <<
No_of_software_required - No_of_software_installed[j] << " New
softwere:-" << endl;
        for (int i = 0; i < 7; i++)
        {
            if (str2[j][i] == "\0")
            {
                cout << str1[j][i] << endl;
            }
        }
```

```cpp
                cout << endl;
                cout << endl;
            }
        }
        break;
        case 2:
        {
            int lab1;
            cout << "Enter lab id to check installed softwere:-";
            cin >> lab1;
            for (int j = 0; j < 7; j++)
            {
                if (lab1 == j + 1)
                {
                    cout << "Lab " << Lab_Id[j] << " have " <<
No_of_software_installed[j] << " Softwere Installed:-" << endl;
                    for (int i = 0; i < 7; i++)
                    {
                        if (str2[j][i] == "\0")
                        {
                            continue;
                        }
                        cout << str2[j][i] << endl;
                    }
                    cout << "Lab " << Lab_Id[j] << " requier " <<
No_of_software_required - No_of_software_installed[j] << " New
softwere:-" << endl;
                        for (int i = 0; i < 7; i++)
```

```cpp
                {
                    if (str2[j][i] == "\0")
                    {
                        cout << str1[j][i] << endl;
                    }
                }
                cout << endl;
                cout << endl;
            }
        }
    }
    break;
    case 3:
    {
        goto y;
    }
    break;
    }
}
y:;
}
void NI ::E()
{
    cout << "-----INCHARG DETAIL------" << endl;
    for (int i = 0; i < 6; i++)
    {
        cout << "Incharg Name :- " << In_name[i] << endl;
```
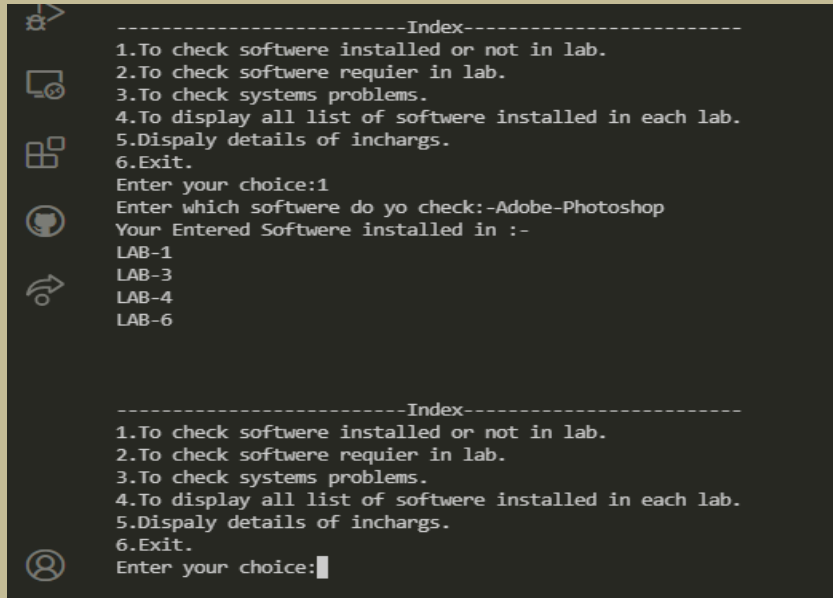
```cpp
        cout << "Incharg Id :- " << In_id[i] << endl;
        cout << "Incharg Contact Number :- " << In_Contact_no[i] << endl;
        cout << "Incharg presence status :- " << In_presence_status[i] << endl;
        cout << endl;
    }
    cout << endl;
    cout << endl;
}
int main()
{
    CNMS Lab;
    NI In;
    int select;
    for (;;)
    {
        cout << endl;
        cout << "--------------------------Index------------------------" << endl;
        cout << "1.To check softwere installed or not in lab." << endl;
        cout << "2.To check softwere requier in lab." << endl;
        cout << "3.To check systems problems." << endl;
        cout << "4.To display all list of softwere installed in each lab." << endl;
        cout << "5.Dispaly details of inchargs." << endl;
        cout << "6.Exit." << endl;
        cout << "Enter your choice:";
        cin >> select;
```

```
switch (select)
{
case 1:
{
   Lab.A();
   break;
}
case 2:
   B(Lab, In);
   break;
case 3:
   C(Lab, In);
   break;
case 4:
   Lab.D();
   break;
case 5:
   In.E();
   break;
case 6:
   exit(1);
   break;
}
}
return 0;
}
```

## Specific task Group Member-1

**1)** Display all the labs in which 'Adobe Photoshop' software is installed.
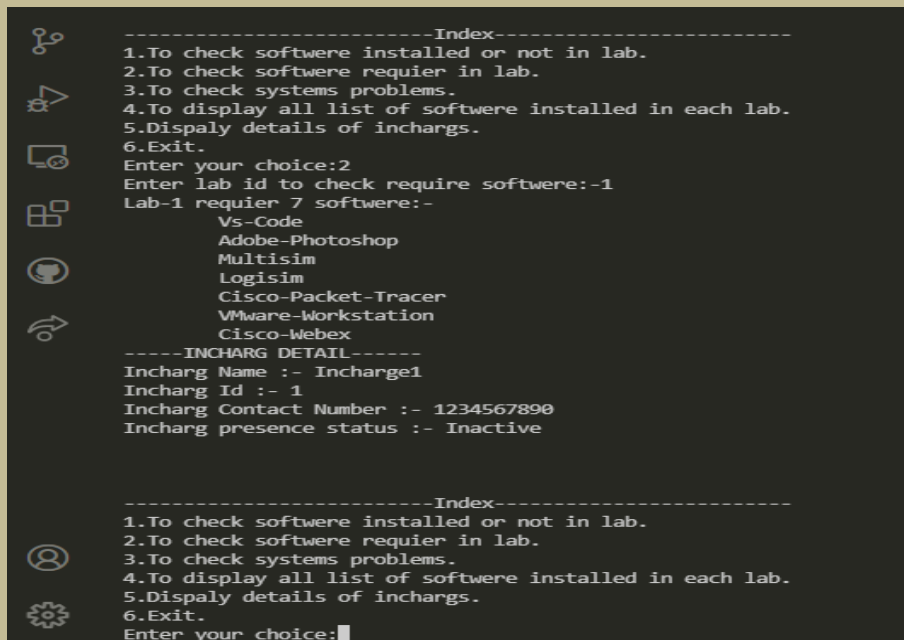
```
-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:1
Enter which softwere do yo check:-Adobe-Photoshop
Your Entered Softwere installed in :-
LAB-1
LAB-3
LAB-4
LAB-6



-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:
```

**2)** Display the list of softwares which are required in 'Lab 1' along with its incharge complete details.

```
-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:2
Enter lab id to check require softwere:-1
Lab-1 requier 7 softwere:-
          Vs-Code
          Adobe-Photoshop
          Multisim
          Logisim
          Cisco-Packet-Tracer
          VMware-Workstation
          Cisco-Webex
-----INCHARG DETAIL------
Incharg Name :- Incharge1
Incharg Id :- 1
Incharg Contact Number :- 1234567890
Incharg presence status :- Inactive



-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:
```

**3)** Display all the systems which are not working properly in Lab 3 and Lab 5.

```
-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:3

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-1
Enter in which lab do you check systems:-3
In Incharg 3 and Lab 3 this systems not working:-
In this lab 0 systems are not working.

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-1
Enter in which lab do you check systems:-5
In Incharg 5 and Lab 5 this systems not working:-
Computer 2 has Slow-computer.
Computer 7 has Networking-issue.

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-
```

*__Specific task Group Member-2__*

**__4)__** **Display the list of softwares installed in each lab along with the new ones needed.**

```
-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:4
Enter lab id to check installed softwere:-1
Lab 1 have 6 Softwere Installed:-
Vs-Code
Adobe-Photoshop
Multisim
Logisim
VMware-Workstation
Cisco-Webex
Lab 1 requier 1 New softwere:-
Cisco-Packet-Tracer


-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:
```

**__5)__** **Display the complete list of Incharge Id, his name, working in lab name, all computers available in that lab.**

```
-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:4

1.Check Installed softwere in all labs.
2.Check Installed softwere in perticuler lab.
3.Exit
Enter your choice:1
Lab 1 have 6 Softwere Installed:-
Vs-Code
Adobe-Photoshop
Multisim
Logisim
VMware-Workstation
Cisco-Webex
Lab 1 requier 1 New softwere:-
Cisco-Packet-Tracer


Lab 2 have 5 Softwere Installed:-
Vs-Code
Multisim
Logisim
Cisco-Packet-Tracer
VMware-Workstation
Lab 2 requier 2 New softwere:-
VLC-Mediaplayer
Microsoft-office
```

```
Lab 3 have 7 Softwere Installed:-
Vs-Code
Adobe-Photoshop
Turbo-c++
Logisim
Cisco-Packet-Tracer
VMware-Workstation
Cisco-Webex
Lab 3 requier 0 New softwere:-


Lab 4 have 5 Softwere Installed:-
Adobe-Photoshop
Logisim
Cisco-Packet-Tracer
VMware-Workstation
Cisco-Webex
Lab 4 requier 2 New softwere:-
Sublime-Text-3
Multisim


Lab 5 have 6 Softwere Installed:-
Vs-Code
Multisim
Notepad++
Cisco-Packet-Tracer
VMware-Workstation
Cisco-Webex
Lab 5 requier 1 New softwere:-
Adobe-Photoshop
```

```
Lab 6 have 7 Softwere Installed:-
Vs-Code
Adobe-Photoshop
Multisim
Logisim
Avast-Antivirus
WinRAR
Cisco-Webex
Lab 6 requier 0 New softwere:-



1.Check Installed softwere in all labs.
2.Check Installed softwere in perticuler lab.
3.Exit
Enter your choice:
```

### *Specific task Group Member-3*

**6) Display all the systems which have problem type as 'Networking issue' and are managed by the Network incharge 'Lal'**

```
------------------------Index------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:3

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-2
Enter what problem do you check:-Networking-issue
Compute 1 has Networking-issue.
Compute 36 has Networking-issue.
Compute 47 has Networking-issue.
Compute 58 has Networking-issue.

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-
```

**7) Display all the systems according to Lab alphabetically in which problem status is still 'pending'.**

```
-------------------------Index-------------------------
1.To check softwere installed or not in lab.
2.To check softwere requier in lab.
3.To check systems problems.
4.To display all list of softwere installed in each lab.
5.Dispaly details of inchargs.
6.Exit.
Enter your choice:3

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-3
Enter to check status of problems in system:-Pending
Computer 1 Networking-issue problem is Pending.
Computer 12 Slow-computer problem is Pending.
Computer 47 Networking-issue problem is Pending.

1.To check systems which is not working properly in perticuler lab.
2.To chechk problem in systems by it's name.
3.check status of problem in systems.
4.Exit
Enter your choice:-
```