**HW7 (vectors)**

Create a class ComputerLabs with member functions: **show\_labs, login, logoff, search\_user, addLab, addComp, removeLab, removeComp** and **member variable**: labs - 2D vector of strings.

labs[i] then is a vector that refers to i-th lab, labs[i][j] refers to a j-th computer at i-th lab.

Constructor should ask user to input number and sizes of the labs and initialize labs.

Other member functions should do the following:

**show\_labs**: show all the labs, computers, and logged on users; for each computer number: if it is not used – show empty, if it is used – show user’s ID.

Example of output:

**Labs: Computer Stations:**

0: 0: empty 1: empty 2: 12345

1: 0: 34567 1: empty

2: 0: empty 1: empty 2: empty 3: 50111 4: 60255

**login:** ask for the user's ID (5 characters), lab#, computer station #, check that the input is correct (such lab and computer exist), then assign user id to labs[i][j];

**logoff**: ask for a user id to be logged off, if this user is found at place i,j: set labs[i][j]=”empty”, otherwise output: this user is not logged in;

**searchUser:** ask for a user id, then search for it and output that what lab and computer station is he/she logged in to or that this user is not found.

**addLab:** add a new lab at the specified position with number of computers inputted by user

**addComp:** ask for lab number, if it exists - add a computer there at the specified position

**removeLab:** ask for the lab number, if it exists - remove it with all its computers and users

**removeComp:** ask for the lab and the computer number, if it is present in this lab remove this computer

**main()** should create all the labs and let user choose from the menu of options (always shown to the user before he/she makes a choice):

1. display all the labs, computers, and users
2. login
3. logoff
4. search user
5. add a computer
6. add a lab
7. remove a computer
8. remove a lab
9. quit

**Submission.** Submit code computerLabs.cpp and output computerLabsTest.pdf, testing all the options. Each option (except 1 and 9) should be followed by a call to the first option (for testing purposes).