Task 2 (60 marks)

Write a program to manage Lab 3 at IST. Currently, lab 3 has 4 rows and each row has 8 computers thus having total capacity of 32 computers. You have a list of roll numbers and passwords of 10 registered students which can log in to computers in Lab 3. Your program should have two modes: **student mode** and **administrator mode**.

In student mode, a student can

1. Login to a PC by entering roll number and password
2. Sign Off from an already logged in PC by entering roll number
3. Request to Change his/her password by entering roll number
4. View Lab Seating Plan
5. View message from administrator by entering roll number

In administrator mode, an administrator can

1. View Lab's Seating Plan
2. Trace a Student
3. View change password requests
4. Change password of a student

You have to make a separate function for each of the option that a user (student/administrator) can select. Your program should display a proper error message in case of invalid input. Your program should handle following constraints:

1. Only a registered student can log in to a computer in lab.
2. A student can't log in to two computers at the same time.
3. A student can't log off from a computer on which (s)he is not logged in.
4. A student can request to change password incase (s)he has lost his/her password.
5. A student can't request to change password until (s)he has a pending password change request.
6. A student can't request for password change while (s)he is logged in to a computer.
7. A student/administrator can view seating plan of lab which shows that which computers are free and which computer are being occupied by students.
8. A student can view message form administrator only once. After reading a message from administrator, that message gets deleted.
9. Administrator can track a student i-e program will show the row number, column number and PC number on which that student is currently logged in.
10. Administrator can view 'change password requests' generated by students.
11. Administrator can change passwords of only those students who have requested for password change.
12. Administrator can change password of a student by entering roll number of a student and by entering new password for that student. New password will be sent to student by message.

Numbering Scheme of Computers in Lab

	[col1]	[col2]	[col3]	[col4]	[col5]	[col6]	[col7]	[col8]
[row 1]	1	2	3	4	5	6	7	8
[row 2]	9	10	11	12	13	14	15	16
[row 3]	17	18	19	20	21	22	23	24
[row 4]	25	26	27	28	29	30	31	32

List of roll numbers and passwords of registered students that you will be using in your program are:

Roll Number	**Password**
19100001	abc123
19100002	abc456
19100003	abc789
19100004	def123
19100005	def456
19100006	def789
19100007	xyz123
19100008	xyz456
19100009	xyz789
19100010	xyz123

It is better to make as many functions as you can to do this task. Your program should display proper error message if an invalid input is entered.