Instructions – Revision Practical

Our company is tracking the completion percentage of different phases in a construction project for multiple teams. There are 8 teams working on different phases of the construction project and each team is responsible for completing certain phases of the project, and we need to monitor/track their progress/ completion percentages.

Design a Python program to streamline this process. Given the sensitive nature of the training data, the program should be protected with a password. Here are the password requirements:

- The password must end with an exclamation mark (#).
- The password must be at least five characters long.
- The password may contain only lowercase letters and numbers.

The program should provide a menu-driven interface with the following options:

1. Show all progress:
2. Add progress:
3. Change progress:
4. Calculate average progress:
5. Exit

The program should include four functions, corresponding to options 1 to 4 of the menu:

1. show_all() - Displays all teams' progress percentages.
2. add_progress() - Prompts the user to enter a new team's progress percentage and adds it to the list. The function returns the team number of the added progress and displays it after the function call.
3. change_progress() - Prompts the user to enter the team number and the new progress in the main program, which is passed as arguments to the function. The progress is then updated in the list if it exists. Implement an appropriate exception-handling technique for a bonus mark.
4. calculate_average() - Calculates and displays the average progress percentage across all teams.

Ensure that the menu continuously displays and handles user input until the user chooses to exit, including input validation for invalid inputs and edge cases.

Start with the following list in your main program:
[65, 89, 76, 44, 56, 12, 90, 99]

Output

```
Enter your password: Qwerty#
That password is not valid.
Enter your password: cmpg111!
That is a valid password.

Menu:
1. Show all teams' progress
2. Add progress
3. Change progress
4. Calculate the average progress
5. Exit
Enter your choice: 1

List of all teams:
Team  1 :    65
Team  2 :    89
Team  3 :    76
Team  4 :    44
Team  5 :    56
Team  6 :    12
Team  7 :    90
Team  8 :    99

Menu:
1. Show all teams' progress
2. Add progress
3. Change progress
4. Calculate the average progress
5. Exit
Enter your choice: 2
Enter the progress to add: 55
Team 4's progress has been added to the list.
```

```
Menu:
1. Show all teams' progress
2. Add progress
3. Change progress
4. Calculate the average progress
5. Exit
Enter your choice: 1

List of all teams:
Team  1 :    65
Team  2 :    89
Team  3 :    76
Team  4 :    44
Team  5 :    56
Team  6 :    12
Team  7 :    90
Team  8 :    99
Team  9 :    55

Menu:
1. Show all teams' progress
2. Add progress
3. Change progress
4. Calculate the average progress
5. Exit
Enter your choice: 3
Enter the team number to update: 1
Enter the new percentage: 70
Team 1's progress updated to 70%.

Menu:
1. Show all teams' progress
2. Add progress
3. Change progress
4. Calculate the average progress
5. Exit
Enter your choice: 1

List of all teams:
Team  1 :    70
Team  2 :    89
Team  3 :    76
Team  4 :    44
Team  5 :    56
Team  6 :    12
Team  7 :    90
Team  8 :    99
Team  9 :    55

Menu:
1. Show all teams' progress
2. Add progress
3. Change progress
4. Calculate the average progress
5. Exit
Enter your choice: 4
The average progress is 65.1111111
```

Rubric

Criteria	Marks
Read and validate password	2
Show all progress	2
Add progress	3
Change progress	3
Average	3
Continuously display the menu	1
Comments	1
Code compiles and runs according to all requirements (Yes = 5, No = 0)	5
Total	20