

Objective:

- Use of functions
- Use of Lists
- Control statements
- Passing values in functions and functions returning values
- Search data
- Displays formatted information

Introduction:

This application registers students in student record (list). Student information consists of first name, last name, student ID and program name.

Prior to saving student information in the records, it checks that student number is:

- a) 9 characters long
- b) First character is uppercase 'N' and second character is '0' (Zero)
- c) Remaining seven characters are digits (0-9)

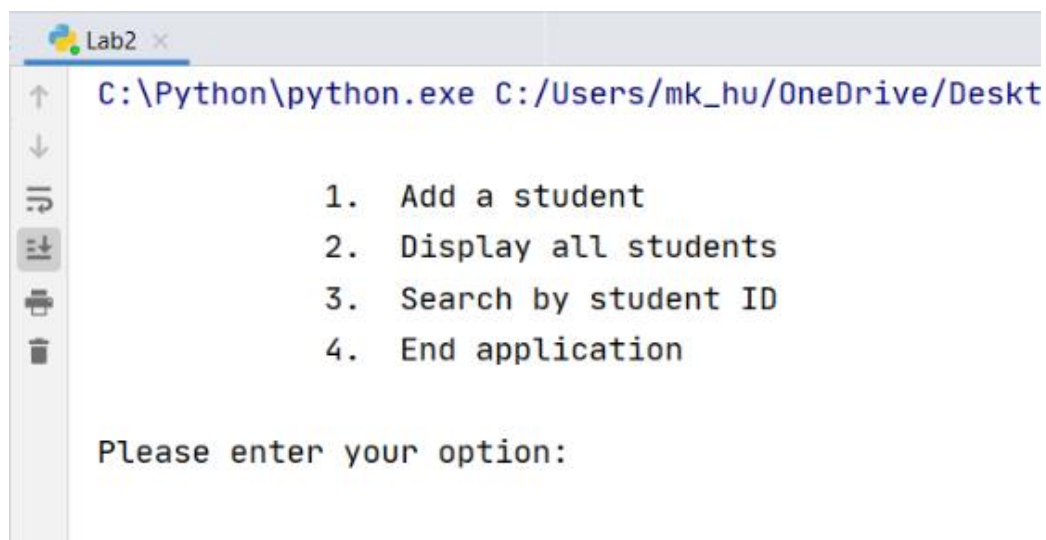
If user entered incorrect student ID then application starts over.

Second check is that the student ID is not repeated. Your application checks if list is empty, then a new student is enrolled. If student ID is already in the list, then this student is not added to the list.

Application

When application executes, following is displayed:

Four options are displayed:



```
Lab2 x
C:\Python\python.exe C:/Users/mk_hu/OneDrive/Deskt

1. Add a student
2. Display all students
3. Search by student ID
4. End application

Please enter your option:
```

If user chooses option 2, to display all students, without adding any student in the records list, then following message is displayed:

```
Please enter your option:      2
There are no records available for any student ....

      1. Add a student
      2. Display all students
      3. Search by student ID
      4. End application

Please enter your option:      |
```

If user chooses option 3 to search student by student ID (but there are no students in the list or list is empty) then following message is displayed:

```
      1. Add a student
      2. Display all students
      3. Search by student ID
      4. End application

Please enter your option:      3
Enter student ID to search information:      N01234567
There are no records in the recorded information list

      1. Add a student
      2. Display all students
      3. Search by student ID
      4. End application

Please enter your option:      |
```

Following shows that if user does not enter correct format of student ID, (e.g. valid student ID starts with 'N0'.....)

```
Please enter your option:      1
Enter first name:      Muhammad
Enter last name:      Khan
Enter student ID:      N12345678
Enter program name:      Computer Science
Not a valid student ID - need to continue
Student cannot be saved in the registration list ...

      1. Add a student
      2. Display all students
      3. Search by student ID
      4. End application

Please enter your option:
```

If user enters student ID that is not 9-characters, then again following message is displayed:

```
Please enter your option:      1
Enter first name:      Muhammad '
Enter last name:      Khan
Enter student ID:      N012345678
Enter program name:      Computer Science
Not a valid student ID - need to continue
Student cannot be saved in the registration list ...
```

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:      |
```

In this example, student ID is 10-characters. This student is not added to the record list.

In the following example, if user enters lower case 'n', again student is not added to the record list:

```
Please enter your option:      1
Enter first name:      Khan
Enter last name:      Muhammad
Enter student ID:      n01234567
Enter program name:    Computer Science
Not a valid student ID - need to continue
Student cannot be saved in the registration list ...
```

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:      |
```

If student number (ID) is valid and student ID is not already in the record list, then following student is added to the records list:

```
Please enter your option:      1
Enter first name:      Khan
Enter last name:      Muhammad
Enter student ID:      N01234567
Enter program name:    Computer Engineering
Adding student information in student records
```

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:
```

Following two images show that the two additional students are added to the students record list:

```
Please enter your option:      1
Enter first name:           Muhammad
Enter last name:           Khan
Enter student ID:          N02468012
Enter program name:        Computer Science
Adding student information in student records
```

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:      |
```

Add another student to the students record list:

```
Please enter your option:      1
Enter first name:      Kenneth
Enter last name:      Lambert
Enter student ID:      N03456789
Enter program name:      Computer Systems
Adding student information in student records
```

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:
```

When user choses option 2, complete record of students is displayed. This is shown below:

```
Please enter your option:      2
```

```
Muhammad Khan
N01234567
```

First Name	Last Name	Student ID	Program Enrolled
Khan	Muhammad	N01234567	Computer Engineering
Muhammad	Khan	N02468012	Computer Science
Kenneth	Lambert	N03456789	Computer Systems

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:
```

If a student needs to register but the student ID already exists, then student is NOT added and the following message is displayed because student is already enrolled and is part of the records list. The name may or may not be the same, as system checks for student ID to differentiate valid student information to enroll in the system.

```
1. Add a student
2. Display all students
3. Search by student ID
4. End application

Please enter your option: 1
Enter first name: Khan
Enter last name: Muhammad
Enter student ID: N02468012
Enter program name: Computer Science
Student having student ID N02468012 already exists
As student having student ID N02468012 already exists, so Khan Muhammad is not added

1. Add a student
2. Display all students
3. Search by student ID
4. End application

Please enter your option: |
```

When user chooses option number 3, to search a student by student ID, following is displayed if student record search is successful:

```
Please enter your option: 3
Enter student ID to search information: N02468012
Student is found in the list

Muhammad Khan
N01234567

-----
First Name      Last Name      Student ID      Program Enrolled
-----
Muhammad       Khan           N02468012      Computer Science

1. Add a student
2. Display all students
3. Search by student ID
4. End application

Please enter your option:
```

If the student (searched by student ID) is not in the given list, then following message is displayed:


```
Please enter your option:      3
Enter student ID to search information:  N01278979
Student is not registered in the institution...
```

1. Add a student
2. Display all students
3. Search by student ID
4. End application

```
Please enter your option:
```

This message shows that the student is NOT enrolled in the program.

If user enters choice (instead of 1, 2, 3 or 4) that is different from the requirements in the application, following message is displayed ("**Enter correct option**"):

```
Please enter your option:      a
Enter correct option ...

1. Add a student
2. Display all students
3. Search by student ID
4. End application
```

```
Please enter your option:      |
```

When user chooses option 4 to end the application, your program displays the message that it was ending and ends the application. This is shown below:

```
Please enter your option:      a
Enter correct option ...

    1. Add a student
    2. Display all students
    3. Search by student ID
    4. End application

Please enter your option:      4
Application ending.....

Process finished with exit code 0
```

Functions:

- a) Write a function to display your name and student ID when output report displays students' information. No arguments are passed in the function
- b) Write a function to read student information. Main application passes a students' record list in this function. This function ensures that the student is NOT already enrolled. If student is NOT enrolled, then the student information is added to the students' record. This function also checks if the student ID entered is valid format of student ID.
- c) Write a function that displays all students' record in formatted format. Students' record (list) is passed in this function.
- d) Write a function to search and display a student from the students' record (list). If student does not exist, message to that effect is displayed, otherwise, application displays record of searched student.

Lab assignment to upload:

- a) Source code (filename.py)
- b) Screenshot of all conditions that are tested:
 - a. Add student, when:
 - i. List is empty
 - ii. List is not empty
 - iii. 9-digit valid student number (error if it is not 9-digit student number)
 - iv. First letter of student ID is 'N' and second digit is '0' (try if you enter lower case 'n' instead of upper case 'N', instead of a '0' as second character enter a different character)
 - v. Student ID already exists
 - vi. Valid student ID and student ID is unique
 - b. Display student list when there is no data in the list and list is empty. If list is not empty then all students information is displayed

- c. Search a student from the List, when:
 - i. List does not have data
 - ii. List has data but student ID does not exist
 - iii. List has data and student also exist so it displays information
- d. When ending application, user enters valid choice to end application and also if user does not enter valid choice to end application

Crop these screenshots and create a PDF document to be uploaded.

Rubric for Lab1:

Note: Marks are assigned to correct execution of application and also if the conditions are met, as defined in the problem definition.

Well documented source working source code: **1 Mark**

Splitting application in at least 5 different functions and function calls

3 Marks

Functionality to add students in the records

2 Marks

Functionality to search student by student ID

2 Marks

Functionality to display all students

2 Marks

Total:

10 Marks