

# Assignment lesson1 Data structure

## First: LIFO Algorithm

```
Console x Properties Search
<terminated> (exit value: 0) lifo_stack.exe [C/C++ Application] C:\Users\Apex\workspace\lifo_stack\Debug\lifo_stack.exe (2/5/24, 11:25 AM)
<<<< add items >>>>

add item is done and is = 0
add item is done and is = 1
add item is done and is = 2
add item is done and is = 3
add item is done and is = 4
add item is failed
add item is failed

<<<< get items >>>>

get item is done and is = 4
get item is done and is = 3
get item is done and is = 2
get item is done and is = 1
get item is done and is = 0
get item is failed
get item is failed
```

## Second: FIFO Algorithm

```
Console x Properties Search
<terminated> (exit value: 0) fifo_data_structure.exe [C/C++ Application] C:\Users\Apex\workspace\fifo_data_structure\Debug\fifo_data_structure.exe (2/5/24, 12:35 PM)
.... fifo init is done ....
FIFO ENQUEUE (0)
.... fifo enqueue is done ....
FIFO ENQUEUE (1)
.... fifo enqueue is done ....
FIFO ENQUEUE (2)
.... fifo enqueue is done ....
FIFO ENQUEUE (3)
.... fifo enqueue is done ....
FIFO ENQUEUE (4)
.... fifo enqueue is done ....
FIFO ENQUEUE (5)
.... fifo enqueue is failed ....
FIFO ENQUEUE (6)
.... fifo enqueue is failed ....

----->fifo print<-----
0
1
2
3
4
.... fifo dequeue is done ....(0)
.... fifo dequeue is done ....(1)

----->fifo print<-----
2
3
4
```

# Second: Linked List Algorithm

## 1-add records to the list:

```
Console x Registers Problems Executables Debugger Console Memory
linked_list_student.exe [C/C++ Application] [pid: 21]

<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 1

<----->
Enter The ID : 10

Enter Student Full Name : tasneem mahmoud

Enter Height : 169

<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 1

<----->
```

```
Console x Registers Problems Executables Debugger Console Memory
linked_list_student.exe [C/C++ Application] [pid: 21]

<----->
Enter The ID : 11

Enter Student Full Name : doaa mahmoud

Enter Height : 171

<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 3

<----->
Record Number 1
ID: 10
Name: tasneem mahmoud
Height: 169.000000
Record Number 2
ID: 11
Name: doaa mahmoud
Height: 171.000000

<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
```

```
Console × Registers Problems Executables Debugger Console Memory
linked_list_student.exe [C/C++ Application] [pid: 21]
4: Delete all
5: Get specific data
6: length of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 1

<----->
Enter The ID : 12

Enter Student Full Name : mariam elbeltagy

Enter Height : 162

<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: length of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 3
```

**Show list after adding:**

```
Console × Registers Problems Executables Debugger Console Memory
linked_list_student.exe [C/C++ Application] [pid: 21]
<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: length of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 3

<----->
Record Number 1
ID: 10
Name: tasneem mahmoud
Height: 169.000000
Record Number 2
ID: 11
Name: doaa mahmoud
Height: 171.000000
Record Number 3
ID: 12
Name: mariam elbeltagy
Height: 162.000000
<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: length of list is
7: Get specific data from the end
```

### 3-delete Doaa:

```
Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 2

<----->
Enter Student Id to be deleted : 11
```

### 4- Show list after deleting:

```
<----->
Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 3

<----->
Record Number 1
ID: 10
Name: tasneem mahmoud
Height: 169.000000
Record Number 2
ID: 12
Name: mariam elbeltagy
Height: 162.000000
```

## 5-Get Mariam data:

```
<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 5

<----->
Enter The Index Of Node that you want to get it's data :1
[
Data you want are :
ID: 12
Name: mariam elbeltagy
Height: 162.000000
,
```

## 6-Deleting all and show list after that:

```
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 4

<----->
<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 3

<----->
List Is Empty
<----->
```

### 7-Add new recording & show it:

```
Choose one of the following options:
```

```
1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 3
```

```
<----->
Record Number 1
ID: 100
Name: mahmoud
Height: 180.000000
Record Number 2
ID: 101
Name: mohamed
Height: 175.000000
Record Number 3
ID: 102
Name: anas
Height: 178.000000
/      \
```

### 8-get length:

```
<----->
Choose one of the following options:
```

```
1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 6
```

```
<----->
length with iterative method is 3
<----->
```

### 9-get data from the end :

```
<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 7

<----->
Enter Number of node: 1

Data you want are :
ID: 102
Name: anas
Height: 178.000000
/-----\
```

### 10-get middle of list:

```
<----->
    Choose one of the following options:

1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 8

<----->
Data you want are :
ID: 101
Name: mohamed
Height: 175.000000
,
,
```

## 11-show input list in reverse:

Choose one of the following options:

```
1: Add_student
2: Delete_student
3: View_students
4: Delete all
5: Get specific data
6: lenght of list is
7: Get specific data from the end
8: Get middle data
9: Get data in reverse
Enter option number : 9
```

```
<----->
Enter size of list:3
```

```
Enter The ID : 20
```

```
Enter Student Full Name : tasneem
```

```
Enter Height : 169
```

```
Enter The ID : 21
```

```
Enter Student Full Name : amr
```

```
Enter Height : 180
```

```
Enter The ID : 22
```

```
Enter Student Full Name : yaseen
```

```
Enter Height : 165
```