Lab 5

Introduction to Medical Informatics

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Lists and Arrays: Organizing Data in Python

Introduction:

In Python, lists are a versatile way to organize and store data. Lists can contain elements of different data types, making them powerful for various applications.

Arrays, on the other hand, are a more specialized data structure in Python, provided by the array module. Unlike lists, arrays typically store elements of the same data type.

Creating Lists:

Creating a list is straightforward. You can define a list by enclosing elements in square brackets []:

```
my_list = [1, 2, 3, "apple", "banana", True]
```

This list contains integers, strings, and a boolean.

Accessing List Elements:

Elements in a list are accessed using index values, starting from 0. For example:

```
print(my_list[0])  # Output: 1

print(my_list[3])  # Output: "apple"
```

Modifying Lists:

Lists are mutable, meaning you can change their elements. Use the index to modify a specific element:

```
my_list[1] = 99
```

Common Operations on Lists:

1- **Adding Elements:**

```
my_list.append(6)       # Add an element at the end
my_list.insert(2, 99)   # Insert 99 at index 2
```

2- **Removing Elements:**

```
my_list.remove("apple")  # Remove the first occurrence of "apple"
popped_element = my_list.pop() # Remove and return the last
element
```

Conclusion:

Lists and arrays are fundamental data structures in Python, offering flexibility and efficiency in handling collections of elements. Mastery of these concepts is crucial for effective data organization and manipulation in Python programming.

Assignment:

Create a Python program that does the following:

Required:

- Create a list containing the names of your favorite fruits. (Required)
- Add two more fruits to the list. (Required)
- Print the third fruit in the list. (Required)

Then choose only ONE of the following:

- Modify the second fruit in the list to your least favorite fruit.
- Remove the first fruit from the list.
- Create an array containing five integers of your choice.