CSC-462 ARTIFICIAL INTELLIGENCE

LAB 02

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Activities:

Activity 1:

```
Enter a value:5
Enter a value:4
Enter a value:3
Enter a value:2
The given list is
['5', '4', '3', '2']
>>>
```

In this lab activity we were to make a list of integer elements and the limit was set to 4 elements. The program was set in a way that it had to take list elements input from the user.

Activity 2:

```
Enter a value:4
Enter a value:3
Enter a value:2
Enter a value:1
The sum of these values are:  10
>>>
```

In this lab activity we were to make a list of integer elements which had the limit set to 4 elements. After taking input from the user the values in list were added.

Activity 3:

```
Enter a value:3
Enter a value:4
Enter a value:5
Enter a value:2
Enter a value:1
[1, 2, 3, 4, 5]
>>>
```

In this lab activity we were to make a list of integer elements which had a limit of 5 elements that had to be entered by the user. This lab activity is to sort the elements in the array in ascending order. The built-in sort() function was used.

Activity 4:

```
Enter objects for list1:
Enter a value:9
Enter a value:7
Enter a value:5
Enter a value:3
Enter a value:1
Enter objects for list2:
Enter a value:2
Enter a value:0
Enter a value:6
Enter a value:8
['9', '7', '5', '3', '1', '2', '0', '6', '8']
>>>
```

In this lab activity we were to make two lists of integer elements which had a limit of 5 elements that had to be entered by the user. This lab activity is to make a list which had all the elements of list1 and list2. In other words, this program is to join two lists together.

Activity 5:

```
Enter objects for list1:
Enter a value:2
Enter a value:3
Enter a value:4
Enter a value:5
Enter a value:6
[2, 3, 4, 5, 6]
Enter a value to find:5
Found
>>>
```

In this lab activity we were to make a list of integer elements which had a limit of 5 elements that had to be entered by the user. This lab activity is to search for a specific element in the list. In this lab activity we made a found variable which would turn true if the specified element was available in the list.

Activity 6:

```
hello Amna
hello Hira
hello No one
>>>
```

In this lab activity we made a function that would take name as an argument and by calling this function giving the specified string variable the function would greet the variable. For example, “Amna” was given as argument and would print “Hello Amna”.

Activity 7:

```
True
>>>
```

In this lab activity we made a function that would take a word as an argument and by calling this function giving the specified string variable the function would check whether the word is a palindrome or not. It would also capitalize the last letter after reversing the word. It would return true when the word would be a palindrome or else it would return false. [::-1] it means all the elements from the back to the front to be shown.

Activity 8:

```
[[1, 2, 3], [4, 5, 6], [7, 8, 9]]
>>>
```

In this lab activity we had matrices “a” and “b” which were to be multiplied and placed into “c”. in order to do this 3 for loops were used. Loop 1 was for the row , loop 2 was for the column and loop 3 was for the auxiliary position or the element position. In these loops in c array , the previous c was added and the product of a’s row and aux position with b’s aux and column position was added.

Activity 9:

```
(-7.999999999999997+46.49620197657477j)
>>>
```

In this lab activity we made a function that would take a list as an argument and by calling this function the function would take the tuples from the list and use it to take out the perimeter of the polygon. The dist variable is used to take the distance between the corner points and squares it , then adds it into the perimeter. It used the formula for distance between 2 points which is $\sqrt{((x1-x2)^2+(y1-y2)^2)}$.

Activity 10:

```
{0, 1, 2, 7, 8, 9}
{0, 1, 2, 7, 8, 9}
{0, 1, 2, 7, 8, 9}
{0, 1, 2, 7, 8, 9}
{0, 1, 2, 7, 8, 9}
>>>
```

In this lab activity we made a function that would take difference of two sets by using loops that if element is in a but not in b or in b but not in a. if they turn out true then listing the elements that are differing. We also used built-in functions to verify our answer and result shows that the function to take difference was correct.

Activity 11:

```
Enter first nameasim
Enter last nameazhar
7162534
>>>
```

In this lab activity we made a function that would take first and last as arguments and by calling this function giving the specified string variable the function would check whether the name is in the list or not. If the first and last names are found in the list the function would return the person’s phone number. It uses “search tuple” variable.

Home Activities:

Activity 1:

Create two lists based on the user values. Merge both the lists and display in sorted order.

```
mylist1 = []
print("Enter objects for list1:")
for i in range(5):
    val=input("Enter a value:")
    #n=int(val)
    mylist1.append(val)
print("Enter objects for list2:")
mylist2 = []
for i in range(4):
    val=input("Enter a value:")
    #n=int(val)
    mylist2.append(val)

combo= mylist1+mylist2
combo.sort()
print(combo)
```

For loop keeps on taking inputs from user and keeps on appending the lists. After that the lists are added and then sorted using sort() function.

```
Enter objects for list1:
Enter a value:2
Enter a value:4
Enter a value:3
Enter a value:1
Enter a value:5
Enter objects for list2:
Enter a value:6
Enter a value:8
Enter a value:7
Enter a value:9
['1', '2', '3', '4', '5', '6', '7', '8', '9']
>>>
```

In this home task we were to make 2 lists with 5 and 4 tuples each. The user would enter the values of these tuples and then a third list would be made consisting tuples of both list1 and list2 and would be in the sorted form.

Activity 2:

Repeat the above activity to find the smallest and largest element of the list. (Suppose all the elements are integer values)

```
mylist1 = []
print("Enter objects for list1:")
for i in range(5):
    val=input("Enter a value:")
    #n=int(val)
    mylist1.append(val)
print("Enter objects for list2:")
mylist2 = []
for i in range(4):
    val=input("Enter a value:")
    #n=int(val)
    mylist2.append(val)

combo= mylist1+mylist2
combo.sort()
print(combo)
print("Smallest element is:",min(combo))
print("Biggest element is:",max(combo))
```

For loop keeps on taking inputs from user and keeps on appending the lists. After that the lists are added and then sorted using sort() function. The max() and min() functions are used to find the minimum and maximum number from the list.

```
Enter objects for list1:
Enter a value:2
Enter a value:1
Enter a value:3
Enter a value:4
Enter a value:5
Enter objects for list2:
Enter a value:6
Enter a value:9
Enter a value:8
Enter a value:7
['1', '2', '3', '4', '5', '6', '7', '8', '9']
Smallest element is: 1
Biggest element is: 9
>>>
```

In this home task we were to make 2 lists with 5 or 4 tuples each. The user would enter the values of these tuples and then a third list would be made consisting tuples of both list1 and list2 and would be in the sorted form. Then from this sorted list we could print the smallest and largest integer using min(), max() functions.

Critical Analysis:

This lab was to get an introduction to python language. In this lab we learned about lists and arrays in python. We learned the commands for making lists, combining lists and sorting lists. We also used lists (arrays) to multiply 2 matrices and to take collective inputs for specific functions like knowing the perimeter of a polygon. We used search and found variables to find specific tuples in the lists.