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ASSIGNMENT NO. 1(b)

Title: Using python perform List Operations and list slicing in detail with necessary programs.

Aim: Using python perform List Operations and list slicing in detail with necessary programs.

Topic Theory:

List: A list in Python is an ordered, mutable (changeable) collection of items.

Lists can hold a variety of data types, including integers, strings, objects, or even other lists.

Operations on Lists:

Creating Lists:

A list in Python can be created using square brackets [], where the elements of the list are placed inside. Lists can also be initialized as empty lists.

Accessing Elements:

Elements of a list are accessed by their index. The index in Python starts at 0 and goes up to the length of the list minus one.

Modifying Lists:

You can change elements in a list by assigning a new value to a specific index.

Adding Elements:

To insert a new element into a list, you can use the insert function. You must specify the position where the new element should be added.

Removing Elements:

To remove an element from a list, the remove function can be used. Simply specify the element you want to remove.

Repeating Elements:

You can repeat the elements of a list by multiplying the list by an integer. For instance, multiplying by 2 will repeat the elements twice, and multiplying by 3 will repeat them thrice.

Slicing:

Slicing is a useful tool in Python that allows you to retrieve a portion of a list, string, or other sequence types. Slicing returns a new sequence containing the elements from the specified range.

Syntax: sequence[start:stop:step]

- **start:** The index where the slice begins (inclusive). If not provided, it defaults to the start of the sequence.
- **stop:** The index where the slice ends (exclusive). If not provided, it defaults to the end of the sequence.
- **step:** The interval between indices in the slice. The default value is 1 if not specified

Algorithm:

1. **Creating Lists:**
Begin by initializing an empty list using square brackets []. Populate the list by including elements within these brackets.
2. **Accessing Elements:**
Determine the position of the element you want to access by its index. Use this index inside square brackets to retrieve the specific element from the list.
3. **Modifying Lists:**
Locate the index of the element you wish to change. Assign a new value to that particular index in the list to update the element.
4. **Adding Elements:**
Decide where you want to insert a new element within the list. Utilize the insert() method to add the element at the chosen index.
5. **Removing Elements:**
Identify the value of the element you intend to remove. Use the remove() method to delete the first occurrence of that value from the list.
6. **Repeating Elements:**
Duplicate the elements in the list by multiplying the list by an integer. For example, multiplying by 2 will repeat the elements twice.
7. **Slicing:**
Define the starting index (inclusive), the ending index (exclusive), and the step size between elements. Apply the slicing syntax to extract a specific subset of the list based on these parameters

CODE=

Operations of list

```

l = ['pankaj', 'Kunal', 'Aman', 'Om', 'Hin']
print("choice 1 for accessing the name:")
print("choice 2 for modifying the name:")
print("choice 3 for adding the name:")
print("choice 4 for removing the name:")
print("choice 5 for repeating the name:") choice
= input("enter the choice:") if choice == '1':
= int(input("enter the index:"))
print("the
n
name present at", n, "index is", l[n]) elif choice
== '2':
n = int(input("enter the index:"))
names = input("enter the modified name:")
l[n] = names
print("modified list of names:", l) elif choice ==
'3':
n = int(input("enter the index:"))
names =
input("enter the name you want to add :")
l.insert(n, names)
print("the update list of names is: ", l) elif choice ==
'4':
names = input("enter the name you want to
remove :")
l.remove(names)
print("the updated list of names is after removing:", l)
elif choice == '5':
print("the repeating list of name:", l
* 2) else:

```

OUTPUT=

```
print("choice is invalid:")
```

choice 1 for accessing the name:

choice 2 for modifying the name:

choice 3 for adding the name:

choice 4 for removing the name:

choice 5 for repeating the name:

enter the choice:

5 the repeating list of name: ['pankaj', 'Kunal',

'Aman', 'Om', 'hinn',

'pankaj', 'kunal', 'aman', 'Om', 'hinn']

Slicing :

```
l = ['pankaj', 'kunal', 'aman', 'om', 'hinn']
```

```
print(l[2:4]) print(l[:4]) print(l[3:])
```

```
print(l[-2:-1])
```

OUTPUT=

```
['aman', 'om']
```

```
['pankaj', 'kunal', 'aman', 'om']
```

```
['om', 'hinn'] ['om']
```