lab1

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1 Question 1

```python
[39]: input1 = "abc"
output = []
for i in input1:
    output.append(i)
print(output)
```

```
['a', 'b', 'c']
```

2 Question 2

```python
[40]: input1 = ['a','b','c']
output = ""
for i in input1:
    output += i
print(output)
```

```
abc
```

3 Question 3

```python
[41]: import random
n = int(input("Enter the size of array: "))
arr = []
for i in range(n):
    arr.append(random.randint(1,100))
print(arr)
```

```
[58, 1, 91, 90, 86]
```

4 Question 4

```
[42]: input1 = [1,2,3,4,5]
      output = sorted(input1, reverse=True)
      print(output)
```

```
[5, 4, 3, 2, 1]
```

5 Question 5

```
[43]: input1 = [1,1,3,2,3,2,3,2,2]
      output = {}
      for i in input1:
          if i in output:
              output[i] += 1
          else:
              output[i] = 1

      print(output)
```

```
{1: 2, 3: 3, 2: 4}
```

6 Question 6

```
[44]: input1 = [1,1,3,2,3,2,3,2,2]
      output = set(input1)
      print(output)
```

```
{1, 2, 3}
```

7 Question 7

```
[45]: input1 = [1,2,3,4,5,1,2]
      output = set()
      for i in input1:
          if i in output:
              print(i)
              break
          else:
              output.add(i)
```

```
1
```

8 Question 8

```
[46]: input1 = 4
      output = {}
      for i in range(1, input1+1):
          output[i] = [i*i, i*i*i]

      print(output)
```

```
{1: [1, 1], 2: [4, 8], 3: [9, 27], 4: [16, 64]}
```

9 Question 9

```
[47]: input1 = [1,2,3,4], ['a','b','c','d']
      output = list(zip(input1[0], input1[1]))
      print(output)
```

```
[(1, 'a'), (2, 'b'), (3, 'c'), (4, 'd')]
```

10 Question 10

```
[48]: input1 = 6
      output = [i*i for i in range(input1+1)]
      print(output)
```

```
[0, 1, 4, 9, 16, 25, 36]
```

11 Question 11

```
[49]: input1 = 6
      output = {i:i*i for i in range(input1+1)}
      print(output)
```

```
{0: 0, 1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36}
```

12 Question 12

Problem 12: Write a `class` such that : 1. The initializer takes an arbitrary list of atomic values as input and saves it in an instance variable. 2. Has a method called `apply` which has the following functionality: Accepts a function as a parameter. You can use a lambda function. Applies the function to the saved list and returns the output. The instance variable must not be modified. If it fails `raise` an `Exception` with a custom error message. You can use `try` and `except` here.

```
[50]: class temp:
          def __init__(self, list1):
```

```
            self.list1 = list1

    def apply(self, function):
        try:
            return list(map(function, self.list1))

        except (TypeError, ValueError) as e:
            print(f"An error occurred: {e}")
            return []

temp1 = temp([1, 2, 3, 4, 5])
print(temp1.apply(lambda x: x * 3))
print()

temp2 = temp([1, 2, 3, 4, 5])
print(temp1.apply(5))
```

```
[3, 6, 9, 12, 15]

An error occurred: 'int' object is not callable
[]
```

13 Question 13

Write a function that takes as input a list of words and upper-cases each word. Use `functools.map` in some capacity to solve this. Input : ['aa','bb','cd','e'] Output : ['AA', 'BB', 'CD', 'E']

```
[51]: def toUpper(string):
          return string.upper()

      input1 = ['aa','bb','cd','e']
      output = list(map(toUpper, input1))
      print(output)
```

```
['AA', 'BB', 'CD', 'E']
```

14 Question 14

Write a function to find the product of all the numbers in a list using `functools.reduce` in some capacity. Input : [1,2,3,4,5] Output : 120

```
[52]: import functools
      input1 = [1,2,3,4,5]

      def multiply(x,y):
          return x*y
```

```
output = functools.reduce(multiply, input1)
print(output)
```

120