PYTHON PROGRAMMING

UNIT 2

Python Program Flow Control Conditional blocks

By

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LEC-6(some mixed questions)

Gateway classes

1. **Write a Python program to replace the last element in a list with another list. Sample data : [1, 3, 5, 7, 9, 10], [2, 4, 6, 8] Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]**

```
list1 = [1, 3, 5, 7, 9, 10]
list2 = [2, 4, 6, 8]
result = list1[:-1] + list2
print("Expected Output:", result)
```

```
Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]
```

2. Write a Python program to check whether the n-th element exists in a given list.

```
sample_list = [10, 20, 30, 40, 50]
n = 3
if n < len(sample_list):
    print(f"The {n}-th element exists: {sample_list[n]}")
else:
    print(f"The {n}-th element does not exist in the list.")
```

```
The 3-th element exists: 40
```

3. Write a program to create a list of empty dictionary

```
n = 5
empty_dict_list = [{} for _ in range(n)]
print("List of empty dictionaries:", empty_dict_list)
```

```
List of empty dictionaries: [{}, {}, {}, {}, {}]
```

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4. Write a Python program to reverse a given list of lists

```
input_list = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
reversed_list = [sublist[::-1] for sublist in input_list[::-1]]
print(reversed_list)
```

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

5. Write a Python program to remove specific words from a given list.

Original list:
['red', 'green', 'blue', 'white', 'black', 'orange']
Remove words:
['white', 'orange']
After removing the specified words from the said list:
['red', 'green', 'blue', 'black']

```
['red', 'green', 'blue', 'black']
```

```
original_list = ['red', 'green', 'blue', 'white', 'black', 'orange']
remove_words = ['white', 'orange']
filtered_list = [word for word in original_list if word not in remove_words]
print(filtered_list)
```

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6 . Write a Python program to combine two lists into another list randomly.

```
import random
list1 = [1, 2, 3, 4, 5]
list2 = ['a', 'b', 'c', 'd', 'e']
combined_list = list1 + list2
random.shuffle(combined_list)
print(combined_list)
```

```
['c', 'd', 'e', 5, 2, 3, 4, 'b', 'a', 1]
```

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Difference between while and for loop

For loop	While loop
For loop is used to iterate over a sequence of items.	While loop is used to repeatedly execute a block of statements while a condition is true.
For loops are designed for iterating over a sequence of items. Eg. list, tuple, etc.	While loop is used when the number of iterations is not known in advance or when we want to repeat a block of code until a certain condition is met.
For loop require a sequence to iterate over.	While the loop requires an initial condition that is tested at the beginning of the loop.
For loop is typically used for iterating over a fixed sequence of items	While loop is used for more complex control flow situations.
For loop is more efficient than a while loop when iterating over sequences, since the number of iterations is predetermined and the loop can be optimized accordingly.	While a loop may be more efficient in certain situations where the condition being tested can be evaluated quickly.

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7.write a program to check whether entered number is Fibonacci number or not

```
1  import math
2  def isPerfectSquare(x):
3      s = int(math.sqrt(x))
4      return s*s == x
5  def isFibonacci(n):
6      return isPerfectSquare(5*n*n + 4) or isPerfectSquare(5*n*n - 4)
7  i=int(input("enter the number"))
8  if (isFibonacci(i) == True):
9      print(i,"is a Fibonacci Number")
10 else:
11     print(i,"is a not Fibonacci Number ")
12
```

input

```
enter the number3
3 is a Fibonacci Number
```

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8.write a program to check whether entered number is Fibonacci number or not in range

```python
import math
def isPerfectSquare(x):
    s = int(math.sqrt(x))
    return s*s == x
def isFibonacci(n):
    return isPerfectSquare(5*n*n + 4) or isPerfectSquare(5*n*n - 4)
a=int(input("enter the terms"))
for i in range(1,a):
    if (isFibonacci(i) == True):
        print( i,"is a Fibonacci Number")
    else:
        print( i,"is a not Fibonacci Number ")

```

input

```
enter the terms6
1 is a Fibonacci Number
2 is a Fibonacci Number
3 is a Fibonacci Number
4 is a not Fibonacci Number
5 is a Fibonacci Number
```

Online Way classes

Use of else with loops

Yes, you can use else with loop

```
l = [1, 2, 3, 4, 5]
for a in l:
    print(a)
else:
    print("else block is executed")
```

```
1
2
3
4
5
else block is executed
```

```
1  i=0
2  while i<5:
3      i+=1
4      print("i =",i)
5  else:
6      print("else block is executed")
```

```
i = 1
i = 2
i = 3
i = 4
i = 5
else block is executed
```

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Conditional statement:

- If statement
- If-else statement
- Nested-if else
- Elif statement

Purpose of loops

- Loops are used in programming to execute a set of instructions repeatedly until a certain condition is met. They help automate repetitive tasks, reducing the amount of code needed and improving efficiency

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AKTU QUESTIONS		
Q.1	What are conditional statement in python using small code example	AKTU 2019-20
Q.2	Write a python program to check if the input year is a leap year or not	AKTU 2021-22
Q.3	Write a program to produce the Fibonacci series in python	AKTU 2021-22
Q.4	Define loops. Explain different types of loops in python Or Difference between while and for loop with example, syntax and flow diagram	AKTU 2023-24
Q.5	ANY pattern question	AKTU 2021-22 AKTU 2022-23

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AKTU QUESTIONS		
Q.6	Explain the the working and purpose of loops. Discuss break and continue with example .Write a python program to convert time from 12 hour format to 24 hour format	AKTU 2019-20
Q.7	Explain the use of break , pass and continue with the suitable example	AKTU 2021-22
Q.8	Write a program to check an input number is prime or not	AKTU 2021-22
Q.9	Write a program to calculate the reverse of a number	AKTU 2022-23
Q.10	Write a program to check whether a number is Fibonacci number or not	AKTU 2019-20
Q.11	Write a program to convert time format from 12 hour to 24 hour format	AKTU 2019-20

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