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1 # List Comprehension
2
3 """
4 COMPREHENSION:
5     --> Comprehensions in Python provide us with a short and concise way to
        construct new sequences (such as lists, set, dictionary etc.) using sequences
        which have been already defined. Python supports the following 4 types of
        comprehensions:
6         --> List Comprehensions
7         --> Dictionary Comprehensions
8         --> Set Comprehensions
9         --> Generator Comprehensions
10 """
11
12 """
13 LIST COMPREHENSION:
14     --> List comprehension is an elegant way to define and create lists based
        on existing lists.
15     --> [expression(n); for n in list(n)]
16     --> We can use conditional(if-else) in comprehension for complex
        conversion.
17     --> Remember, every list comprehension can be rewritten in for loop, but
        every for loop can't be rewritten in the form of list comprehension.
18 """
19 names = ['Abhishek', 'Dylan', 'Bittu']
20
21 # Make a new list which has surname 'Baghel' with every name in the list names
22
23 # Using For Loop
24 names_with_surname = []
25 for name in names:
26     names_with_surname.append(name + ' Baghel')
27 print(names_with_surname)
28
29 # Python Way - Using Comprehension
30 names_with_surname2 = [name + ' Baghel' for name in names]
31 print(names_with_surname2)
32
33 nums = [5, 12, 13, 55, 23, 6, 16, 11]
34 squared_nums = [x*x for x in nums]
35 print(squared_nums)
36
37 """
38 Conditional Logic With List Comprehension
39     --> If: [x for x in list[] if condition(x)]
40     --> If-else [true_exp(x) if conditon(x) else false_exp(x) for x in list[]]
41 """
42
43 # If in List Comprehension
44 numbers = list(range(0, 50))
45 print(numbers)
46 even_numbers = [n for n in numbers if n % 2 == 0]
47 print(f"Even: {even_numbers}")
48 odd_numbers = [n for n in numbers if n % 2 != 0]
49 print(f"Odd: {odd_numbers}")
50
51 # If-else in List Comprehension
52 mixed = [x*x if x % 2 == 0 else x*x*x for x in nums]
53 print(mixed)
54

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55 # Removing Vowels and Creating Capitalize Feature
56 text = "Programming is the amazing thing in this world!"
57 text_without_vowels = [char for char in text if char not in "aeiou"]
58 print("".join(text_without_vowels))
59
60 text_capitalize = [f"{char[0].upper()}{char[1:]}" for char in text.split(" ")]
61 print(" ".join(text_capitalize))
```