**Python List Manipulation Assignment**

Instructions:

* This assignment is designed to test your understanding of Python list manipulation, including slicing and indexing.
* Ensure your code is well-commented and follows best practices.
* Name your file as "list\_assignment.py".
* Submit your completed assignment by the specified deadline.

**Questions:**

Question 1: Basic List Operations

a) Create a list named `fruits` containing the following items: "apple", "banana", "orange", "grape", "kiwi".

b) Add "pear" to the end of the list.

c) Insert "mango" at the second position in the list.

d) Remove "orange" from the list.

fruits = ["apple", "banana", "orange", "grape", "kiwi"]  
print(fruits)  
fruits.append("pear")  
fruits.insert(1,"mango")  
fruits.remove("orange")  
print(fruits)

Question 2: Slicing and Indexing

a) Create a list named `numbers` containing the integers from 0 to 9.

b) Print the element at index 3.

c) Print a sublist containing the elements from index 2 to 6 (inclusive).

d) Print the last three elements using negative indexing.

numbers = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]  
print(numbers)  
print(numbers[3])  
print(numbers[2:7])  
print(numbers[-3:])

Question 3: List Comprehension

a) Create a list named `squares` using a list comprehension that contains the squares of numbers from 1 to 10.

b) Create a new list named `even\_squares` using a list comprehension that contains the squares of even numbers from the `squares` list.

squares = [(i\*\*2)for i in range(1,11)]  
print(squares)  
even\_squares = [x for x in squares if x % 2 == 0]  
print(even\_squares)

Question 4: List Manipulation

a) Create a list named `colors` containing the following items: "red", "green", "blue", "yellow", "purple".

b) Swap the first and last elements of the list.

c) Reverse the order of the list.

d) Remove the second and third elements from the list.

colors = ["red", "green", "blue", "yellow", "purple"]  
print(colors)  
colors.insert(0, "purple")  
colors.remove("red")  
colors.insert(4, "red")  
colors.reverse()  
colors.remove("purple")  
colors.reverse()  
print(colors)  
colors.reverse()  
print(colors)  
colors.remove("yellow")  
colors.remove("blue")  
print(colors)

OR

colors = ["red", "green", "blue", "yellow", "purple"]  
print(colors)  
swap = colors[0]  
colors[0] = colors[4]  
colors[4] = swap  
print(colors)  
colors.reverse()  
print(colors)  
colors.remove(colors[1])  
colors.remove(colors[1])  
print(colors)

Question 5: Advanced Slicing

a) Create a list named `letters` containing the letters from 'a' to 'j'.

b) Using slicing, create a new list `first\_half` containing the first half of the `letters` list.

c) Using slicing, create a new list `last\_three` containing the last three elements of the `letters` list.

letters = []  
start = ord("a")  
for i in range(10):  
 letters.append(chr(start + i))  
print(letters)  
first\_half = letters[0:5]  
print(first\_half)  
last\_three = letters[7:11]  
print(last\_three)

Question 6: Nested Lists

a) Create a nested list named `matrix` with the following rows:

- [1, 2, 3]

- [4, 5, 6]

- [7, 8, 9]

b) Print the element in the second row and third column.

c) Use nested indexing to change the value at the second row and first column to 0.

matrix = [  
 [1,2,3],  
 [4,5,6],  
 [7,8,9]  
]  
print(matrix)  
print(matrix[1][2])  
matrix[1][0] = 0  
print(matrix)

**Submission:**

Submit your "list\_assignment and your name.pynp” file containing your code for each question.