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**Question 1**

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| **Source Code** |

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| *# Write a program to demonstrate the use of different operators in python.*  **def** **operators\_demo**(a, b):  print("Addition:", a + b)  print("Subtraction:", a - b)  print("Multiplication:", a \* b)  print("Division:", a / b **if** b != 0 **else** "Undefined")  print("Modulus:", a % b **if** b != 0 **else** "Undefined")  print("Floor Division:", a // b **if** b != 0 **else** "Undefined")  print("Exponentiation:", a \*\* b)  print("Equal:", a == b)  print("Not Equal:", a != b)  print("Greater:", a > b)  print("Smaller:", a < b)  print("Logical AND:", a > 0 and b > 0)  print("Logical OR:", a > 0 or b > 0)  print("Logical NOT:", not(a > 0))  a = int(input("Enter first number: ")) b = int(input("Enter second number: ")) operators\_demo(a, b) |

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| **Output** |

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| Enter first number: 10 Enter second number:5 Addition: 15 Subtraction:5 Multiplication:50 Division:2.0 Modulus:0 Floor Division:2 Exponentiation:100000 Equal:False Not Equal:True Greater:True Smaller:False Logical AND:True Logical OR:True Logical NOT:False |

**Question 2**

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| **Source Code** |

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| *# Write a program to print Fibonacci Series 0 1 1 2 3 5 ………..N*  n = int(input("Enter the number of terms: ")) a, b = 0, 1 print("Fibonacci Series:") **for** \_ in range(n):  print(a)  a, b = b, a + b |

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| **Output** |

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| Enter the number of terms: 7 Fibonacci Series: 0 1 1 2 3 5 8 |

**Question 3**

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| **Source Code** |

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| *# Write a program to print the sum of first n prime numbers.*  **def** **is\_prime**(num):  **if** num < 2:  **return** **False**  **for** i in range(2, int(num \*\* 0.5) + 1):  **if** num % i == 0:  **return** **False**  **return** **True**  n = int(input("Enter Number of Prime Numbers to Sum: ")) count, num, total = 0, 2, 0 **while** count < n:  **if** is\_prime(num):  total += num  count += 1  num += 1 print("Sum of first", n, "prime numbers is:", total) |

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| **Output** |

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| Enter Number of Prime Numbers to Sum: 5 Sum of first 5 prime numbers is: 28 |

**Question 4**

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| **Source Code** |

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| *# Create a function Pall\_n to print all of the palindrome numbers between two ranges.*  **def** **is\_palindrome**(num):  **return** str(num) == str(num)[::-1]  low = int(input("Enter lower range: ")) high = int(input("Enter upper range: "))  print("Palindrome numbers are:", end=" ") **for** i in range(low, high + 1):  **if** is\_palindrome(i):  print(i, end=" ") |

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| **Output** |

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| Enter lower range: 10 Enter upper range: 50 Palindrome numbers are: 11 22 33 44 |

**Question 5**

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| **Source Code** |

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| *# Write a Python program to perform the string slicing.*  s = input("Enter a string: ")  **while** **True**:  print("\n--- String Slicing Menu ---")  print("1. First 5 characters")  print("2. Last 5 characters")  print("3. Characters from index 2 to 7")  print("4. Every second character")  print("5. Reversed string")  print("6. Exit")   choice = int(input("Enter your choice: "))   **if** choice == 1:  print("First 5 characters:", s[:5])  **elif** choice == 2:  print("Last 5 characters:", s[-5:])  **elif** choice == 3:  print("Characters from index 2 to 7:", s[2:8])  **elif** choice == 4:  print("Every second character:", s[::2])  **elif** choice == 5:  print("Reversed string:", s[::-1])  **elif** choice == 6:  print("Exiting program...")  **break**  **else**:  print("Invalid choice! Try again.") |

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| **Output** |

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| Enter a string: HelloWorld --- String Slicing Menu --- 1. First 5 characters 2. Last 5 characters 3. Characters from index 2 to 7 4. Every second character 5. Reversed string 6. Exit Enter your choice: 1 First 5 characters: Hello --- String Slicing Menu --- 1. First 5 characters 2. Last 5 characters 3. Characters from index 2 to 7 4. Every second character 5. Reversed string 6. Exit Enter your choice: 2 Last 5 characters: World --- String Slicing Menu --- 1. First 5 characters 2. Last 5 characters 3. Characters from index 2 to 7 4. Every second character 5. Reversed string 6. Exit Enter your choice: 3 Characters from index 2 to 7: lloWor --- String Slicing Menu --- 1. First 5 characters 2. Last 5 characters 3. Characters from index 2 to 7 4. Every second character 5. Reversed string 6. Exit Enter your choice: 4 Every second character: Hlool --- String Slicing Menu --- 1. First 5 characters 2. Last 5 characters 3. Characters from index 2 to 7 4. Every second character 5. Reversed string 6. Exit Enter your choice: 5 Reversed string: dlroWolleH --- String Slicing Menu --- 1. First 5 characters 2. Last 5 characters 3. Characters from index 2 to 7 4. Every second character 5. Reversed string 6. Exit Enter your choice: 6 Exiting program... |

**Question 6**

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| **Source Code** |

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| *# Write a Python program to demonstrate the use of List, Tuple, Dictionary.*  my\_list = [10, 20, 30, 40] my\_tuple = (1, 2, 3, 4) my\_dict = {"a": 100, "b": 200, "c": 300}  **while** **True**:  print("\n--- Data Structure Menu ---")  print("1. Show List")  print("2. Show Tuple")  print("3. Show Dictionary")  print("4. Exit")   choice = int(input("Enter your choice: "))   **if** choice == 1:  print("List:", my\_list)  print("Access List element (index 2):", my\_list[2])  **elif** choice == 2:  print("Tuple:", my\_tuple)  print("Access Tuple element (index 1):", my\_tuple[1])  **elif** choice == 3:  print("Dictionary:", my\_dict)  print("Access Dictionary element (key 'b'):", my\_dict["b"])  **elif** choice == 4:  print("Exiting program...")  **break**  **else**:  print("Invalid choice! Try again.") |

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| **Output** |

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| --- Data Structure Menu --- 1. Show List 2. Show Tuple 3. Show Dictionary 4. Exit Enter your choice: 1 List: [10, 20, 30, 40] Access List element (index 2): 30 --- Data Structure Menu --- 1. Show List 2. Show Tuple 3. Show Dictionary 4. Exit Enter your choice: 2 Tuple: (1, 2, 3, 4) Access Tuple element (index 1): 2 --- Data Structure Menu --- 1. Show List 2. Show Tuple 3. Show Dictionary 4. Exit Enter your choice: 3 Dictionary: {'a': 100, 'b': 200, 'c': 300} Access Dictionary element (key 'b'): 200 --- Data Structure Menu --- 1. Show List 2. Show Tuple 3. Show Dictionary 4. Exit Enter your choice: 4 Exiting program... |

**Question 7**

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| **Source Code** |

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| *# Q1: Write a program to perform Linear Search*  **def** **linear\_search**(arr, target):  **for** i in range(len(arr)):  **if** arr[i] == target:  **return** i  **return** -1  **while** **True**:  print("\n--- Linear Search Menu ---")  print("1. Perform Linear Search")  print("2. Exit")  choice = int(input("Enter your choice: "))   **if** choice == 1:  arr = list(map(int, input("Enter numbers separated by space: ").split()))  target = int(input("Enter the element to search: "))  result = linear\_search(arr, target)  **if** result != -1:  print(f"Element found at index {result}")  **else**:  print("Element not found")  **elif** choice == 2:  print("Exiting program...")  **break**  **else**:  print("Invalid choice! Try again.") |

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| **Output** |

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| --- Linear Search Menu ---  1. Perform Linear Search  2. Exit  Enter your choice: 1  Enter numbers separated by space: 5 3 8 1  Enter the element to search: 8  Element found at index 2  --- Linear Search Menu ---  1. Perform Linear Search  2. Exit  Enter your choice: 2  Exiting program... |

**Question 8**

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| **Source Code** |

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| *# Q2: Write a function to find all duplicates in two different lists*  **def** **find\_duplicates**(list1, list2):  duplicates = set(list1).intersection(set(list2))  **return** list(duplicates)  **while** **True**:  print("\n--- Duplicate Finder Menu ---")  print("1. Find Duplicates")  print("2. Exit")  choice = int(input("Enter your choice: "))   **if** choice == 1:  list1 = list(map(int, input("Enter elements of first list separated by space: ").split()))  list2 = list(map(int, input("Enter elements of second list separated by space: ").split()))  duplicates = find\_duplicates(list1, list2)  **if** duplicates:  print("Duplicates found:", duplicates)  **else**:  print("No duplicates found")  **elif** choice == 2:  print("Exiting program...")  **break**  **else**:  print("Invalid choice! Try again.") |

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| **Output** |

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| --- Duplicate Finder Menu --- 1. Find Duplicates 2. Exit Enter your choice: 1 Enter elements of first list separated by space: 10 20 30 Enter elements of second list separated by space: 20 30 40 Duplicates found: [20, 30] --- Duplicate Finder Menu --- 1. Find Duplicates 2. Exit Enter your choice: 2 Exiting program... |

**Question 9**

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| **Source Code** |

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| *# Q3: Write a function to print the sum of numbers in list having 3 at their units place*  **def** **sum\_with\_units\_digit\_3**(numbers):  **return** sum(num **for** num in numbers **if** num % 10 == 3)  **while** **True**:  print("\n--- Sum of Numbers Ending with 3 Menu ---")  print("1. Calculate Sum")  print("2. Exit")  choice = int(input("Enter your choice: "))   **if** choice == 1:  numbers = list(map(int, input("Enter numbers separated by space: ").split()))  total = sum\_with\_units\_digit\_3(numbers)  print(f"Sum of numbers ending with 3 is: {total}")  **elif** choice == 2:  print("Exiting program...")  **break**  **else**:  print("Invalid choice! Try again.") |

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| **Output** |

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| --- Sum of Numbers Ending with 3 Menu --- 1. Calculate Sum 2. Exit Enter your choice: 1 Enter numbers separated by space: 13 23 3 4 Sum of numbers ending with 3 is: 39 --- Sum of Numbers Ending with 3 Menu --- 1. Calculate Sum 2. Exit Enter your choice: 2 Exiting program... |