**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: 10 Fibonacci Series: 0 1 1 2 3 5 8 13 21 34 |

**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: 10 Sum of first 10 prime numbers is: 129 |

**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: 20 Palindrome numbers are: 11 13 17 |

**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: Hello, 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: 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: llo, W  --- 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: HloWrd  --- 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: !dlroW ,olleH  --- 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: Enter numbers separated by space: Enter the element to search: Element not found  --- Linear Search Menu --- 1. Perform Linear Search 2. Exit Enter your choice: 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: Enter elements of first list separated by space: Enter elements of second list separated by space: Duplicates found: [] --- Duplicate Finder Menu --- 1. Find Duplicates 2. Exit Enter your choice: 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: Enter numbers separated by space: Sum of numbers ending with 3 is: 6  --- Sum of Numbers Ending with 3 Menu --- 1. Calculate Sum 2. Exit Enter your choice: Exiting program... |