**Problem 1**

# 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)

**Output**

Enter first number: 10  
Enter second number: 5  
Addition: 15  
Subtraction: 5  
Multiplication: 50  
Division: 2.0  
Modulus: 0  
Floor Division: 2  
Exponentiation: 9765625  
Equal: False  
Not Equal: True  
Greater: True  
Smaller: False  
Logical AND: True  
Logical OR: True  
Logical NOT: False

**Problem 2**

# 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

**Output**

Enter the number of terms: 10  
Fibonacci Series:  
0  
1  
1  
2  
3  
5  
8  
13  
21  
34

**Problem 3**

# 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)

**Output**

Enter Number of Prime Numbers to Sum: 12  
Sum of first 12 prime numbers is: 858

**Problem 4**

# 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=" ")

**Output**

Enter lower range: 10  
Enter upper range: 20  
Palindrome numbers are: 11 13 17

**Problem 5**

# 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.")

**Output**

Enter a string: Test  
--- 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: Test  
--- 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: Test  
--- 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

**Problem 6**

# 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.")

**Output**

--- 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