Notes for program procedure

Program 1: Print Even Numbers from 1 to 20

Procedure:

1. Start a for loop using range (2, 21, 2) to iterate from 2 to 20 with a step of 2.
2. Each value of i in this loop will be an even number.
3. Use print(i) to display the number.

```
# Program to print even numbers from 1 to 20
# Using range with step size 2 starting from 2 (first even number)
for i in range (2, 21, 2):
   print(i)   # Prints each even number
```

Program 2: Identify Even and Odd Numbers from 1 to 10

Procedure:

1. Use a for loop with range (1, 11) to iterate from 1 to 10.
2. Inside the loop, use an if condition: if i % 2 == 0 to check if the number is even.
3. If true, print the number as even.
4. Else, print the number as odd.

```
# Program to check and print whether numbers from 1 to 10 are even or odd
for i in range (1, 11):  # Loop from 1 to 10
   if i % 2 == 0:  # If number is divisible by 2, it is even
      print (i, "= even number")
   else:  # Otherwise, it' is odd
      print (i, "= odd number")
```

Program 3: Count Total, Even, and Odd Numbers in each Range

Procedure:

1. Accept two inputs from the user: sr (start range) and er (end range).

2. Initialize three counters:
    - nc for total numbers
    - ec for even numbers
    - oc for odd numbers
3. Use a for loop from sr to er (inclusive).
4. For each number i:
    - Increment nc by 1.

Use if i % 2 == 0 to check if it's even:

- If true, increment ec.
- Else, increment oc.

Print intermediate values for tracking.

Optionally, print final counts after the loop ends.

Purpose:
To calculate how many totals, even, and odd numbers exist in a user-defined range.

```
# Program to count how many numbers, even numbers, and odd numbers are in a given range

# Input: start and end of the range
sr = int (input ("Enter start range: "))
er = int (input ("Enter end range: "))

# Initialize counters
nc = 0 # Total number count
ec = 0 # Even number count
oc = 0 # Odd number count

# Loop through the range from sr to er (inclusive)
for i in range (sr, er + 1):
    print ("When i =", i) # Show current number
    nc += 1 # Increment total count
    print ("nc =", nc) # Print current total count
```

```
if i % 2 == 0:
    ec += 1 # Increment even count
    print ("ec =", ec) # Print current even count
else:
    oc += 1 # Increment odd count
    print ("oc =", oc) # Print current odd count
```

Program 4: Calculate Factorial of a Number

Procedure:

1. Accept an integer input from the user (num).
2. Initialize a variable s = 1 to store the factorial result.
3. Use a for loop from num down to 1 (range (num, 0, -1)).
4. In each iteration, multiply s by i and update s.
5. Print the intermediate result after each multiplication.

```
# Program to calculate factorial of 7 using loop
# Factorial of 7 = 7 * 6 * 5 * 4 * 3 * 2 * 1

num = int input ("Enter a number (e.g., 7): ")) # Input number
s = 1 # Initialize result variable

# Loop from num down to 1
for i in range (num, 0, -1):
    s = s * i # Multiply current value of s with i
    print(s) # Print intermediate result after each multiplication.
```