VARIABLES, DATA TYPES, OPERATORS

1. Digit Sum Calculator Ask the user for a number and calculate the sum of its

digits. Example: 753 → 7 + 5 + 3 = 15

```
num = input("Enter a number: ")
num = [int(i) for i in num]
digitSum = sum(num)
print(digitSum)
```

2. Reverse a 3-digit Number Input a 3-digit number and print it reversed. Input:

123 → Output: 321

```
num = input("Enter 3 digit number: ")

if len(num) != 3:
    print("Enter a 3 digit number!")
else:
    print(num[::-1])
```

3. Unit Converter Build a converter that takes meters and converts to:

Centimeters, feet, inches

```
metres = int(input("Enter measurement in metres: "))
cm = metres * 100
feet = metres * 3.281
 inches = metres * 39.37

print(f"{metres} meter = {cm} cm, {feet} feet, {inches} inches")
```

4. Percentage Calculator Input marks of 5 subjects and calculate total, average,

and percentage. Display grade based on the percentage.

```
m1 = int(input("Enter Mark-1: "))
m2 = int(input("Enter Mark-2: "))
m3 = int(input("Enter Mark-3: "))
m4 = int(input("Enter Mark-4: "))
m5 = int(input("Enter Mark-5: "))

total = m1 + m2 + m3 + m4 + m5
average = total / 5
percentage = (total / 500) * 100

print(f"Total: {total}, Average: {average}, Percentage: {percentage}")
```

CONDITIONALS

5. Leap Year Checker A year is a leap year if it's divisible by 4 and (not

divisible by 100 or divisible by 400).

```
year = int(input("Enter year: "))

if (year % 4 == 0 and year % 100 != 0) or (year % 400 == 0):
    print(f"{year} is leap year")
```

```
else:
    print(f"{year} is non-leap year")
```

6. Simple Calculator Input two numbers and an operator (+ - * /) and perform the

operation using if...elif...else .

```
x = int(input("Enter x: "))
operator = input("Enter operator: ")
y = int(input("Enter y: "))

if operator == '+':
    print(x + y)
elif operator == '-':
    print(x - y)
elif operator == '*':
    print(x * y)
elif operator == '/' and y != 0:
    print(x / y)
else:
    print("Enter a valid number or operator")
```

7. Triangle Validator Given 3 side lengths, check whether they can form a valid

triangle.

```
len1 = int(input("Enter length 1: "))
len2 = int(input("Enter length 2: "))
len3 = int(input("Enter length 3: "))

if ((len2 + len3) > len1) and ((len1 + len3) > len2) and ((len2 + len1) > len3):
    print("This is a valid triangle")
else:
    print("Invalid triangle")
```

8. Bill Splitter with Tip Ask total bill amount, number of people, and tip

percentage. Show final amount per person.

```
billAmount = int(input("Enter total bill amount: "))
numberOfPeople = int(input("Enter number of people: "))
tipPercent = float(input("Enter tip percentage: ")) / 100

totalAmount = billAmount + (billAmount * tipPercent)
perPerson = totalAmount / numberOfPeople
print(f"Final amount per person: {perPerson}")
```

LOOPS

9. Find All Prime Numbers Between 1 and 100 Use a nested loop to check

divisibility.

```
for i in range(2, 101):
    prime = True     for j in range(2, int(i ** 0.5) + 1):
        if i % j == 0:
            prime = False            break     if prime:
        print(f"{i} is a prime")
```

10. Palindrome Checker Ask for a string and check whether it reads the same

backward.

```
x = input("Enter a string: ")
y = x
palindrome = True

for i in range(len(x)):
    if x[i] != y[len(x) -1 -i]:
        palindrome = False
        break

print(f"{x} is palindrome - {palindrome}")
```

11. Fibonacci Series (First N Terms) Input n , and print first n terms of the

Fibonacci sequence.

```
num = int(input("Enter number: "))

values = [0, 1]

for i in range(2, num+1):
    values.append(values[i-1] + values[i-2])

print(values)
```

12. Multiplication Table (User Input) Take a number and print its table up to 10:

```
num = int(input("Enter number for table: "))

for i in range(10):
    print(f"{i+1} * {num} = {(i+1) * num}")
```

13. Number Guessing Game Generate a random number between 1 to 100

Ask the user to guess Give hints: "Too High", "Too Low", Loop until the correct guess

```
import random

num = random.randint(1, 100)
guess = False

while not guess:
    userGuess = int(input("Enter guess"))
    if userGuess == num:
```

```
        print("Correct")
        guess = True

    elif userGuess < num:
        print("Too Low")

    else:
        print("Too High")
```

14. ATM Machine Simulation Balance starts at 10,000

Menu: Deposit / Withdraw / Check Balance / Exit

Use a loop to keep asking, Use conditionals to handle choices

```
balance = 10_000 online = True

while online:
    print(f"1. Deposit\n2. Withdraw\n3. Check Balance\n4. Exit")
    num = int(input("Enter choice: "))

    if num == 1:
        depositAmt = int(input("Enter deposit amount: "))
        balance += depositAmt

    elif num == 2:
        withdrawAmt = int(input("Enter withdraw amount"))
        if withdrawAmt <= balance:
            balance -= withdrawAmt        else:
            print("Not sufficient balance")

    elif num == 3:
        print(balance)

    else:
        online = False
```

15. Password Strength Checker Ask the user to enter a password Check if it's at least 8 characters

Contains a number, a capital letter, and a symbol

```
import string

password = input("Enter password: ")
chars, number, capital, symbol = False, False, False, False

if len(password) >= 8:
    chars = True

for i in password:
    if i.isdigit():
        number = True     elif i.isupper():
        capital = True     elif i in string.punctuation:
        symbol = True

if all([chars, number, capital, symbol]):
    print("Strong password")
else:
    print("Weak password")
```

16. Find GCD (Greatest Common Divisor), Input two numbers, Use while loop or Euclidean algorithm

```python
a = int(input("Enter a: "))
b = int(input("Enter b: "))

while b!= 0:
    a, b = b, a%b

print(f"GCD: {a}")
```