**1. Write a Python program to print a triangle pattern (give any), emphasizing the transition from C to Python syntax**

n = 5

for i in range(1, n + 1):

for j in range(1, i + 1):

print("\*", end=" ")

print()

**2. Develop a Python program that takes a numerical input and identifies whether it is even or odd, utilizing conditional statements and loops.**

# Function to check if the number is even or odd

def check\_even\_odd(number):

if number % 2 == 0:

return "even"

else:

return "odd"

# Main function to take input and check the number

def main():

while True:

try:

num = int(input("Enter a number (or type '0' to exit): "))

if num == 0:

print("Exiting the program. Goodbye!")

break

result = check\_even\_odd(num)

print(f"The number {num} is {result}.")

except ValueError:

print("Invalid input. Please enter a valid number.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**3. Create a Python program to check whether the given input is a digit, lowercase character, uppercase character, or a special character using an 'if else-if' ladder.**

def check\_character(char):

if char.isdigit():

return "Digit"

elif char.islower():

return "Lowercase character"

elif char.isupper():

return "Uppercase character"

else:

return "Special character"

# Main function to take input and check the character

def main():

char = input("Enter a character: ")

if len(char) != 1:

print("Please enter a single character.")

else:

result = check\_character(char)

print(f"The character '{char}' is a {result}.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**4.Write a Python program to take a numerical input from the user and generate its multiplication table using loops.**

def generate\_multiplication\_table(num, upto=10):

for i in range(1, upto + 1):

print(f"{num} x {i} = {num \* i}")

# Main function to take input and generate the multiplication table

def main():

try:

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

upto = int(input("Enter the number of multiples to display: "))

generate\_multiplication\_table(num, upto)

except ValueError:

print("Invalid input. Please enter valid numbers.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**5. Develop a Python program to print the Fibonacci sequence using a while loop.**

def fibonacci\_sequence(limit):

a, b = 0, 1

while a <= limit:

print(a, end=" ")

a, b = b, a + b

print()

# Main function to take input and print the Fibonacci sequence

def main():

try:

limit = int(input("Enter the limit for the Fibonacci sequence: "))

fibonacci\_sequence(limit)

except ValueError:

print("Invalid input. Please enter a valid number.")

if \_\_name\_\_ == "\_\_main\_\_":

main()

**6. Design a Python program to compute the factorial of a given integer N.**

def factorial(N):

if N < 0:

return "Factorial is not defined for negative numbers."

elif N == 0 or N == 1:

return 1

else:

result = 1

for i in range(2, N + 1):

result \*= i

return result

# Main function to take input and compute the factorial

def main():

try:

N = int(input("Enter a non-negative integer: "))

print(f"The factorial of {N} is {factorial(N)}.")

except ValueError:

print("Invalid input. Please enter a non-negative integer.")

if \_\_name\_\_ == "\_\_main\_\_":

main()