**Python Assignment**

**1. Number Categorizer**

**Write a Python program that prompts the user to enter a number between 1 and 100.**

**o If the number is less than 50, print "The number is small."**

**o If the number is between 50 and 75 (inclusive), print "The number is medium."**

**o If the number is greater than 75, print "The number is large."**

**o If the input is not a valid number or not in the range 1 to 100, print "Invalid**

**input."**

**o After printing the message, ask the user if they want to input another number. If**

**yes, repeat the process; if no, end the program with a message "Thank you for**

**using the program."**

**o Ensure that the program continues to prompt for new numbers until the user**

**decides to stop.**

def number\_categorizer():

while True:

try:

num = int(input("Enter a number between 1 and 100: "))

if 1 <= num < 50:

print("The number is small.")

elif 50 <= num <= 75:

print("The number is medium.")

elif num > 75:

print("The number is large.")

else:

print("Invalid input.")

except ValueError:

print("Invalid input.")

again = input("Do you want to input another number? (yes/no): ").strip().lower()

if again != 'yes':

print("Thank you for using the program.")

break

number\_categorizer()

**2. Even or Odd Checker**

**Write a program that asks the user to enter a number.**

**o Check if the number is even or odd.**

**o Print "The number is even" if the number is even, otherwise print "The number**

**is odd."**

def even\_or\_odd\_checker():

try:

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

if num % 2 == 0:

print("The number is even.")

else:

print("The number is odd.")

except ValueError:

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

even\_or\_odd\_checker()

**3. Simple Calculator**

**Write a program that performs basic arithmetic operations (addition, subtraction,**

**multiplication, and division).**

**o Prompt the user to enter two numbers and choose an operation (+, -, \*, /).**

**o Perform the chosen operation and display the result.**

**o Handle division by zero errors with a suitable message.**

def simple\_calculator():

try:

num1 = float(input("Enter the first number: "))

operator = input("Enter the operation (+, -, \*, /): ")

num2 = float(input("Enter the second number: "))

if operator == '+':

result = num1 + num2

elif operator == '-':

result = num1 - num2

elif operator == '\*':

result = num1 \* num2

elif operator == '/':

if num2 == 0:

print("Error: Division by zero is not allowed.")

return

result = num1 / num2

else:

print("Invalid operator.")

return

print(f"The result is: {result}")

except ValueError:

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

simple\_calculator()

**4. Number Guessing Game**

**Write a program that randomly selects a number between 1 and 10.**

**o Prompt the user to guess the number.**

**o Provide feedback if the guess is too high or too low.**

**o Allow the user to guess again until they find the correct number.**

**o Print a congratulatory message when the correct number is guessed.**

import random

def number\_guessing\_game():

number = random.randint(1, 10)

while True:

try:

guess = int(input("Guess the number between 1 and 10: "))

if guess < number:

print("Too low!")

elif guess > number:

print("Too high!")

else:

print("Congratulations! You've guessed the number.")

break

except ValueError:

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

number\_guessing\_game()

**5. Multiplication Table**

**Write a program that prompts the user to enter a number.**

**o Generate and display the multiplication table for that number (from 1 to 10).**

def multiplication\_table():

try:

num = int(input("Enter a number to display its multiplication table: "))

for i in range(1, 11):

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

except ValueError:

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

multiplication\_table()

**6. Factorial Calculator**

**Write a program that prompts the user to enter a non-negative integer.**

**o Calculate the factorial of the number (n!) using a loop.**

**o Display the result.**

def factorial\_calculator():

try:

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

if num < 0:

print("Invalid input.")

return

factorial = 1

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

factorial \*= i

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

except ValueError:

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

factorial\_calculator()

**7. Palindrome Checker**

**Write a program that prompts the user to enter a word or phrase.**

**o Check if the entered text is a palindrome (reads the same forwards and**

**backwards).**

**o Print "The text is a palindrome" or "The text is not a palindrome" based on the**

**result.**

def palindrome\_checker():

text = input("Enter a word or phrase: ").replace(" ", "").lower()

if text == text[::-1]:

print("The text is a palindrome.")

else:

print("The text is not a palindrome.")

palindrome\_checker()

**8. List Sum Calculator**

**Write a program that initializes a list of numbers.**

**o Calculate and print the sum of all numbers in the list.**

**o Prompt the user to enter a number to add to the list.**

**o Update the list and print the new sum.**

def list\_sum\_calculator():

numbers = [1, 2, 3, 4, 5] # Initialize the list of numbers

print(f"Initial list: {numbers}")

print(f"Sum of the list: {sum(numbers)}")

try:

new\_number = int(input("Enter a number to add to the list: "))

numbers.append(new\_number)

print(f"Updated list: {numbers}")

print(f"New sum of the list: {sum(numbers)}")

except ValueError:

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

list\_sum\_calculator()