Solve logical problems using python?

1. Area

def calculate\_area():

print("Choose the shape to calculate the area:")

print("1. Rectangle")

print("2. Square")

print("3. Triangle")

print("4. Circle"

) choice = input("Enter the number of your choice: ")

if choice == '1':

length = float(input("Enter the length of the rectangle: "))

width = float(input("Enter the width of the rectangle: "))

area = length \* width

print(f"The area of the rectangle is {area}")

elif choice == '2':

side = float(input("Enter the side length of the square: "))

area = side \*\* 2

print(f"The area of the square is {area}")

elif choice == '3':

base = float(input("Enter the base of the triangle: "))

height = float(input("Enter the height of the triangle: "))

area = 0.5 \* base \* height

print(f"The area of the triangle is {area}")

elif choice == '4':

radius = float(input("Enter the radius of the circle: "))

area = 3.14159 \* radius \*\* 2

print(f"The area of the circle is {area}")

else:

print("Invalid choice. Please choose a valid shape.")

calculate\_area()

1. Reversestring

def reverse\_string():

# Prompt the user to enter a string

user\_string = input("Enter a string to reverse: ")

# Reverse the string using slicing

reversed\_string = user\_string[::-1]

# Print the reversed string

print(f"The reversed string is: {reversed\_string}")

# Run the function to reverse the string

reverse\_string()

1. Largest element

def find\_largest\_element():

# Prompt the user to enter a list of numbers separated by spaces

numbers = input("Enter numbers separated by spaces: ").split()

# Convert the input strings to integers

numbers = [int(num) for num in numbers]

# Find the largest number in the list

largest = max(numbers)

# Print the largest numb

print(f"The largest element is: {largest}")

# Run the function to find the largest element find\_largest\_element()

1. Sum of elements

def find\_sum\_of\_elements():

# Prompt the user to enter a list of numbers separated by spaces

numbers = input("Enter numbers separated by spaces: ").split()

# Convert the input strings to integers

numbers = [int(num) for num in numbers]

# Calculate the sum of the numbers in the list

total\_sum = sum(numbers)

# Print the sum of the numbers

print(f"The sum of the elements is: {total\_sum}")

# Run the function to find the sum of elements

find\_sum\_of\_elements()

1. Duplicate

def find\_duplicate\_elements():

# Prompt the user to enter a list of numbers separated by spaces

numbers = input("Enter numbers separated by spaces: ").split()

# Convert the input strings to integers

numbers = [int(num) for num in numbers]

# Create a set to track seen numbers and a list to store duplicates

seen = set()

duplicates = []

# Iterate through the numbers and identify duplicates

for num in numbers:

if num in seen:

if num not in duplicates: # Avoid adding the same duplicate multiple

times

duplicates.append(num)

else: seen.add(num)

# Print the duplicates

if duplicates:

print(f"The duplicate elements are: {duplicates}")

else:

print("There are no duplicate elements.")

# Run the function to find duplicate elements

find\_duplicate\_elements()

6. List is empty

def check\_if\_list\_is\_empty():

# Prompt the user to enter a list of elements separated by spaces

elements = input("Enter elements separated by spaces (leave empty for an empty list): ").split()

# Check if the list is empty

if not elements:

print("The list is empty.")

else:

print("The list is not empty.")

# Run the function to check if the list is empty

check\_if\_list\_is\_empty()