17. Find row, column, and diagonal sums in a matrix

def matrix\_sums(matrix):

rows = len(matrix)

cols = len(matrix[0]) if rows > 0 else 0

# Row sums

row\_sums = [sum(row) for row in matrix]

# Column sums

col\_sums = [sum(matrix[i][j] for i in range(rows)) for j in range(cols)]

# Diagonal sums (assuming square matrix)

main\_diag\_sum = sum(matrix[i][i] for i in range(min(rows, cols)))

secondary\_diag\_sum = sum(matrix[i][cols - i - 1] for i in range(min(rows, cols)))

return row\_sums, col\_sums, main\_diag\_sum, secondary\_diag\_sum

# Example usage:

matrix = [

[1, 2, 3],

[4, 5, 6],

[7, 8, 9]

]

row\_sums, col\_sums, main\_diag\_sum, secondary\_diag\_sum = matrix\_sums(matrix)

print(f"Row sums: {row\_sums}")

print(f"Column sums: {col\_sums}")

print(f"Main diagonal sum: {main\_diag\_sum}")

print(f"Secondary diagonal sum: {secondary\_diag\_sum}")