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Module 1

Assignment 1.3

A screenshot of a computer

Description automatically generated

# Program to calculate the energy needed to heat water

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# Purpose: To calculate the energy required to heat water from an initial temperature to a final temperature.

# Constants

SPECIFIC\_HEAT\_CAPACITY = 4184 # Specific heat capacity of water in J/(kg\*C)

def main():

# Prompt user for inputs

try:

water\_mass = float(input("Enter the amount of water in kilograms: "))

initial\_temperature = float(input("Enter the initial temperature of the water in Celsius: "))

final\_temperature = float(input("Enter the final temperature of the water in Celsius: "))

# Calculate the energy required (Q)

energy = water\_mass \* (final\_temperature - initial\_temperature) \* SPECIFIC\_HEAT\_CAPACITY

# Display the result

print(f"The energy needed to heat {water\_mass} kg of water from {initial\_temperature} °C to {final\_temperature} °C is {energy:.2f} Joules.")

except ValueError:

print("Invalid input. Please enter numeric values.")

# Call the main function

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

main()