

MET 3601 Syntax Problem #13

Please do your work in the .syntax-problems folder on the JupyterHub and DON'T forget to also upload both the figure and the .ipynb file to Canvas!

<https://fit24f-1.ees220002.projects.jetstream-cloud.org/>

Objectives

1. Use definitions to modularize programming
2. Practice use of if statements in Python syntax
3. Obtaining input from standard input

Due by 11:00 am 11/13/2024

Problem

1. Write a Python program that uses a definition to compute the energy emitted, according to the Stefan-Boltzmann equation from an input temperature and **use the MetPy module for units**.

$$E = \varepsilon \sigma T^4$$

Where ε is the emissivity (assume it is a perfect blackbody, i.e. = 1), σ is the Stefan-Boltzmann constant ($5.67 \times 10^{-8} \text{ W m}^{-2} \text{ K}^{-4}$) and T is the temperature in Kelvin. The script should use standard input to read in the temperature in °C. Output should be the energy emitted in W m^{-2} with units expressed as part of the calculation!

A starter script syntax13.ipynb is available on the JupyterHub in the syntax problems folder.

Notes:

- Only one value should result from the input
- Double check to make sure you have the correct output and conversion for temperature.
- You **MUST** check your calculations by hand (take a picture and add it to the notebook – it will last longer!). You can also sanity check your answer on-line (either a calculator or relevant image!).
- Make sure documentation (e.g., comment block and comments throughout code) is present in your source code
- Make output informative so that anyone running your program understand what is being produced without seeing the assignment.
- **DO NOT FORGET to rename the program (notebook)**

syntax13_lastname.ipynb

where 'lastname' is your lastname 😊. Also - upload a backup copy to Canvas.