This project assesses your ability to use variables, data types, decision structures, and loops to construct a program that will issue cold weather advisory or warnings according to criteria used by the national weather service for the state of VA. You must also gather input and produce output in a table using print formatting.

According to <https://www.weather.gov/lwx/WarningsDefined> A Cold Weather Advisory or Extreme Cold Warning is issued to alert residents of the State of Virginia to cold weather conditions that are dangerous for people and animals if precautions are not taken. They are issued when the following criteria are met:

Cold Weather Advisory

A Cold Weather Advisory is issued when either wind chill or temperature is expected to fall to:

\* 0 to -9 degrees east of the Blue Ridge Mountains

\* -10 to -19 degrees west of and including the Blue Ridge Mountains

Extreme Cold Warning

An Extreme Cold Warning is issued when either wind chill or temperature is expected to fall to or below:

\* -10 degrees east of the Blue Ridge Mountains

\* -20 degrees west of and including the Blue Ridge Mountains

This is the formula for calculating Wind Chill Temperature:

Wind Chill Temperature = 35.74 + 0.6215T - 35.75(V^0.16) + 0.4275T(V^0.16)

Where:

T = Air Temperature (in Fahrenheit)

V = Wind Speed (in mph)

^ = raised to a power (exponential)

You are developing a report notification system that will issue an Advisory or Warning based on user input. Multiple reports may be entered by user given that different regions, temperatures, and wind speeds are possible. Sometimes the data entered will necessitate an Advisory or Warning to be issued and sometimes it will not but a report is required regardless.

You begin by asking the user for the number of reports. Validate the number of reports with a loop that will ensure the number of reports is at least 0. The number of reports will be used within a counter-controlled loop that will control the processing of the data entered. After the loop is entered, you will get input for the air temperature then validate the air temperature to ensure that it is no more than 50. Then, get input for the wind speed in mph. Validate the wind speed to ensure that it is at least 3. Then, get input for the region using a menu like that shown below. Validate the region to ensure that it is either ***E*** for East of Blue Ridge, or ***W*** for the Blue Ridge and areas West of the Blue Ridge.

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

Now that you have all of the data that you need, calculate the wind chill according to the formula given. Remember that you must use the Python exponent operator \*\* instead of ^ as shown in the formula. Obviously, replace T with the variable name you are using for temperature. Replace V with the variable name you are using for wind speed.

Then, you will use decision structure(s) to determine according to the region, air temperature, and wind chill whether a Cold Weather Advisory, Extreme Cold Warning, or No Cold Weather Advisory or Extreme Cold Warning should be issued.

Here is an example of the full report for persons East of the Blue Ridge when the criteria for issuing a Cold Weather Advisory is met. Other regions and conditions follow this format for the report but obviously the data varies.

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Report Number 1

Cold Weather Advisory Issued East of Blue Ridge

Temperature 0.0

Wind Speed 3.0

Wind Chill -6.9

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To help you to fully test your logic, there are 8 test cases shown in the How the Program Should Run section below. When you test your code, use these test cases, and they will help you determine if your logic works for the different regions and conditions for temperature, wind speed, and of course wind chill. You must print in a tabular format with 2 columns as shown in the How the Program Should Run section. When the program ends, print a message to remind people to Be Weather Aware!

To make sure that you understand the requirements, the section in green below shows How the Program Should Run including test data that appears in ***red***, ***bolded***, and ***italicized***. Remember that your program should run for any weather report and not just the reports listed below. That means if you are stating something like if report\_number == 1, you are not programming for any weather report correctly. It isn’t the Weather Report Number that determines the advisory or warning or neither, it is combination of the region, temperature, wind speed, and wind chill that determines the output.

Cold Weather Advisory | Cold Weather Warning System

Please enter the number of reports:

***-1***

Invalid number of reports. Enter a value >= 0:

***-2***

Invalid number of reports. Enter a value >= 0:

***8***

Please enter the air temperature no more than 50 F:

***51***

Invalid. The air temperature should not exceed 50 F.

Please try again:

***70***

Invalid. The air temperature should not exceed 50 F.

Please try again:

***0***

Please enter the wind speed that should be at least 3:

***2***

Invalid. Wind speed must be at least 3:

Please try again.

***1***

Invalid. Wind speed must be at least 3:

Please try again.

***3***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***z***

Invalid. Please enter E for East of Blue Ridge or

W for West of and including the Blue Ridge mountains:

***y***

Invalid. Please enter E for East of Blue Ridge or

W for West of and including the Blue Ridge mountains:

***e***

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Report Number 1

Cold Weather Advisory Issued East of Blue Ridge

Temperature 0.0

Wind Speed 3.0

Wind Chill -6.9

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Please enter the air temperature no more than 50 F:

***-9***

Please enter the wind speed that should be at least 3:

***3***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***E***

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Report Number 2

Extreme Cold Warning Issued East of Blue Ridge

Temperature -9.0

Wind Speed 3.0

Wind Chill -17.1

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Please enter the air temperature no more than 50 F:

***15***

Please enter the wind speed that should be at least 3:

***25***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***e***

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Report Number 3

Cold Weather Advisory Issued East of Blue Ridge

Temperature 15.0

Wind Speed 25.0

Wind Chill -4.0

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Please enter the air temperature no more than 50 F:

***35***

Please enter the wind speed that should be at least 3:

***3***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***e***

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Report Number 4

No Cold Weather Advisory or Extreme Cold Warning

Temperature 35.0

Wind Speed 3.0

Wind Chill 32.7

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Please enter the air temperature no more than 50 F:

***50***

Please enter the wind speed that should be at least 3:

***15***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***W***

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Report Number 5

No Cold Weather Advisory or Extreme Cold Warning

Temperature 50.0

Wind Speed 15.0

Wind Chill 44.6

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Please enter the air temperature no more than 50 F:

***-1***

Please enter the wind speed that should be at least 3:

***3***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***W***

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Report Number 6

No Cold Weather Advisory or Extreme Cold Warning

Temperature -1.0

Wind Speed 3.0

Wind Chill -8.0

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Please enter the air temperature no more than 50 F:

***0***

Please enter the wind speed that should be at least 3:

***14***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***W***

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Report Number 7

Cold Weather Advisory Issued Blue Ridge and West

Temperature 0.0

Wind Speed 14.0

Wind Chill -18.8

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Please enter the air temperature no more than 50 F:

***-10***

Please enter the wind speed that should be at least 3:

***12***

Please enter your region from the menu below:

E for East of Blue Ridge Mountains:

W for West of and including the Blue Ridge Mountains:

***W***

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Report Number 8

Extreme Cold Warning Issued Blue Ridge and West

Temperature 10.0

Wind Speed 12.0

Wind Chill -30.0

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Be Weather Aware!

Submit the cold\_weather.py file in Canvas when complete.