

# Cat, Cot, Cap Temperature Calculator

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## Problem.

Your friend has asked you to help them with a project. He needs to convert a Fahrenheit temperature to either Celsius, Kelvin or Rankine temperature scales. However, your friend is a bit - odd. He needs this to apply to only three objects: a cat, a cot and a cap. Each object has a valid temperature range for his calculations (See Table 1 below).

## Requirements.

- Prompt for the object to calculate the temperature for. Note: This is NOT a menu! The client is expected to enter the proper words.
- Ask for the temperature of the object in Fahrenheit. Check to see if it's in the proper range. Reprompt if incorrect.
- Create a menu of valid temperature scales to select from. Selecting the scale option will immediately display the converted temperature. Include an option to calculate the temperature for ALL the options. See **Table 1** for the allowable temperature ranges.
- Re-prompt if incorrect data was entered. Keep re-prompting until the client gets it right.
- Include a void ProgramGreeting() function. This will run automatically once when the program first starts. This function should display (on individual lines):

- A welcome message.
- Your name (as author).
- System date. Format this as MonthName day, year. Example:  
June 30, 1988.

- Store the results of all computations.
- Include your specification comments above the main portion of your code where you implement the specification. No credit if this is missing!
- Use white-space and comments to make your code more readable.
- Put a Source File Header at the top of your source file.
- Include a ProgramGreeting() function.
- Use function prototypes for all functions.
- Do not use c (.h) style libraries. Use C++ libraries instead.
- Your program must compile in C++ on Ubuntu.
- Your program must generate logically correct output.
- Program activities are split into logical 'chunks' or paragraphs. I'm expecting paragraphs for input, processing (if any), and output operations.

- If there is non integer output, force the computer to always display 3 places to the right of the decimal.

**Table 1.**

Allowable Temp (F) for Objects

Object	Low Temp	High Temp
cat	86.0	102.0
cot	54.0	80.0
cap	72.0	88.0

## Specifications.

### // Specification C1 – Only Valid Words

We only want to accept valid words cat, cap, cot no matter how they are spelled (ie Cat, CAT, caT all Ok too). Put this in a function along with the text prompt. This function will only return an integer **objCode** corresponding to one of the following values: 0 - bad input, 1 - cat, 2 - cot, 3 - cap, 4 - free for your word (if you program one). You can use objCode in this function. You must use **objCode** in the function you call this from as the return variable. Use a do .. while loop to reprompt until correct.

### // Specification C2 – Select Temp Scale Menu

Create a menu which shows us what temperature scales we can convert to (Fahrenheit, Celsius, etc.). This can be a numeric menu. The client selects what scale they want to use for output. Remember to include an option to convert to all the scales.

### // Specification C3 – Another Thing

Add another thing (dog as well as cat, etc etc). Modify the program to process it correctly.

### // Specification B1 – Floats for Temps

Allow the client to enter a decimal temperature. Use the variable **templn** in your input statement.

### // Specification B2 – Valid Temps Only

Make sure the user can input the temperatures only within a valid range. If out of range, tell them (too high, too low) and re-prompt. We can accept an error of less than +/-0.2 degrees. Example: a valid temperature for a cat will be 102.2, but 102.3 will not. Create a function **bool ValFlo()** which accepts the user entered float value and returns a boolean value; true if the float it's checking is good and false if it isn't.

### // Specification B3 - Prompt Function

Create a function called Prompt like the last assignment. Continue to pass the string to display when Prompt is called. This time, overload this function so 1 version of Prompt returns an integer and the other a float. Use any input mechanism you wish. You will not need to use the integer version of this function to solve this assignment, but I suggest you test it in your program greeting to make sure it works correctly.

### **// Specification A - Reflection**

Using the following prompts, generate feedback on your assignment using ChatGPT. Often shift-return will generate a blank line without submitting the prompt.

*Analyze this student's code in relationship to commonly accepted C++ programming practices and standards. This is an assignment from an Introductory C++ programming course. Indicate if this code is likely to compile or run correctly in addition to your other feedback.*

*<Copy and Paste your source code here>*

Review and reflect on the feedback the system gives you. Write this up in 250 words or more. Include your write up as a block comment at the bottom of your assignment. **Also indicate the number of words in your write up, as well.** You may wish to:

Comment on the overall quality of the assessment. Was it accurate? Did it make sense? Did you find it useful? Does it align with what you coded? You may wish to discuss one or two main themes the AI identified in relationship to your coding.

Memorialize your reaction to the feedback. Do you find it easier to get feedback from a computer or a human? Was there any advice in particular which was helpful to you? Can you think of a better prompt to generate the information you need? You can also use this as coding notes to yourself to help you remember some of the hard won lessons from this project.

I am NOT interested in the feedback from the generative AI. Do NOT copy and paste that in your program. I am interested in your thoughts about it however. You are free to use multiple prompts as well. I do not use this tool to grade your assignments - it's not accurate enough for my purposes. I will not grade the quality of your content. I want this to be useful to you and not worry about saying something "grade worthy". I suggest this is the last step you perform before you turn in your assignment. You can do it earlier if you wish, but the feedback will not be as useful. You are free to revise your code in light of the feedback you get, but remember, the assignment is what I grade to, not ChatGPT. Make sure you confirm your code runs before you turn it in.