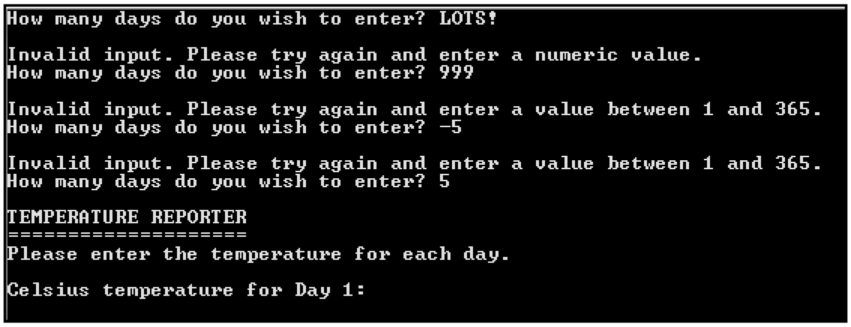
Unit 4B: Arrays - In-Class Project 3

CPRG3202 – T. MacDonald

In this in-class project you will create a console C++ program that will have the user to enter Celsius temperature readings for anywhere between 1 and 365 days and store them in a dynamically allocated array. In the next in-class project, we will then display a report showing both the Celsius and Fahrenheit temperatures for each day entered. This program is very similar to **Unit 4A In-Class Project 1 (IC4-1)**, but will require the use of **pointers and dynamic memory allocation**.

- You will collaborate in groups of 2 to 3 students, but each of you will write your own program on your own laptop. You will be submitting your source code at the end of the lesson for marks.
- You must be present, in class, to be eligible to participate in the activities, and thus be eligible for these marks.



```
How many days do you wish to enter? LOTS!

Invalid input. Please try again and enter a numeric value.
How many days do you wish to enter? 999

Invalid input. Please try again and enter a value between 1 and 365.
How many days do you wish to enter? -5

Invalid input. Please try again and enter a value between 1 and 365.
How many days do you wish to enter? 5

TEMPERATURE REPORTER
====================
Please enter the temperature for each day.

Celsius temperature for Day 1:
```

Determining the number of days to get input for: For this lab you will ask the user how many days worth of temperature readings they wish to enter. This value must be numeric and between one and 365. Do not forget to check for for non-numeric input.

Array allocation: Once you have determined how many temperature readings to store, allocate the appropriate amount of memory to a pointer using the **new[] operator**. This should happen in a **try {}** block. If the memory allocation fails at run-time, the new[] operator throws a **bad_alloc** exception. Include a **catch{}** block that displays the error message "*Error allocating memory*" to the user if this happens. Remember that all memory allocated with the new[] operator should be freed when you are done with it. The final statement of your try block should **delete[]** your pointer.

Getting valid temperature readings: Like IC4-1, the value entered must be numeric and between *-90.0°C* and *+60.0°C*. All input should be completed in a generic, re-usable function.

Temporary Output: In the next in-class project, we will display a report showing both the Celsius and Fahrenheit temperatures for each day entered. For now, simply output the contents of the array in order to verify that the input worked as intended.

General Requirements

- Include an opening comment with your full name, the full names on the student(s) you are working with, the name of the program, the date, and a short description.
- Follow the style guide! Use descriptive names and sensible data-types for variables, constants, arrays, functions, etc. that follow our naming conventions. Use good spacing and make sure braces ({}) are located where they are supposed to be.
- Attach the unzipped source code file(s) (*.cpp, .h*) to the dropbox. Nothing else please.