Nicholas (Nick) Snyder

ECE 401

Section 5

9 November 2020

Homework 8

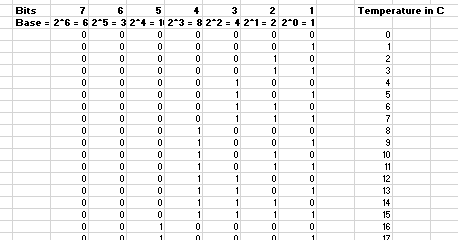
**Problem Statement:**

We are given that we want to be able to resolve the temperature in 1 degree Celsius increments over a range of 0 degrees to 125 degrees Celsius.

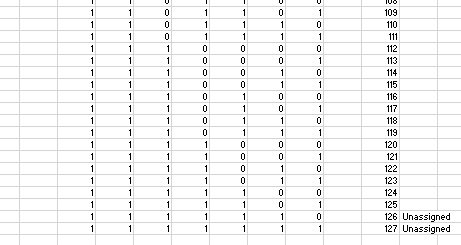
**How many codewords are needed to provide an accuracy of 1 degree over the temperature range given?**

128 codewords are needed to accurately increment a range from 0 to 125 when using a base 2 number system.

**Provide the number of bits (N) along with how many unique values that it can attain (X):**



**…**



**Show that if you choose N-1 bits there is not enough unique codewords to meet the requirements:**

If 6 bits are used instead of 7, the largest possible range of numbers that can be assigned codewords is 0 to 63. In other words, 1111111 = 127 and 111111 = 63.

**Suggest an assignment of codewords for EVERY degree over the range 0 to 125 degrees Celsius:**

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