Problem 1 (HB type casting and arithmetic)
Do the following calculation on the HB:

\[ l = j \left(\frac{m}{m} + \frac{f}{g}\right) \]

Where \( f, g \) are of type float; \( i, j \) are of type int; and \( l, m \) are of type long.
Use the following values: \( i=20, j=10, f=10, g=12, m=2 \).
Declare each variable and initialize it with the above values.
Print \( l \) to the LCD.

Problem 2 (Using HB library functions)
Design and code the following program and run it on the HB:
The HB should produce a 500Hz audio output as long as the stop button is pressed and produce a 800Hz audio output when the start button is pressed. While you hold the button down it should produce the output. Upon release, there should be no sound. Pressing both buttons together should result in a 650Hz output. Display the current audible frequency on the LCD.

Problem 3 (Arrays and Visual C)
This problem is to be completed using Visual C on your desktop.
Generate an array with 26 cells, with the ability of holding one character in each cell. Initialize all cells to contain the character ‘#’. Receive single character lower case inputs (a to z) from a user and place them into this array according to their place in the alphabet.
Display and error message when a character input outside of the range a to z is entered.

Example output:

```
Input Character: a
List so far:
a#############################

Input Character: g
List so far:
a#g##########################

Input Character: z
List so far:
a#g#z#########################

Input Character: h
List so far:
a#gh#########################z

Input Character:
```