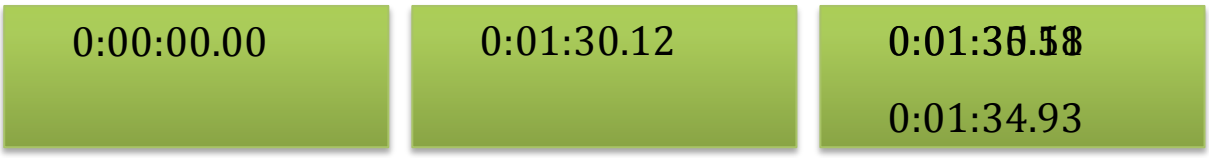
EMB1

Problem Solving

In this session you will implement a stopwatch. Use the LCD module as your display and the expansion board for the buttons.
The stopwatch will be able to count: H:MM:SS.hh (hours, minutes, seconds, hundredths of a second).



1.Initial 2.Stopped 3.Split time

Pressing button 1 will start/resume the measurement.
Pressing button 2 will stop the measurement. See Figure 2.
Pressing button 3 will split the time (current time saved in line 2 and running in line 1). See Figure 3.
Pressing button 4 will reset the time to 0:00:00.00 and clear the second line. See Figure 1.

The code has to implement the following:

- Define a time structure (time_t) that will contain data about: hours, minutes, seconds and hundredths of seconds. Make 2 global variables of type time_t, one for the current time and one for the split time.
- Create a function that can reset the current time. The function takes no parameters.
- Create a function that will print the time in the desired format, with 2 input parameters: line in the display to print and a time_t structured variable.
- Create a function that adds 1 hundredth of a second to the current time. Make sure to address overflow (hundreths of seconds, seconds, minutes).
- Use a variable to keep track of your state: running or stopped.

At the end, check if the timer / stopwatch runs correctly by comparing to your phone. Explain any possible problems.

Tip: see what this does: `printf("%02d", 0);`

Extra: Try to draw the flowchart of your program.