Meeting Minutes – Group 5

Location: 0 B 6

9 March 2023, 14:30–17:30

Present

Mark Mizzi, Damjan Filipovic (Minutes), Gabriel Apap (Chair)

Discussion

1. Minutes from the previous meeting were read and approved.
2. Matters arising out of minutes Some issues were brought up:
    a) After discussion with professor Briffa it was reminded that a timer interrupt was used to update the DAC.
3. Progress report from group members
    a) Gabriel did not have time to research how LCD functions and how the encoding from string to LCD could be done. This is postponed to the next week's meeting.
    b) Damjan researched some points about the lock free queue, however, due to the large nature of the field, more time is required. This is postponed to the next week's meeting.
    c) Mark, did not have a lot of time to look into the assembly, however, he did have time to look at the hardware excpetions. The assembly discussion is postponed to the next week's meeting.
4. Reading and approval of minutes from previous meeting
5. Matters arising from minutes
    a) Following a discussion with professor Briffa we were reminded that we have to use a timer interrupt to drive the DAC.
6. Progress report from group members
    a) Gabriel did not have time to research about the LCD. Discussion will be postponed to the next week's meeting.
    b) Damjan did not have time to research everything about the lock free queue due to the large nature of the field. Discussion will be postponed to the next week's meeting.
    c) Mark did not research about the assembly however he did read about the hardware exceptions. Discussion about the assembly will be posponed to the next week's meeting.
7. Discuss possible settings
    a) Increase/decrease resolution of tone. This is controlled by the k-parameter in the specified algorithm.
    b) Symbol spacing.
    c) Inter-symbol spacing.
    d) Volumne(analog control)

e) Purpose of the external LEDs - on/off indicator and input registration

f) Use of different profiles for modifying the settings discussed above, for the encoder, etc... (quick dial)

8. Set up project
   a) The group is unsure whether commiting to the SVN would as well copy the path.
   b) The team agreed to ask professor Johan aout the problem listed above.
9. Discuss hardware

0.1 Exception Model

a) Mark points out that there are multiple hardware exception types.

b) Each registered exception is identified by a unique exception number.

c) Some excpetions are built-in whilst others are defined by the programmer.

d) Excpetion addresses are stored in a vector table in order of their exception number.

e) Each exception has a priority number seperate to its exception number. This determines its priority over other exceptions.

f) Lower priority number means higher priority.

g) High priority excpetions can preempt lower priority ones. In the case of 2 pending excpetions with the same priority, the excpetion number is used as a tie breaker.

h) A running exception cannot be interrupted by another exception of the same priority.

i) Reset is a built in interrupt - resets everything. Thus, it is highest priority. In the actual code there will be a reset handler to deal with it.

j) Another built-in interrupt is the systick interrupt. This allows for timer interrupts.

k) One of the interrupt handlers can be set as non-maskable. This means no other interrupt can interrupt it.

10. Discuss and delegate work for design brief
    a) Mark clarifies that an executive summary is a brief informal description of our design.
    b) Introduction should be a general description of the problem that the team is trying to solve.
    c) Gabriel clarifies that the summary should be similar to an abstract, whilst the introduction sould list out the structure of the entire document.
    d) Mark is assigned with the system design and references sections of the design brief.
    e) Damjan is assigned with management and closure sections of the design brief.
    f) Gabriel is assigned with the executive summary and introduction sections of the design brief.
    g) Mark poiints out that the seperation of concerns has to be specified in order to facilitate time management and to specify system design.

0.2 Modules

i. LCD Driver to be adapted from Labs

ii. DAC Driver code (Timer interrupt that computes the tone, enabling and disabling timer interrupt)

iii. LED Driver

iv. Button Matrix Driver

v. The Lock Free Queue (only the pop instruction needs to be thread safe since pushes are done by Non-Maskable Interrupts)

11. Other matters

a) No other matters