TDT4258
Energy Efficient Computer Design
Exercise 2

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March 9, 2013

Abstract

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Contents

I Introduction

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II Description and methodology

2.1 Tools

- GitHub for handling version control
- Vim as main code-editor
- Google Docs for report collaboration
- LaTeXfor report markup
- JTAGICE mkII for connecting the computer to the board
- avr32gdbproxy for connecting to JTAGICE mkII
- avr32-gdb for connecting to the board, allowing us to debug the code

III Results and tests

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IV Evaluation of assignment

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V Conclusion

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References

[1] Computer Architecture and Design Group, *Lab Assignments in TDT4258 Energy Efficient Computer Systems*. Department of Computer and Information Science, NTNU, 2013, http://www.idi.ntnu.no/emner/tdt4258/_media/kompendium.pdf.

[2] Atmel. *AVR32 Architecture Document*, 2011, http://www.idi.ntnu.no/emner/tdt4258/_media/doc32000.pdf.

[3] Atmel. *AT32AP7000 Preliminary*, 2009, http://www.idi.ntnu.no/emner/tdt4258/_media/doc32003.pdf.

[4] http://www.avrfreaks.net/index.php?name=PNphpBB2&file=viewtopic&p=750034

A Tests

Test 1:	**Starting the machine**
Action:	Turn on the STK1000
Preconditions:	Uploaded program on microcontroller and power cable is connected
Wanted outcome:	LED0 should light up and 'Under pressure' should play.

Test 2:	**Switch song**
Action:	Press button SW X
Preconditions:	LED Y lit and the music corresponding to SW Y should be playing.
Wanted outcome:	LED Y turns off and LED X turns on. Music corresponding to SW Y turns off and music corresponding to SW X turns on.

Test 3:	**Wrap right**
Action:	Press button 0
Preconditions:	LED 0 lit and all others unlit.
Wanted outcome:	After the button press, LED 0 should turn off and LED 7 should turn on.

Test 4:	**Wrap left**
Action:	Press button 2
Preconditions:	LED 7 lit and all others unlit.
Wanted outcome:	After the button press, LED 7 should turn off and LED 0 should turn on.

Test 5:	**No action**
Action:	Do nothing
Preconditions:	Precisely one LED lit
Wanted outcome:	The same LED should remain lit for the entire period of inaction, and no other LEDs should light up.

Test 6:	**Quick click**
Action:	Press button 2 fast 5 times
Preconditions:	LED 0 lit and all others unlit.
Wanted outcome:	LED 5 lit and all others unlit.
Comments:	This test was made to make sure the debouncing code doesn't interfere with normal speed-clicking