**8051 microprocessor labwork**

**Syllabus 2016 Fall**

**[1] Course Training Goal:**

A: Skills required for a 51-S/W engineer  
1. 51 architecture and control  
2. assembly programming for various drivers

3. use of 51-emulator and codes debug

B: Skills required for a 51-H/W engineer  
1. timing sequence for various R/W bus cycle  
2. timing sequence of instruction cycle and interrupts  
3. interconnection and running of memory and I/O   
 subsystems

4. use of 51-emulatior circuit board trouble-shooting

C: Skills for H/W and S/W integration

**[2] Lecture Materials and Useful Assistance:**

A. textbook: none;

yet if one wishes, many books in Chinese concerning the use of

8051 and its variants will be just fine;

B. readings: 1. 89c51 data sheets

2. memory chips data sheets (RAM and flash)

3. manuals of 51µVsion emulator, …

and more to be suggested in due time of lecturing

C. TAs: 馬妤萍 王牧凡

陳世瑜 蔡淳如

chief Lab.-manager: 朱健亞

D. other resources:

1. course discussion and paneling on E3 platform

**[3] Course Session Schedule:** (tentative)

|  |  |
| --- | --- |
| Phase I: Fundamentals of Assembly Coding  Phase II: Labwork conducting | |
| phase 1 | events and notes |
| wk.1-6 | class session: Thur. IJK at EC015  Fri. EF at EDB26  wk.1: holiday off  wk.2: 1. Lab-team registration, and some administrative issues  2. Assembly-Coding-ABC-1  - code execution and activities in CPU architecture  - some simple code pieces and data representation  - functional categories in an assembly instruction set  wk.3: Assembly-Coding-ABC-2  - running a short code piece in 51-emulator  - context in which a 51-code is emulated  - 51 instruction set and codebook [1]  - 1-hr written test  wk4: Assembly-Coding-ABC-3  - 51 instruction set and codebook[2]  - mechanism behind sequential execution  conditional/unconditional branching  call/return  - 1-hr written  wk5: Assembly-Coding-ABC-4  - assembler-linker-loader  - code-module linking  \* variable-address resolving  \* label-address resolving  - 1-hr written test  wk6: Assembly-Coding-ABC-5  - Labwork#1-2.2 briefing  - 1-hr written test |
| phase 2 |  |
| wk.7-17 | wk.7: Labwork#1uvision  Labwork#2.1uvision  Labwork#2.2uvision  wk.8: Labwork#2.3uvision  wk.9: Labwork#3uvision  wk.10: Labwork#4.1uvision  wk.11: Labwork#4.2uvision  wk.12: Labwork#5.1uvision  Labwork#5.2uvision  wk.13: Labwork#6uvision  wk.14: Labwork#7uvision (16x2LCD)  wk.15: Labwork#8uvision (nested interrupts)  wk.16: Labwork#9uvision (use of external memory units)  wk17.:  wk.18: final exam. |
| [note] 1. starting from wk.8, while two of the 3-man team  conduct the labwork, the 3rd team member would take a 2-hr written test (on issues associated with the labwork done 1 week ago) at EC015  2. 1 written test for all will be held around wk.12 |

**[3] Class Attending:**

A. attending lecture sessions on Friday (EF) is essential, though not enforced;

B. active interactions, such as raising or answering questions regarding the subjects in discussion, during the class sessions are encouraged, which will be reflected in one’s final grading;

**[4] Disciplinary issues:**

Consequence of offending or violating the following disciplinary requirements will be severe, and everyone’s compliance is advised.

1. regulations on the use of the laboratory must be strictly followed;
2. without permission from TA in advance, absence from the lab-working sessions is prohibited;
3. due of turning-in reports deadline of demonstrating the results of every lab-work must not be failed;
4. lab-report must be original work of the team member(s), plagiarizing or

copy-paste of any kind will not be tolerated;

E. eluding from honor codes in taking exams (written tests or on-site practicing), even in the slightest degree, is absolutely unacceptable. Anyone caught in action or leaving traces in answers will be requested to drop the course at once.

**[5] Grading Policy:**

The final grade will be evaluated by the following constituents

\* lab-work performance;

\* exam performance;

\* class interactions;

\* any indications showing one’s expertise acquired during the training.