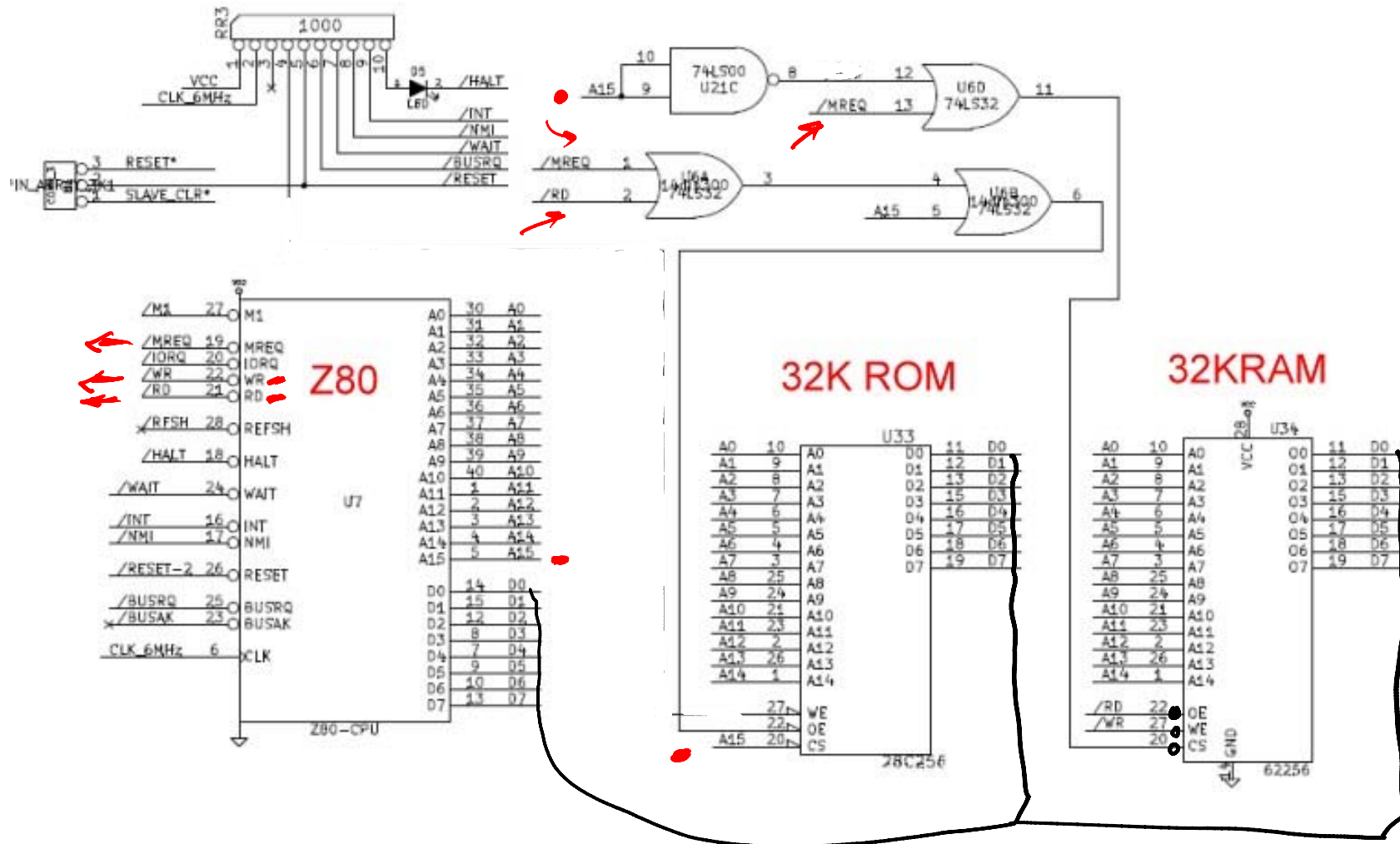
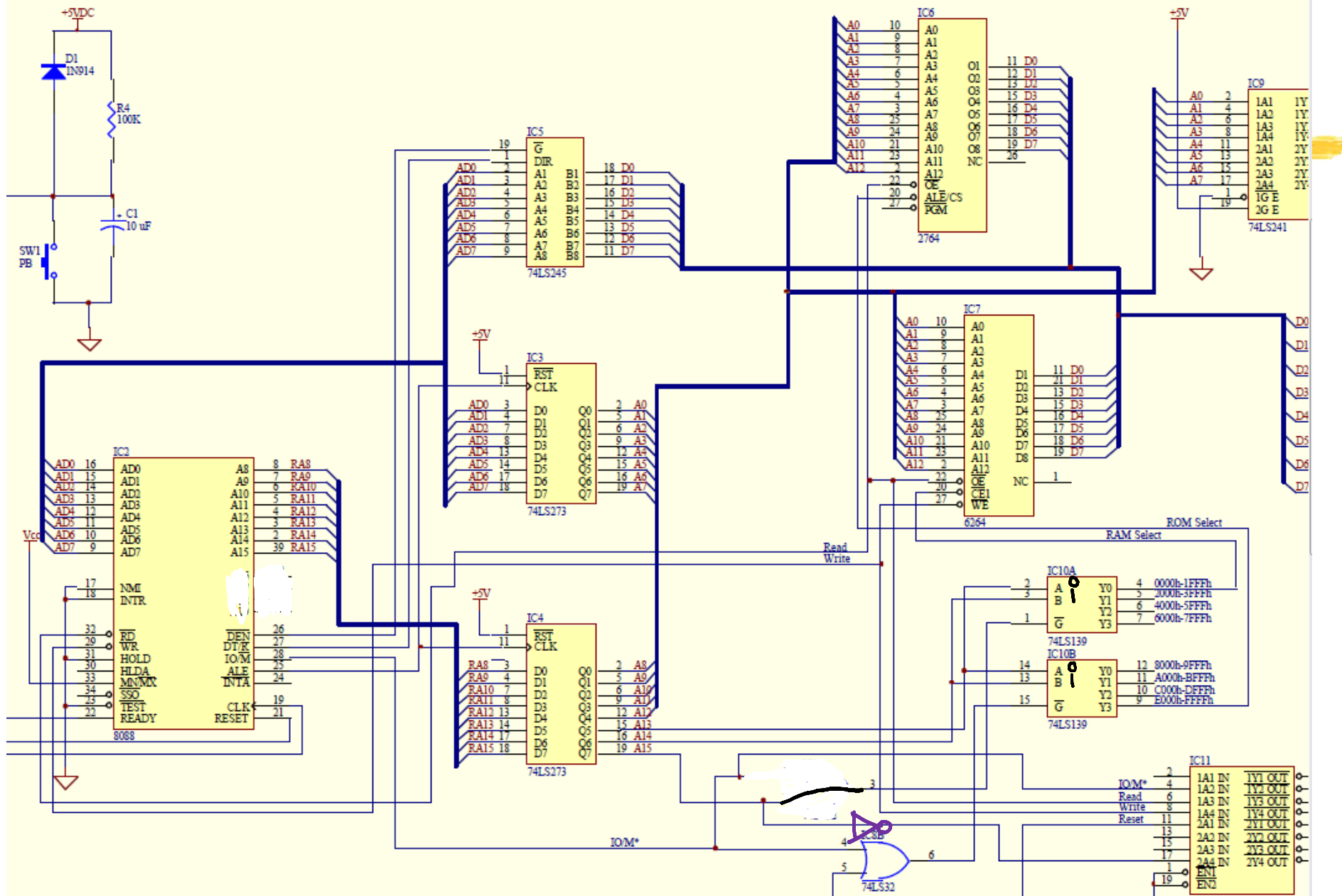
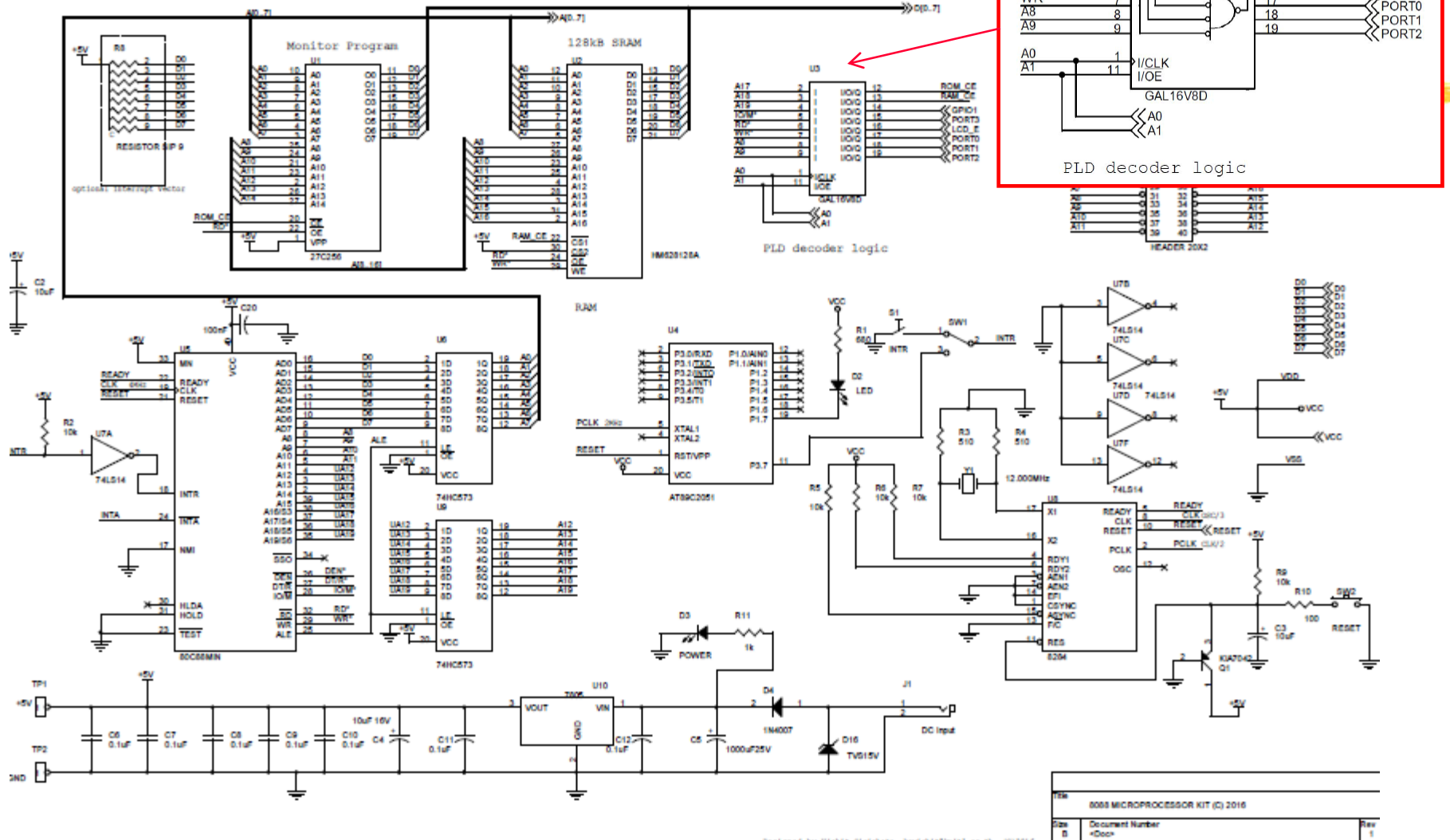


Z80 Schematic



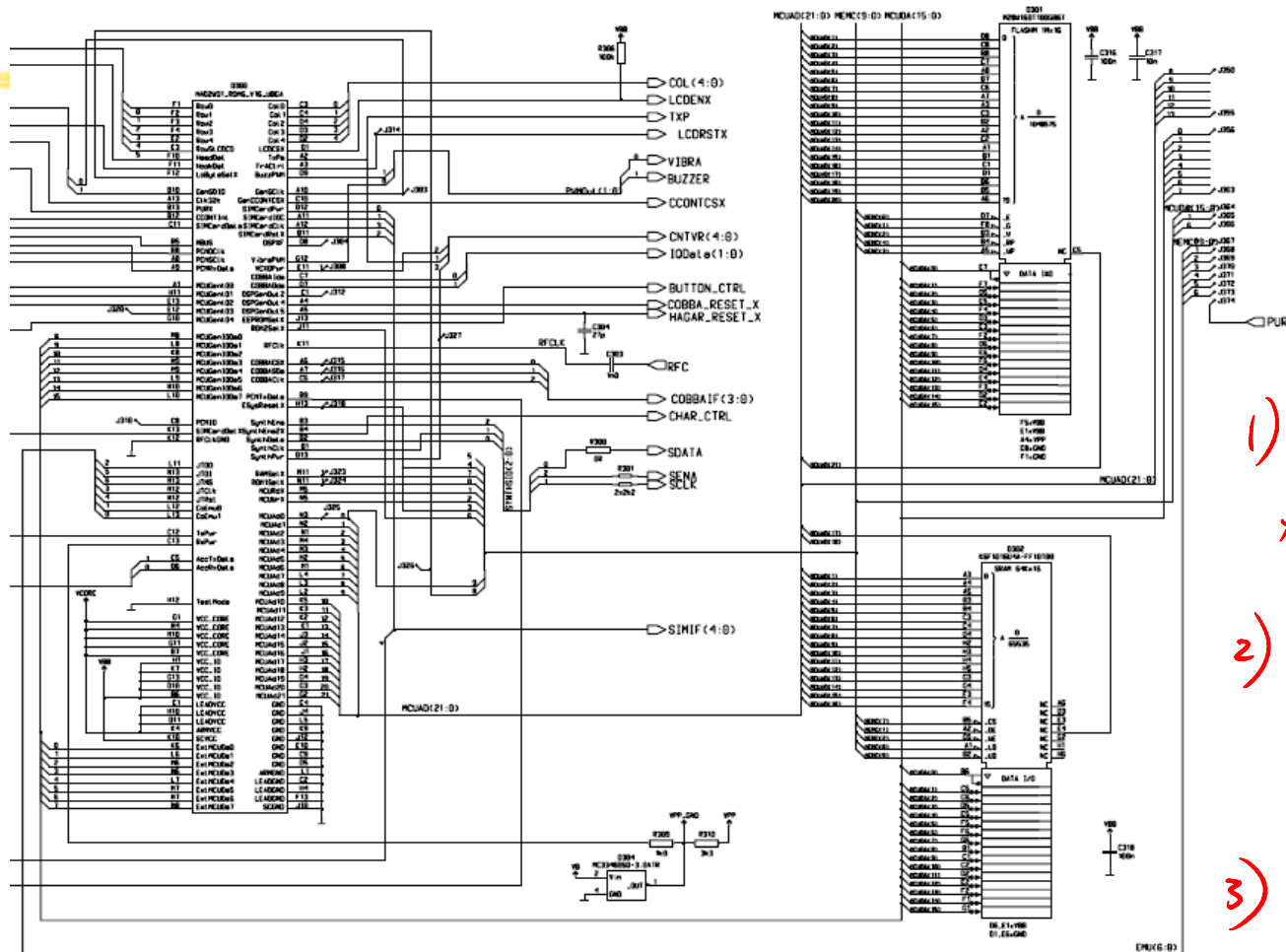


Class Activity 1 – MTK88S



New submission date: T 10/4/2016

Homework - NOKIA 3310 Phone



Group work

- 1) Find All the memories
- 2) Draw a memory map.
- 3) Done

T 10/4/16 ~~9/29/16~~

EECE416 :Microcomputer Fundamentals and Design

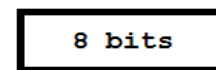
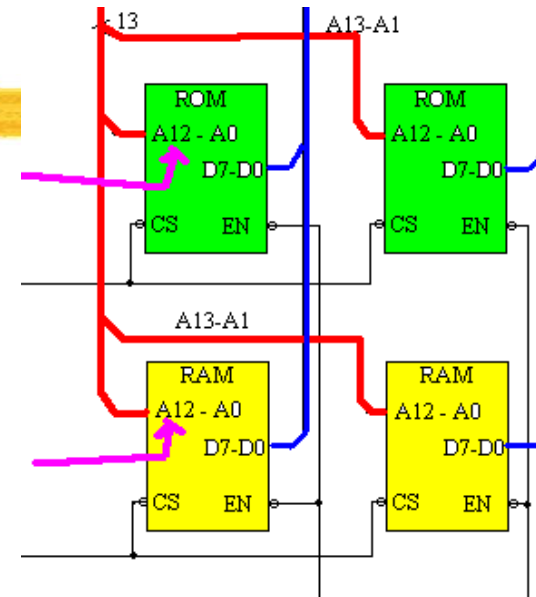
X86 Assembly Programming

Part 1 – MASM

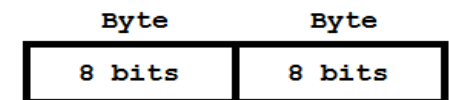
www.MWFTR.com

Multiple Address Access Issues

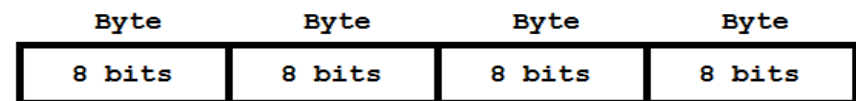
- ⌘ Reminder: a single address locates only a byte of memory
- ⌘ 8-bit processor
 - ⏏ Accesses one address with a byte data
- ⌘ 16-bit processor
 - ⏏ Accesses two address spaces (Even (or Low Byte) and Odd(or High Byte)) at a single execution with 2-byte (or "Word") data
 - ⏏ Where do we store each of the 2 bytes to each of the 2 address spaces?



"Byte"



"Word"



Word

Word

"Long Word"

Big-Endian vs. Little-Endian

⌘ **Big-Endian:** Words are stored with the lower 8-bits (“Lower Byte”) in the higher of the two storage locations (“Addresses”):
Motorola

☒ “Big guy (“Upper Byte”) ends at lower address”

⌘ **Little-Endian:** Lower-order byte stored in the lowest address: **Intel 80x86 family**

☒ Little guys (“Lower Byte”) ends at lower address”

Big-Endian vs. Little-Endian

Word Data

Byte1	Byte0
-------	-------

H L

Store data

0x3210 = 12816

0x1032 = 4146

dst src
 MOV 0, \$3210
 MOV 2, \$76543210

000006h	
000005	76
000004	54
000003	32
000002	10
000001	32
000000	10

Little-Endian

Intel

src dst
 MOVE \$3210, 0
 MOVE \$76543210, 2

000006h	
000005	10
000004	32
000003	54
000002	76
000001	10
000000	32

Big-Endian

Motorola

“Endianness”

⌘ Endian or Endian-Architecture

- ☒ how multi-byte data is represented by a computer system and is dictated by the CPU architecture of the system
- ☒ Not all computer systems are designed with the same endian architecture
- ☒ Issues with software and interface

Computer System Endianness

Platform	Endian Architecture
ARM*	Bi-Endian
DEC Alpha*	Little-Endian
HP PA-RISC 8000*	Bi-Endian
IBM PowerPC*	Bi-Endian
Intel® 80x86	Little-Endian
Intel® IXP network processors	Bi-Endian
Intel® Itanium® processor family	Bi-Endian
Java Virtual Machine*	Big-Endian
MIPS*	Bi-Endian
Motorola 68k*	Big-Endian
Sun SPARC*	Big-Endian

Common file formats

Little-Endian Format	Big-Endian Format	Variable or Bi-Endian Format
BMP (Windows* & OS/2) GIF FLI (Autodesk Animator*) PCX (PC Paintbrush*) QTM (MAC Quicktime*) RTF (Rich Text Format)	PSD (Adobe Photoshop*) IMG (GEM Raster*) JPEG, JPG MacPaint SGI (Silicon Graphics*) Sun Raster WPG (WordPerfect*)	DXF (AutoCAD*) PS (Postscript*, 8 bit interpreted text, no Endian issue) POV (Persistence of Visionraytracer*) RIFF (WAV & AVI*) TIFF XWD (X Window Dump*)
Bus Protocols	Network Protocols	Bus Protocols
Infiniband PCI Express PCI-32/PCI-64 USB	TCP/IP UDP	GMII (8 bit wide bus, no Endian issue)

Bi-Endian & Endian-Neutral Approaches

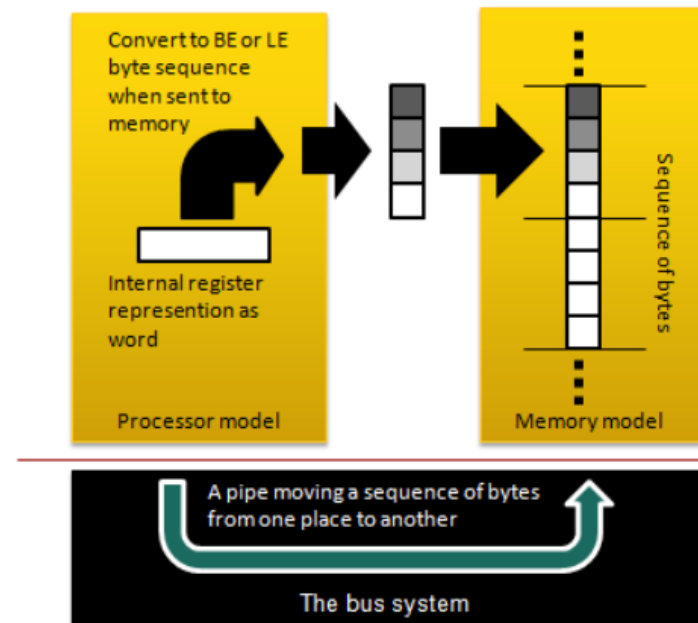
⌘ Conversion

☑ Byte Swap

☑ Network I/O Macro

⌘ “Endian Neutral”:

jakob.engbloms.se/archives/1336



HOMEWORK – Individual Work

⌘ Technical Report on “Endian-Neutral Approaches”

- ☐ What are they?
- ☐ How do they work?
- ☐ Who are involved and leading the works
- ☐ Submission Due: Hardcopy + Softcopy by
5:30pm Thursday Oct 13

⌘ How to write well for busy technical people ?

Compare this

www.cbsnews.com/8301-202_162-57600384/syria-strike-seems-inevitable-as-u.n-warns-against-unilateral-military-action-hunt-1

Updated at 6:48 a.m. Eastern

DAMASCUS, SYRIA | U.N. chemical weapons experts investigating an alleged poison gas attack near Damascus left their hotel again Wednesday hoping to carry out their second field trip, which was delayed Tuesday for security reasons.

The team of about 20 inspectors left their hotel in the Syrian capital in a convoy of cars to visit the eastern Ghouta suburbs, where the Obama administration says President Bashar Assad's forces unleashed a chemical weapons attack on Aug. 21 that killed hundreds of people.

Local opposition activists told CBS News that the convoy had reached the town of Mleiha, in the sprawling Ghouta area, and videos posted online by the activists showed the U.N. inspectors interviewing patients at clinics in Mleiha and the nearby town of Zamalka.



Play VIDEO

Intercepted communications, tissue samples prove Syrian regime responsible for gas attack



On Tuesday, Vice President Joe Biden made it clear that regardless of what the U.N. inspectors find, the **White House is now convinced** the attack was carried out by Assad's forces.

The **American government's assessment** is based on the circumstantial evidence from videos posted on the internet, and, as CBS News correspondent David Martin reported Tuesday, intelligence -- much of it still classified -- ranging from intercepted Syrian communications to tests of tissue samples taken from victims.

Another key piece of circumstantial evidence which has been cited by both officials and analysts for days is the simple fact that the regime is the only entity in Syria known to have chemical weapons and the means to disperse them.

With this

By Oliver Holmes and Erika Solomon

BEIRUT | Wed Aug 28, 2013 7:59am EDT

(Reuters) - The United Nations Security Council was set for a showdown over Syria on Wednesday after Britain sought authorization for Western military action that seems certain to be vetoed by Russia and probably [China](#).

U.N. chemical weapons experts investigating an apparent gas attack that killed hundreds of civilians in rebel-held suburbs of Damascus made a second trip across the front line to take samples. Secretary-General Ban Ki-moon pleaded for them to be given the time they need to complete their mission.

But the United States and European and Middle East allies have already pinned the blame on Assad and, even without full U.N. authorization, U.S.-led air or missile strikes on [Syria](#) look all but certain, though the timing is far from clear.

That has set Western leaders on a collision course with Moscow, Assad's main arms supplier, as well as with China, which also has a veto in the Security Council and disapproves of what it sees as a push for Iraq-style "regime change" - despite U.S. denials that President Barack Obama aims to overthrow Assad.

Uncertainty over how the escalation of the conflict at the heart of the oil-exporting Middle East will affect trade, and the world economy sent oil prices, and gold, to their highest levels in months while stocks fell. Fears over the economy of Syria's hostile neighbor [Turkey](#) pushed its lira to a record low.

Analysis & Opinion

[Western powers could strike Syria within days](#)

[West mustn't rush into Syrian conflict](#)

Related Topics

[World »](#)

[Russia »](#)

[United Nations »](#)

[Syria »](#)

Related Video

[U.N. resumes Syria chemical attack probe](#)

4:20am EDT

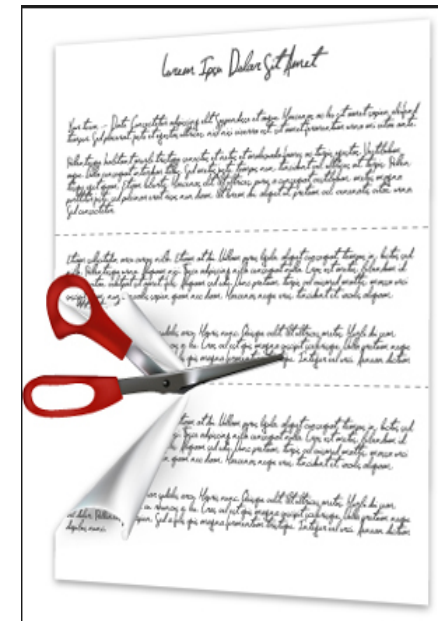
[Rebels gain ground in Northern Syria](#)

[Israel will respond with force to any attack from Syria](#)

[Biden: No doubt Syrian regime used chemical weapons](#)

Writing well for the Class

- ⌘ People are more likely to read subjects/writings/emails that create **curiosity** or provide **utility**.
- ⌘ When they are busy
 - ☑ Curiosity fades in importance
 - ☑ They read only the ones with **practical importance** ["utility"]
- ⌘ So, write as if you are a staff writer (targeting for busy people) for a newspaper, and remember that you have an editor whose job is to cut your article to fit into a limited space, maybe just 1 inch in a column.
 - ☑ Important things [Conclusions and summary] in the first paragraph
 - ☑ Summary of the event/thing first so that it delivers message even though only that summary survives the "cutting"
 - ☑ Then expand your story after the First Paragraph
 - ☑ Use your own words



HOMework - Recap

⌘ Technical Report on “Endian-Neutral Approaches”: **Individual Work**

☒ Subject

☒ What are they?

☒ How do they work?

☒ Who are involved and leading the works

☒ Format:

☒ 2 - 3 pages

☒ **First paragraph** must summarize the entire report (**the importance of the first paragraph – your own words --- this determines the grade**):
you may want to write this first paragraph after completing the report.

☒ No figure, no photo, text only.

☒ Submission Due: Hardcopy + Softcopy (for **Similarity Check**) by
5:30pm Thursday Oct 13