Computer architecture
Homework week 3

Instructions

Submit by e-mail to the lecturer, as a PDF document with your name and student ID near the beginning. You can work in groups of 2; however, use different groups than week 1 and 2. Use the English language. Deadline: Sept 23rd, 23:59.

Question 1

1) Explain what *delay line memory* is in your own words; highlight how it differs from *random access memory*.

2) Propose a way to use internet e-mail as a form of delay line memory. Estimate the capacity, refresh time and bandwidth of your solution.

Question 2

Research and collect the following properties for *Williams-Kilburn tube memory*, *magnetic core memory*, *SRAM*, *DRAM*, *NAND Flash memory*, and *Phase-Change memory*, for the typical products available commercially as of 2012 (or the latest typical available product, if no product is available in 2012):

- Max capacity (bits) per packaged product

- Durability: number of accesses before wear

- Minimum frequency of refreshes (if applicable)

- Latency of writes to individual cells

- Density: size of an individual memory cell in nm or nm2

- Type of memory interface/controller necessary to connect the component to a computer

Detail your information sources.