Computer Technology

A first year course in Computer Science

Year 2015-2016

Department of Computer Architecture
Universidad de Málaga

Teacher

- Dr. Eligius M. T. Hendrix

  Email: eligius@uma.es,

  - Room 2.116D Industrial Engineering building

Available for questions:

	Time		
Tuesday	9:30	12:30	2.116D IND
Wednesday	10:30	13:30	2.116D IND

This hour: how are we going to do the course

Includes: interaction in English

We use in Internet

http://informatica.cv.uma.es/

Slides,

- Forum with questions,
- Exercises,
- Laboratory material …

We use in Internet

Laboratory site:

http://guac.ac.uma.es/

- **Uploading lab exercises**
- Base material
- Interaction with the teacher
- Make teams that compete

We use in Internet

WEB of ETSI Informatics:

www.informatica.uma.es

More info about:

- Academic schedule
- Timetable
- Examination (when and where)

Objectives

Understand more about

- How a processor works
- assembly code
- Instruction cycle
- Single-cycle CPU design
- Concept of pipelining
- Information representation in a computer

Subjects to deal with

Computer Technology, 6 ECTS

Theory (~4 ects)

topic 1. Processor structure

assembly coding

topic 2. Processor design, datapath, control unit

topic 3. Concept of a pipelined processor

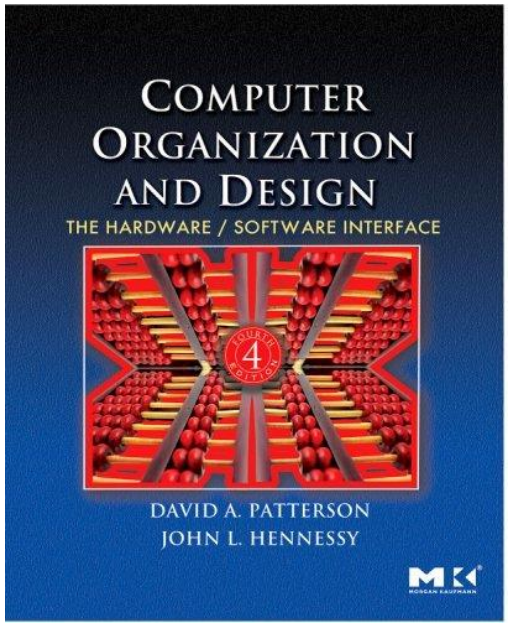
topic 4. Processor Arithmetic

Laboratory exercises (~2 ects)

Study by reading and discussing

- **David Patterson and John L. Hennesy**

4ª Edición, Morgan Kaufmann (Elsevier)



I will try to indicate the pages for each class and we discuss in class

Don’t forget in class: your attention please

- Try interaction in English
- No outside communication, computer
- Leave the cellphone alone,

What is a smombie?

Lab exercises

Exercises in website 

- **Programming in MIPS assembly**
  - Exercises with MIPS simulator MARS
- **Designing and simulation of a single-cycle processor**
  - Tool Logisim is used for the implementation and simulation
- **Playing with a raspberry pi**
- **Competition between teams of 2 persons**
- **Uploading and automatic tests of handed in work**

Payoff and knowledge testing

- Theory (~60%)
  - **Continuous evaluation**
    - **Testing: teacher asking nasty questions**
    - **Payoff: midterm exam results**
    - Handed in exercises to increase the marks. Announcement in the CV
  - **If we really have to:**
    - **Final theory exam**, of course you can always increase you earlier mark with that
- Lab exercises (~40%):
  - Obligatory handing in of elaboration of exercises
  - Your designs are used in the practical part of the exam

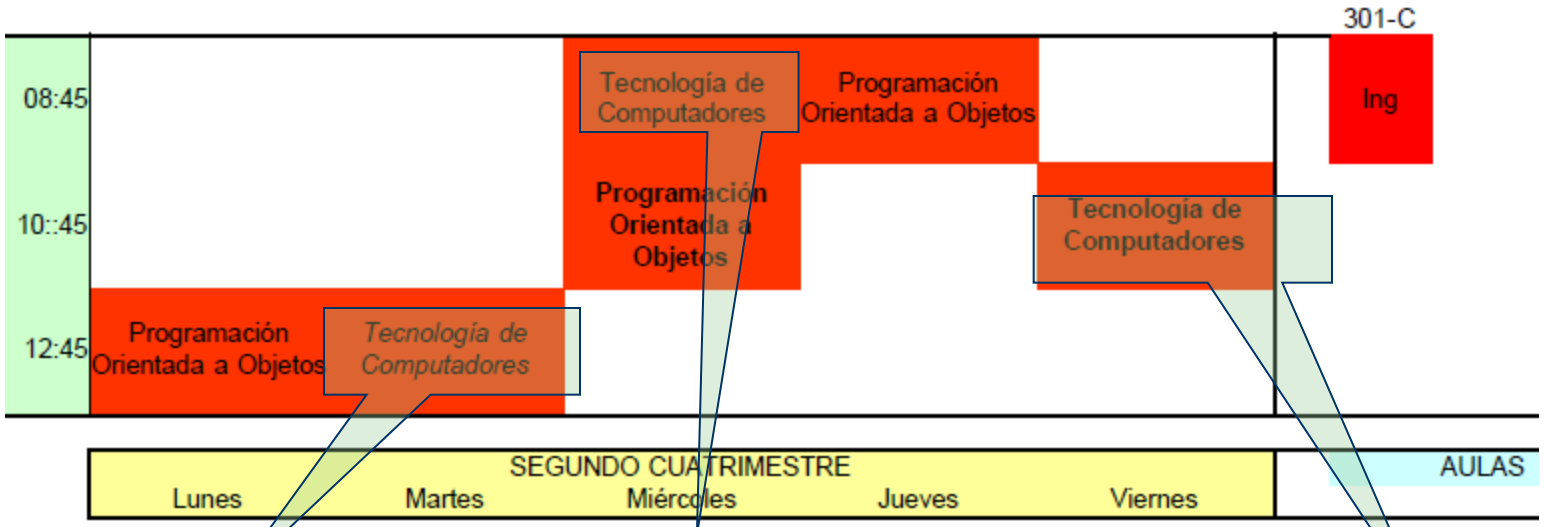
Exam dates are defined by the school

Payoff (more)

- **Necessary to pass both parts of the examination; theory exam and practical exam**
- In a midterm exam:
  - Questions about theory as well as practice
  - The total mark is a weighted average of the marks of midterm exams
- If you want to improve it, go for the final exam with questions and exercises about the whole course
- Sub-marks of midterm exams and earlier results are not stored or taken into account when repeating the total exam

Time table

Can someone help the school translating this?
Three reserved time slots a week.



Lab or exercises

Lab (2.1.9.b)

Theory 304

Time table

1st midterm

febrero-16						
Lun	Mar	Mie	Jue	Vie	Sab	Dom
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29						

marzo-16						
Lun	Mar	Mie	Jue	Vie	Sab	Dom
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

abril-16						
Lun	Mar	Mie	Jue	Vie	Sab	Dom
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

mayo-16						
Lun	Mar	Mie	Jue	Vie	Sab	Dom
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

junio-16						
Lun	Mar	Mie	Jue	Vie	Sab	Dom
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

2nd midterm

Final exams

Questions? Yes, I have some

Let us practice some English from important people

“This "telephone" has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us”

-Western Union internal memo -- 1876.

“I think I may say without contradiction that when the Paris Exhibition closes, electric light will close with it, and no more will be heard of it”

-Erasmus Wilson, Professor at Oxford University -- 1878

“Who the hell wants to hear actors talk?”

-H.M. Warner, Warner Brothers -- 1927

“The average American family does not have time for television”

-The New York Times – 1939

"I think there is a world market for maybe five computers."

- Thomas Watson, Chairman of IBM, 1943

“Computers in the future may only have 1000 vacuum tubes and weigh no more than one-and-a-half tonnes."

- Popular Mechanics, 1949

Famous statements

“There will never be a mass market for motor cars - about 1,000 in Europe - because that is the limit on the number of chauffeurs available!”
-Spokesman for Daimler Benz

“Man will never reach the moon regardless of all future scientific advances”
-Dr. Lee De Forest, inventor of the vacuum tube -- 1957

"I can assure you that data processing is a fad that won't last the year."
- Chief Business Editor, Prentice Hall, 1957

“The world potential market for copying machines is 5000 at most”
-IBM to the founders of Xerox – 1959

"Yeah, microchips, but what... is it good for?"
- an IBM senior engineer, 1968

"There is no reason anyone in the right state of mind will want a computer in their home."
- Ken Olson, President of Digital Equipment Corp, 1977.

Famous statements

"640k is enough for anyone, and by the way, what's a network?"
- William Gates III, President of Microsoft Corporation, 1984

“I was lazy.. so I built the computer"
- Konrad Zuse to William Gates III, 1995

“I never thought, one could make money out of software"

Questions? Yes, I have some

- Why did you go study Computer science? You could have watched birds (biology), watch people (social science), watch exploding tubes (chemistry)

- What is the truth machine of Alan Turing?
- Who was Turing, how did he die and why does the apple symbol have a bite out?
- Does a computer without cables exist? The Z1
- Who is von Neumann and what about his architecture?
- What is a bus???