

Unit Zero

Course Introduction

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0.A.1

0.1 Theory and Lab

- **Theory.**
 - Mondays: 26th January – 11th May
 - Three first Tuesdays (Jan.-Feb) and last 2 (May)
 - This sums up 19 theory sessions, used for:
 - Lecturing: 13
 - Mid-term exams: 2
 - Class presentations (tasks in groups): 4
- **Laboratory assignments**
 - Tuesdays: 10 sessions
 - 4 assignments
 - Maybe 5th assignment . Voluntary: +0.5 on final grade

0.1 Theory and Lab

Outline

Unit 1: Introduction and Basic Concepts.

Unit 2: Busy Wait Synchronization

Unit 3: Shared-Memory Communication

3.1 Semaphore

3.2 Conditional Critical Regions

3.3 Monitors

Unit 4: Message-Passing using Synchronous Communication

Unit 5: Real-Time (Task 3)

Assignment 1: Java Threads

Assignment 2: Busy wait and signals

Assignment 3: Semaphores

Assignment 4: Monitors

0.2 Assessment and Schedule

- Theory: [0-7]
- Practice: [0-3]
- Final grade: theory + lab assignments
- *How do I get 7 theory points?*
 - Presentation of three group tasks: 2 points
 - Presentation of Tasks 1 and 2: 0.5 each
 - Presentation of Task 3: 1.0
 - The whole group does not need to participate (talk) in each presentation
 - Two mid-term exams: 2.5 each --- *OR OFFICIAL EXAM: 5 points.*
 - ***You need to get at least 1.0 point in each mid-term exam***
- *How do I get 3 lab points?*
 - *Successfully implementing and explaining your solution to each assignment.*

0.2 Assessment and Schedule

January	
26	Unit Zero
27	Unit 1

February	
2	Unit 1
3	Unit 1
9	Unit 2
10	Unit 2
16	Unit 2/3.1
23	Unit 3.1

March	
2	<u>Task 1</u>
9	Unit 3.2
16	Exam 1
23	Unit 3.3

April	
13	Unit 4
20	<u>Task 2</u>
27	Unit 4

May	
4	Revision
5	<u>Task 3</u>
11	<u>Task 3</u>
12	Exam 2

Three former weeks are used for theory
Exam 1: lectures including 2nd March.
Exam 2: the rest

Theory:
Lectures, group tasks
and mid-term exams

0.2 Assessment and Schedule

February	
17	Assignment 1
24	Assignment 1

March	
3	Assignment 2
10	Assignment 2
17	Assignment 3
24	Assignment 3

Lab sessions:
Concurrent programming in
Java

April	
7	Assignment 3
14	Assignment 4
21	Assignment 4
28	Assignment 4

0.3 Mid-term exams

- **Exam 1:** units 1 to 3.1
- **Exam 2:** units 3.2 to 4
- Multiple-choice questions
- Short-answer questions or definitions
- Exercises:
 - No programming!
 - Pseudo-code
 - Correct or interpret real code
 - Explain your solution or conclusion
 - Step-by-step thread and shared-memory status

0.4 Tasks presentation

For each task, you may choose the option you like the most

- **Task 1: presentation lasts about 15 minutes**
 - 1) 2 Solved Exercises from Unit 3 in Palma et al., using Pascal-FC
 - 2) 2 Solved Exercises from Unit 3 in Palma et al. , using Pascal-FC
 - 3) 2 Solved Exercises from Unit 3 in Palma et al. , using Pascal-FC
 - 4) 2 correct and efficient solutions to the Dining Philosophers problem using semaphores in Pascal-FC.

- **Task 2: presentation lasts about 15 minutes.**
 - 1) Solution to the Readers and Writers problem using semaphores in Pascal-FC.
 - 2) Simulating synchronous message passing in Java.
 - 3) Binary semaphore and elevator problem using monitors.
 - 4) Java concurrent.
 - 5) Java concurrent.

- **Task 3: presentation lasts about 25-30 minutes.**
 - 1) Intro to Real-Time Systems.
 - 2) An Introduction to Real-Time Java Technology.
 - 3) Embedded software.
 - 4) Avoiding the Embedded Software Risks.
 - 5) Introduction to Ada.

0.4 Tasks presentation

- Rubric for tasks evaluation:

Respect to the global interests of the group	The group is not well organized. Members did not share the work to carry on. 0 points	Some problems arised, and many were solved. 1 points	No problems have affected the performance of the group. 2 points	
Respect to the presentation of other groups	Disrespectful comments or lack of attention 0 points	Normal 1 points	Special interest and/or effort to make question 2 points	
Correctness of the task	The task was not solved correctly at all. 0 points	Only a few points were right 2 points	Mostly correct 4 points	Perfect 6 points
Correctness of the presentation	Many spelling errors, missleading layout and outline 0 points	The information written in the presentation file needs several corrections 1 points	Clear, minor corrections needed. 2 points	Correct outline, clear layout, no spelling errors. 3 points

0.4 Tasks presentation

- **Each task is chosen at least 2 weeks before the presentation date**
- The duration of one lecture is divided among the number of groups
- Commonly, 5 extra minutes for questions

0.5 Lab sessions

- 4 mandatory assignments (3 points)
 - Each assignment has several sections which need to be solved
- Evaluation rubric:






Respect to the global interests of the group	The group is not well organized. Members did not share the work to carry on. 0 points		Some problems arised, and many were solved. 1 points		No problems have affected the performance of the group, or were successfully solved, 2 points
Correctness of the assignment	It was not solved correctly at all. 0 points	Only a few points were right 1 points	Mostly correct 3 points		Perfect 4 points
Correctness of answers to questions about the code (Algorithms and structures used)	No answers /wrong answers 0 points	A few correct, or correct but only member answered 1 points	Both members gave mostly correct answers. 2 points		Both members answered correctly to all questions. 4 points

- 1 *potential* voluntary assignment (+0.5)
 - The score obtained is summed up to the final grade of this course

0.6 Bibliography

- Most of the theory in this course follows these 2 books (at your disposal in your campus library):
 - Concurrent Programming. A. Burns and G. Davies. Addison-Wesley. 1993,
 - *Programación Concurrente*. Tomás et al. Thomson. Primera Edición. 2003.
 - *Principles of Concurrent and Distributed Programming*. M. Ben-Ari. Addison-Wesley. 2nd Edition. 2006.

Keywords phonetics

- Assignment /ə'saɪnmənt/ 
- Course /kɔ:s/ 
- Lecture /'lektʃəʳ/ 
- Group /gru:p/ 
- Voluntary /'vɒləntəri/ 
- Rubric /'ru:brɪk/ 