ARCOS Group

uc3m | Universidad Carlos III de Madrid

Course rules

Computer Structure

Bachelor in Computer Science and Engineering

Course profile

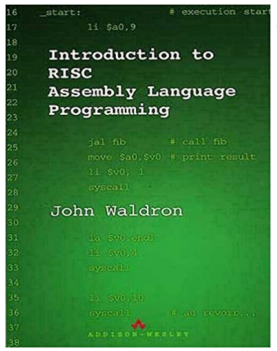
- COMPUTER STRUCTURE
- Bachelor in Computer Science and Engineering
  - REQUIRED
  - ECTS Credits: 6
  - Hours/week: 3
- The purpose is to understand the basic concepts for designing computers

Program

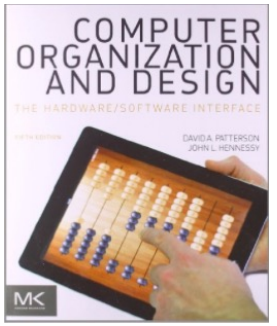
1. Introduction to computers
2. Data representation and basic
3. Assembly programming
4. Processor
5. Memory hierarchy
6. Input/output systems

Bibliography

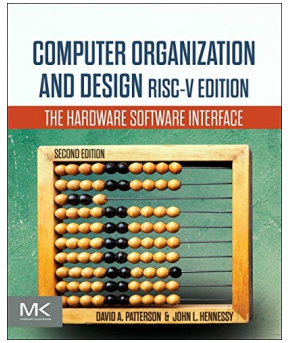
- Introduction to RISC Assembly Programming
  J. Waldron,
  Editorial Addison-Wesley, 1999



- Computer Organization and Design The Hardware/Software Interface
  D. A. Patterson, J. Hennessy
  5th edition, 2014



- Computer Organization and Design RISC-V Edition: The Hardware Software Interface
  David A. Patterson John L. Hennessy,
  2th edition, 2021



Methodology

- Theory classes:
  - Present and explain basic concepts.
  - Students must also consult the textbooks (both for theory and problems); it is possible that the professor may not have time to explain all details during class! Ask anything that is unclear, ideally before exam week!!
- Problem solving in class:
  - The professor will solve exercises to illustrate how to apply the concepts learned in the theory class.
  - The students will solve exercises to make sure they get practical experience and they understand what concepts are still unclear.
- Lab work:
  - Several sets of problems, solved in groups to encourage teamwork.

Schedule

Week	Session	Description	Tuesday	Friday	
1	1	Introduction	07-sep		
1	2	Review of representation and floating point		10-sep	
2	3	Computer programming model	14-sep		
2	4	Exercises		17-sep	
3	5	Data, instructions and control structures	21-sep		
3	6	Laboratory session 1		24-sep	Laboratory
4	7	Addressing modes. Functions and stack usage (I)	28-sep		
4	8	Exercises		01-oct	
5	9	Functions and stack usage (II)	05-oct		
5	10	Exercises + mini-Exam		08-oct	mini-Exam
6	11	Computer structure	**14-oct**		recovering (holiday)
6	12	Laboratory session 2		15-oct	Laboratory
7	14	Elemental operations	19-oct		
7	15	Exercises		22-oct	
8	16	Control unit design	26-oct		
8	17	Laboratory session 3		29-oct	Laboratory
9	18	Interruptions, booting and processor state	02-nov		
9	19	Exercises + mini-Exam		05-nov	mini-Exam
10	20	Memory system	09-nov		
10	21	Exercises		12-nov	
11	22	Caché system	16-nov		
11	23	Laboratory session 4		19-nov	Laboratory
12	24	Virtual memory	23-nov		
12	25	Exercises		26-nov	
13	26	Exercises	30-nov		
13	27	Exercises + mini-Exam		03-dic	mini-Exam
14	28		07-dic		
14	28	I/O system		10-dic	
15	29	I/O techniques	14-dic		
16	30	Exercises		17-dic	session 29

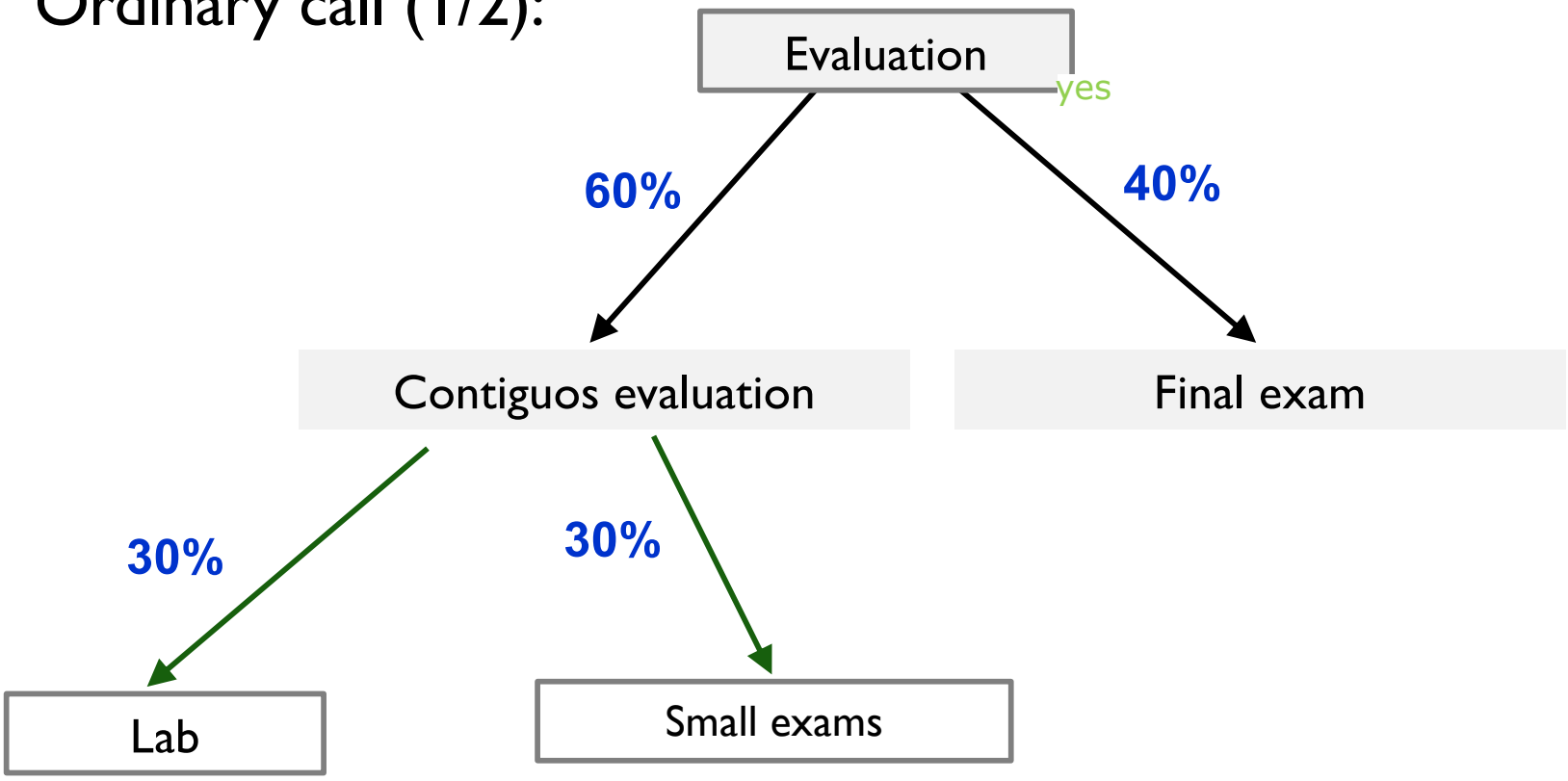
- 15 weeks, 29 classes in total:
  - 14 classes: magistral classes
  - 11 classes: exercises + review + mini-exam
  - 4 laboratory classes

COVID rules

- Personal attendance
  - Office hours: on-line (appointment required).
- Classes:
  - Rotation system: classes will be streamed (Blackboard).
  - Doors and windows opened during class.
  - Face mask is mandatory.
- Please check latest information at: https://www.uc3m.es/covid19/inicio

Evaluation

- Ordinary call (1/2):



Evaluation

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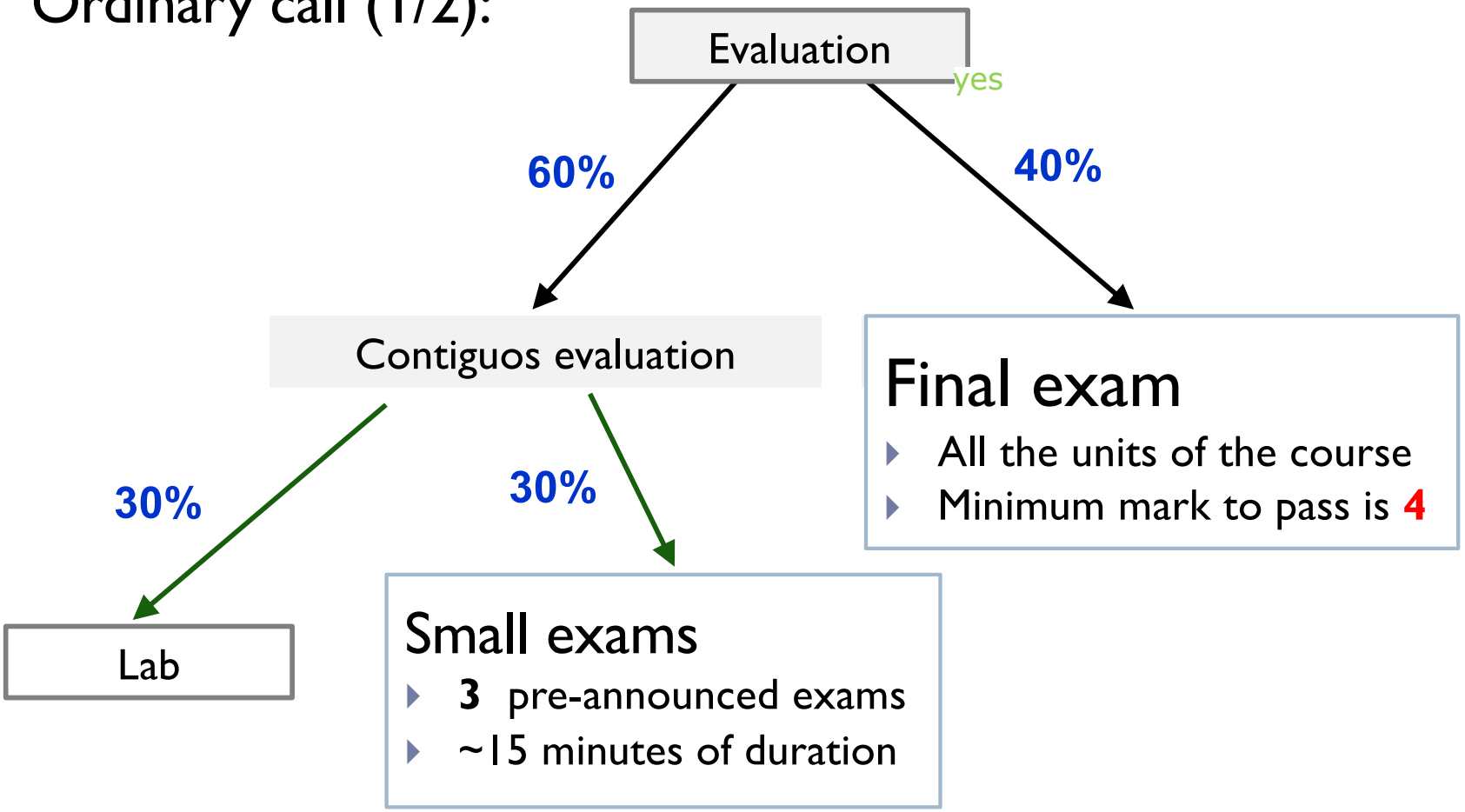
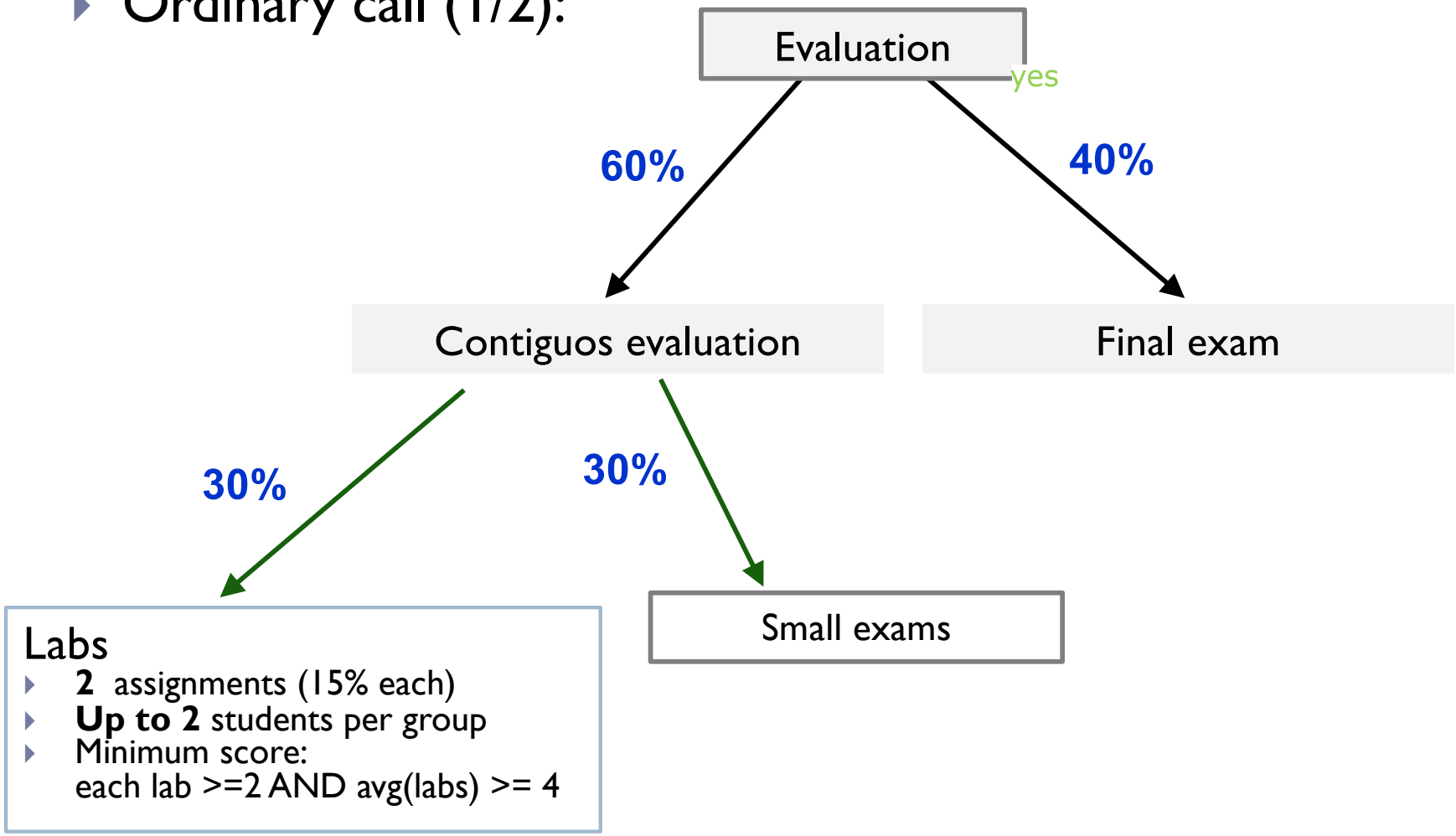


Extra point if the grade is greater than 7 in the contiguous evaluation

Evaluation

- Ordinary call (1/2):



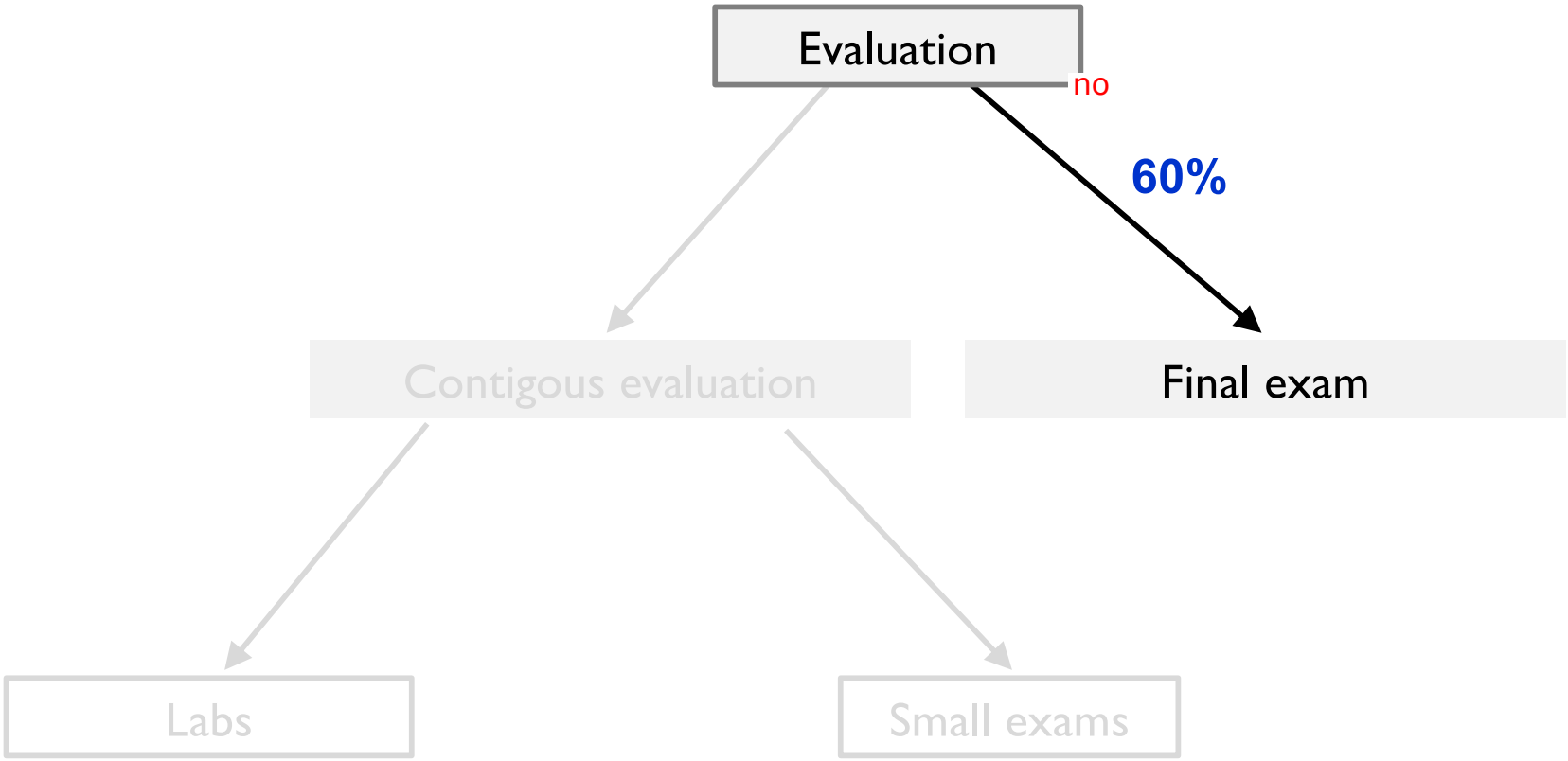
Evaluation: labs

- **2 programming assignments** (**30%**)
  - Each assignment has a score of **15%**
  - Minimum score to past is:
    - (2 over 10 for each one) AND (4 over 10 on contiguous evaluation)
- **Up to 2** students per group (max)

- 4 Laboratories classes
  - Attending is not mandatory (but recommendable)
  - Schedule
    - September 23 | 24
    - October 14 | 15
    - October 28 | 29
    - November 18 | 19

Student evaluation

- Ordinary call (2/2):



Evaluation

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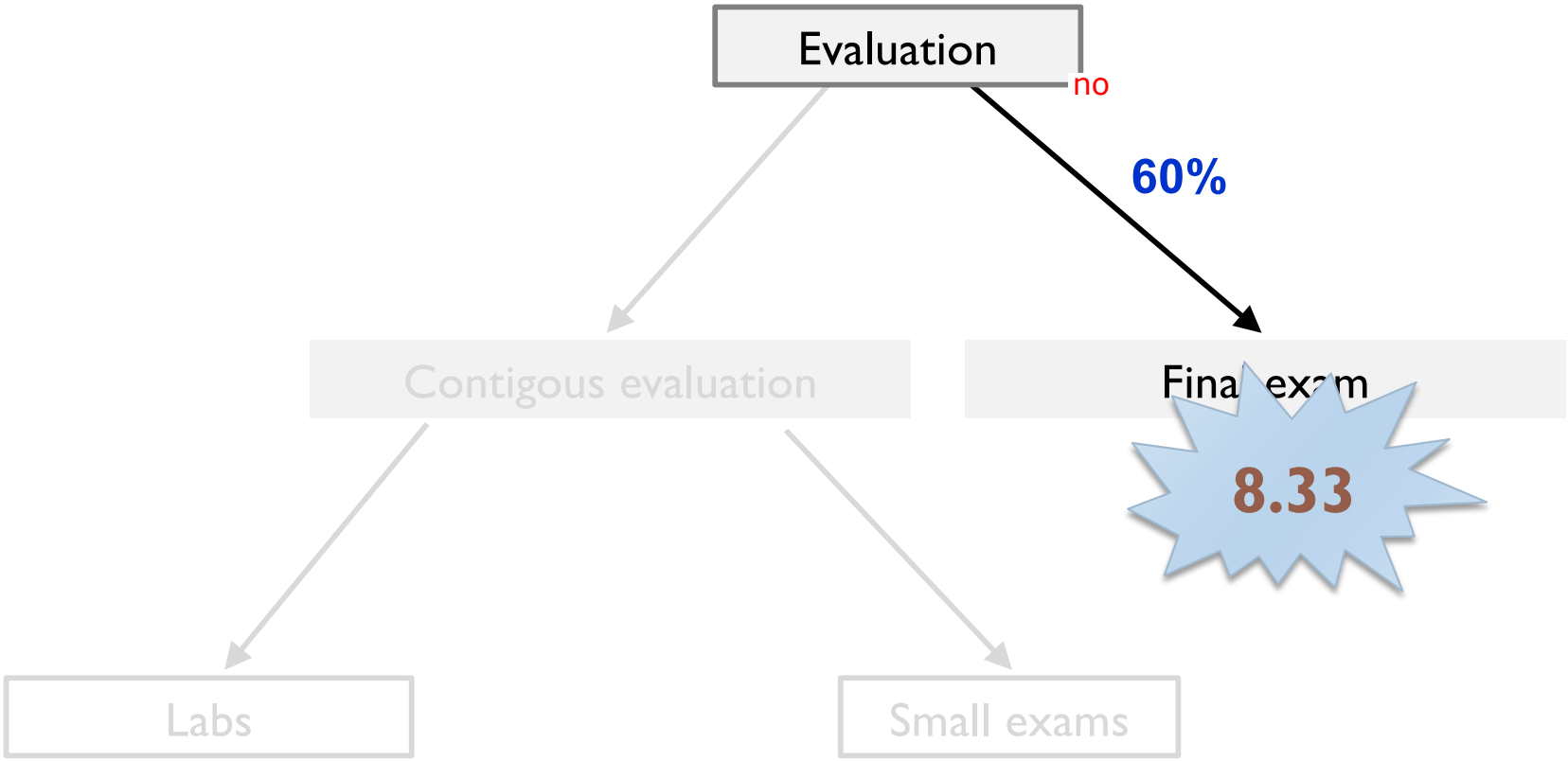
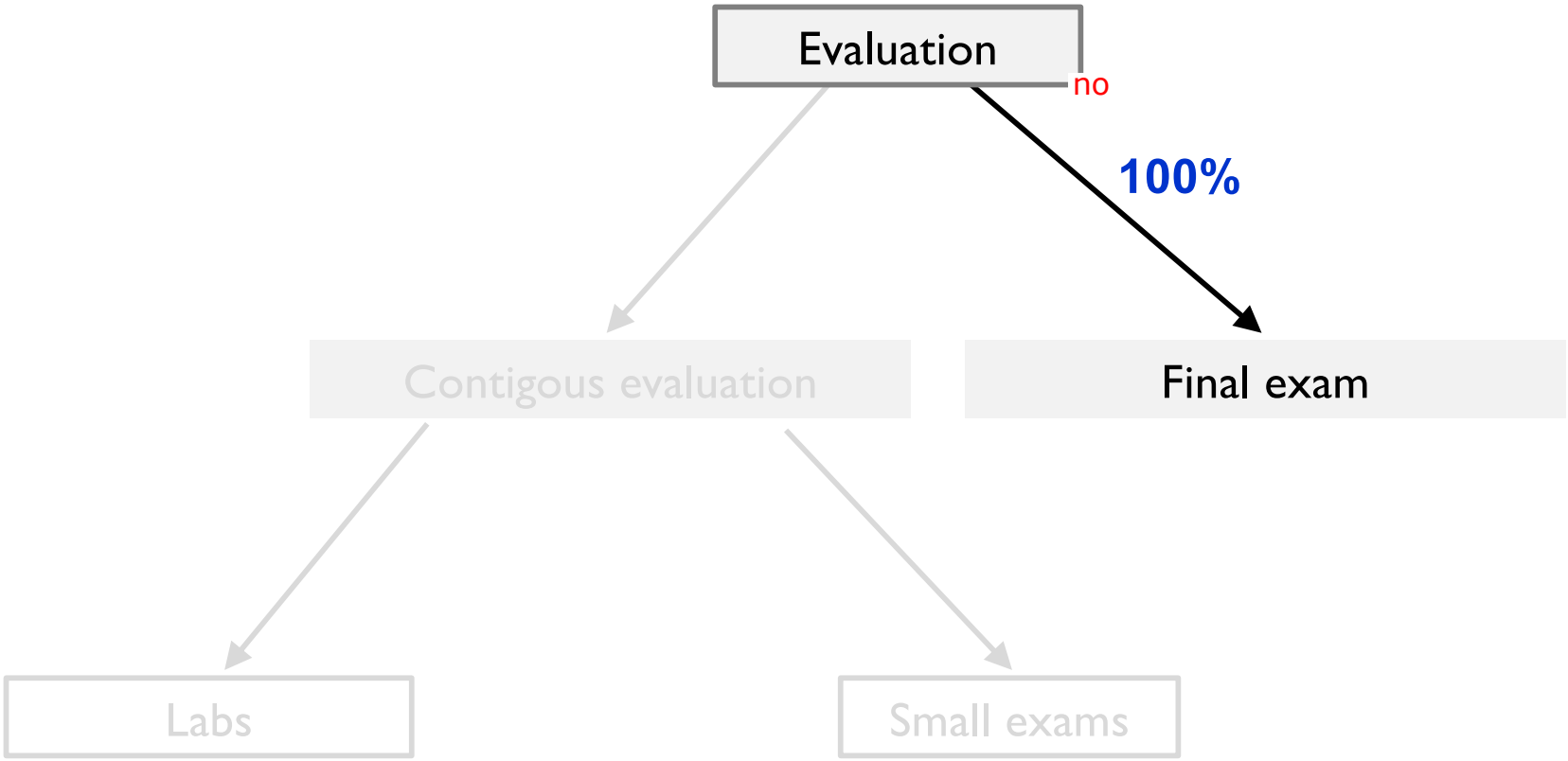


Evaluation

- Extraordinary call (1/2):



Evaluation

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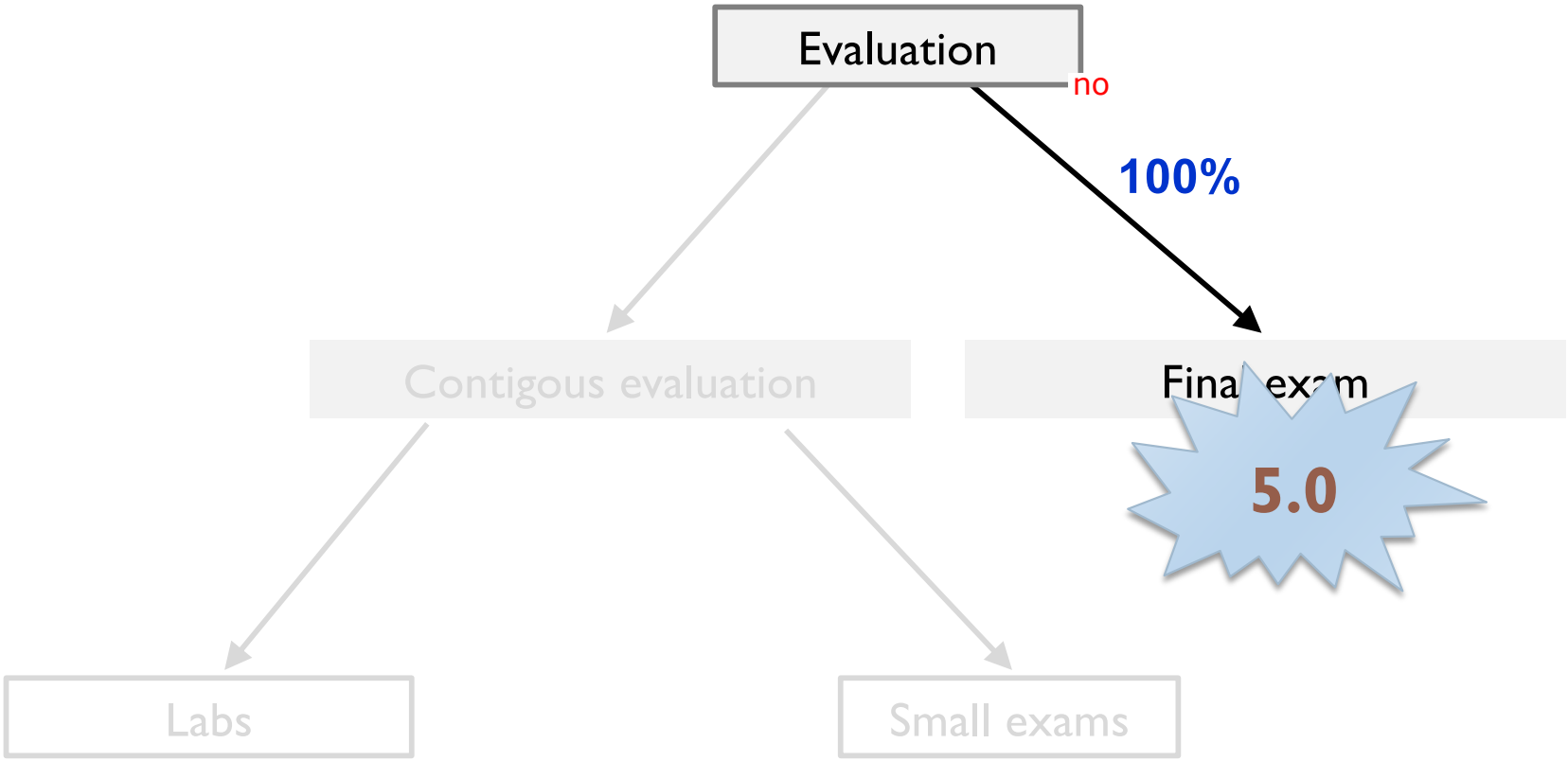
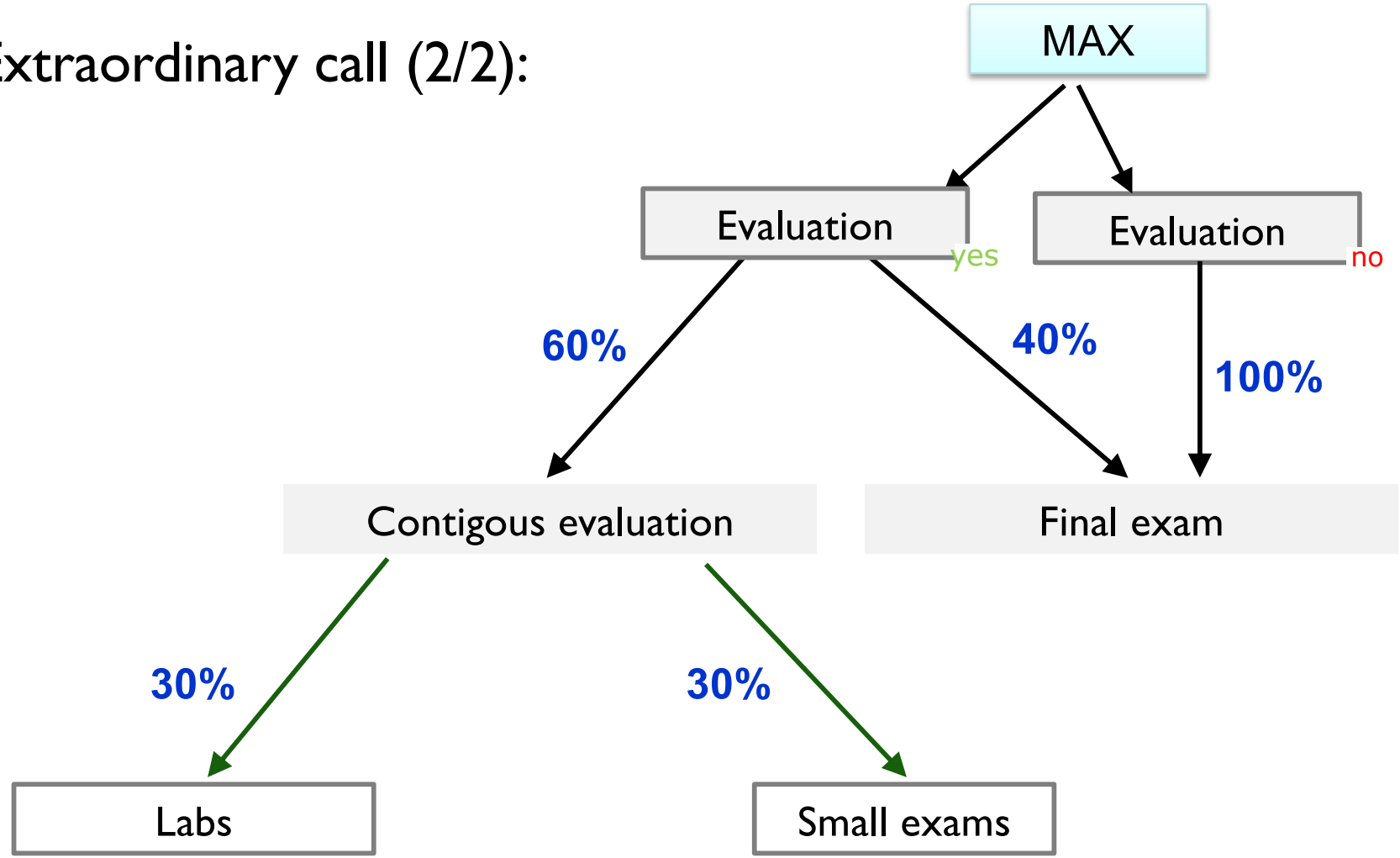


Evaluation

- Extraordinary call (2/2):



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