EDAA40

Discrete Structures in Computer Science

Administrivia

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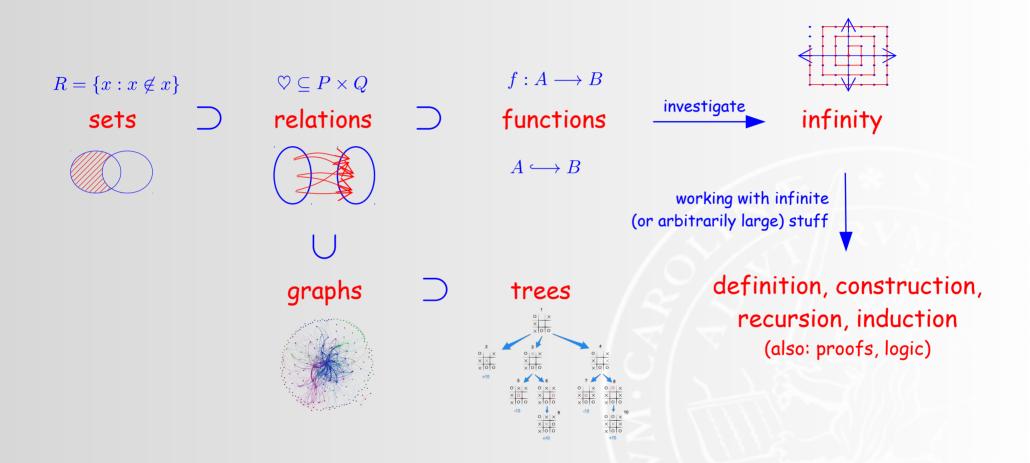
basic concepts, terminology/language & notation for math foundations and discrete structures relevant to CS

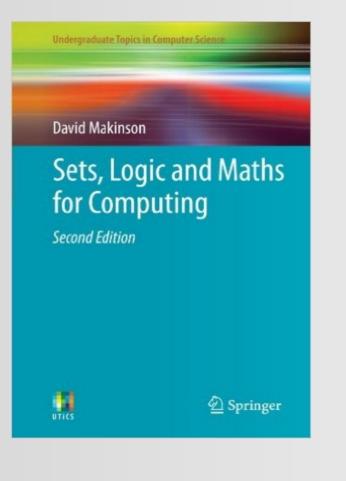
some hands-on experience with simple structures

Clojure



overview





Sets, Logic and Maths for Computing (SLAM)

Collecting Things Together: Sets

Comparing Things: Relations

Associating One Item with Another: Functions

Recycling Outputs as Inputs: Induction and Recursion

Counting Things: Combinatorics

Weighing the Odds: Probability

Squirrel Math: Trees

Yea and Nay: Propositional Logic

Something About Everything: Quantificational Logic

Just Supposing: Proof and Consequence

course components

Lectures

David Makinson

Second Edition

61

Sets, Logic and Maths for Computing

strongly recommended

• basic source of new material

Exercises

strongly recommended

- recap of material in lectures
- diagnosis → seminars, Piazza

Programming Contest

- intended to get you "into" the Clojure language
- win points for the exam!

Labs

required

- must be passed for credits
- putting math into practice

Seminars

optional

- free form: bring questions from lectures, labs, exercises
- I usually bring material, too
- background material, more extensive discussion, alternative explanations, examples
- additional exercises (not always with solutions → seminars, Piazza)

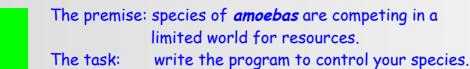
structure and schedule

Tuesday Monday	Lecture 1000h, E:B	Lecture 1000h, E:B	Lecture 1000h, E:B	Lecture 1000h, E:B Lab (A-C) 1500h Lab (D-F) 1000h				
Thursday Wednesday		Lecture 1000h, E:B		Seminar 1300h, MA6				Seminar 1300h, MA6
Friday T	Seminar 1300h, MA6 w 1 (cw 13)	Seminar 1300h, MA6 w 2 (cw 14)	Seminar 1300h, MA6 w 3 (cw 15)	w 4 (cw 16)	Seminar 1300h, MA6 w 5 (cw 19)	Seminar 1300h, MA6 w 6 (cw 20)	Seminar 1300h, MA6 w 7 (cw 21)	w 8 (cw 22)

questions, feedback: Piazza

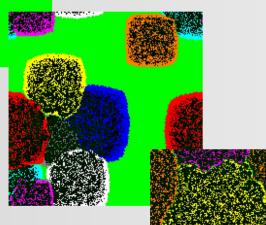
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iecture1 lecture2 lecture3 lecture4 lectu	ure6 lecture8	8 clojure exam other	
Unread Updated Unresolved Following	Q.	Question History.	\sim
New Post Q. Search or add a post		😮 question 🕸	stop following 88 views
tuples in the relation \$\$S\circ R\$\$ than writing all the tuples out and co	Î	Lab 5 - 6	Actions 🔻
Exam 30 May 2018 Hill wonder if a smart or intuitive way of doing question 2? I think I understand that the question goes: "How ma	5/26/17	We are a bit confused if our answer is correct to question 6 in lab 5. Our suggestion is $a \prec b = f(a) < f(b)$, which should be transistive, irreflexive and antisymmetric.	
Exam 2018 28 ang quaetion 7 In the answer for question 7 Isn't the last a (the right-most in the curly brackets) supposed to be a v. Otherwise	5/26/17	We wonder if our assumption is correct and how the answer in the solutions can be correct, i.e. $a \prec b = len(a) < len(b)$ since for example $len(10) < len(11)$ fails the irreflexive requirement.	
sô home exercitees 1 In the key for Question 7 (advanced), what does code(s(m div k), m mod k) do exactly? Is code an function name with tw	5/26/17	lecture6	
Home assersions 1 Question 6 I am very confused with the prove about	5/26/17	ecti good question 0	Updated 9 months ago by Karl-Oskar Rikås
question 6, what does 2N mean? Is Sn a subset of natural numbers? for exampl		1 the Instituctoral amender, where instructors collectively construct a single answer	
2016 28 stag Im having problem with question 5. This is how i read the quantificational logic: For all "x", there exists a • 1 Unrecoded Followsp	5/26/17 S i	"We wonder if our assumption is correct" It's an interesting answer because I think it works, and meets the requirements. It feels strangely circular to use f in the context of a definition whose purpose is to prove that the recursion in f is well-founded, but as an answer to the question I think it is o	correct.
old ອະຫະກາ 20100028 ຈ.2 I did not get how question 9.2 could be evaluated as true. Shouldn't its DNF form be ຼ p V າດ V (pAາດ) ?	5/26/17 i	"[] and how the answer in the solutions can be correct, i.e. $a \prec b = len(a) < len(b)$ since for example $len(10) < len(11)$ fails the irreflexive requirement." Does it? Please explain.	
I thought the result for question 12.2 should be false. But why it is none?	5/26/17 i	Jorn	
Exem 2010/0828 quartion 5 Question 5.1 Do you mind explaining why D=(a,b) and R=((a,a,(b,b)) fulfi the requirement? Question 5.2 I do not unders	5/25/17	good answer 0	Updated 9 months ago by Jorn W. Janneck
Left: 5 - 5 We are a bit confused if our answer is correct to question 6 in lab 5. Our suggestion is \$\$a \prec b = f(a) < f(b)\$\$	5/25/17 i	Polliosaup discusseloose for ingering questions and comments	
ഞ്ഞെ 20160630 ശ്രാങ്ങ്ങക. Hej, what is the solution to question 4.6 in exam 20160530?	5/25/17 i	Carri-Dekter Fibble 9 months ago Airight, thanks for the reply!	
On the first question 1.1 What does the set B Contain?	5/25/17 Øi	Our confusion with using len is that $len(10) = 2$ and $len(11) = 2$, but the comparison operator < is strict so what does $2 < 2$ even mean in this context?	from this order is that the
what is the difference between codomain, image and range?	5/25/17 <mark>100000000000000000000000000000000000</mark>	argument of f (i.e. s) and the things it calls itself on (the s') are ordered in such a way that s' < s. If that's the case (and it is for the order defined via the length if you check the definition, the s' are always shorter than the s, because the off of it from the front), and if the order is well-founded (i.e. there are no infinite descending chains) then we know that f' must terminate.	
Gan you bring to the coan? I'm wondering if it's allowed to print the	5/25/17	Average Response Time: Special Mentions:	Online Now This Week:
solutions to excersises and to the old exams and bring them to the ex		33 mile Jorn W. Janneck answered Exam 2016-05-30 question 4 in 34 min. 6 months ago	1 1 2
Freez & Sourcest Gill's M	5/25/17 ¥		

programming contest (experimental)



The winner is the group creating the most successful amoebas.





The **objective** is to give you more practice with Clojure, our language for the labs.

More on this in the seminar.



sidebars contain "non-essential" material

i.e.

nothing introduced in a sidebar will be required in an exam

BUT it may help understand other material, or put it in context 1. It's "all math", so no Clojure programming tasks.

- 2. It's "open book", so notes, books, printed material, etc. are allowed.
- 3. No electronic and communication devices of any kind.
- 4. Stuff that might be tested includes anything discussed in the lectures (except "sidebar" material).