

CS 61A: Structure and Interpretation of Computer Programs

Fall 2024: Mon, Wed, Fri 1pm in 150 Wheeler

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Announcements: Monday, October 28

- Ants project is due Wednesday 10/30.
 - Early submission bonus point Tuesday 10/29.
- Midterm 2 is Friday 11/1 7pm-9pm.
 - Seat assignments will be emailed to you before the exam (probably Thursday)
 - You may bring 2 2-sided sheets of notes.
 - The [midterm 1 study guide](https://cs61a.org/assets/pdfs/61a-mt1-study-guide.pdf) (<https://cs61a.org/assets/pdfs/61a-mt1-study-guide.pdf>) and [midterm 2 study guide](https://cs61a.org/assets/pdfs/61a-mt2-study-guide.pdf) (<https://cs61a.org/assets/pdfs/61a-mt2-study-guide.pdf>) will be printed for you and provided.
- No discussion this week on 10/30 & 10/31. Instead, you can [sign up](https://forms.gle/NizESZa2g6DjrKfx5) (<https://forms.gle/NizESZa2g6DjrKfx5>) to form a study group in your regular discussion room & time ([results](https://docs.google.com/forms/d/1TKcFmGYudtvUV_kCMitA4FIqKtHrt2WJrGVprTl5NeQ/viewanalytics) (https://docs.google.com/forms/d/1TKcFmGYudtvUV_kCMitA4FIqKtHrt2WJrGVprTl5NeQ/viewanalytics)).
- No lecture Friday 11/1.

Current Assignments

Calendar

Week	Date	Lecture	Textbook	Lab & Discussion Links	Homework & Project	
1	Wed 8/28	Welcome Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-1-welcome) Slides (1pp)		Disc 00: Getting Started Solutions		
				Lab 00: Getting Started Solutions	Due Wed 9/4	
	Fri 8/30	Functions Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-2-functions) Videos (https://www.youtube.com/watch?v=gNv81_4X0uU&list=PL6BsET-8jgYULSxiV2garZ0FxbnXR08MP&index=1) Slides (1pp) 02.py	Ch. 1.1 (https://www.composingprograms.com/pages/11-getting-started.html) Ch. 1.2 (https://www.composingprograms.com/pages/12-elements-of-programming.html) Ch. 1.3 (https://www.composingprograms.com/pages/13-defining-new-functions.html)		HW 01: Functions, Control Solutions	Due Mon 9/9
	Mon 9/2	No Lecture: Labor Day		Lab 01: Functions Solutions	Due Wed 9/4	
2	Wed 9/4	Control Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-3-control) Videos (https://www.youtube.com/watch?v=IPec2ATj2bY&list=PL6BsET-8jgYVCz97Y75GRXSWbb4sTpDIR) Slides (1pp) 03.py	Ch. 1.4 (https://www.composingprograms.com/pages/14-designing-functions.html) Ch. 1.5 (https://www.composingprograms.com/pages/15-control.html)	Disc 01: Control, Environment Diagrams Solutions		
					HW 02: Higher-Order Functions Solutions	Due Thu 9/12
	Fri 9/6	Higher-Order Functions Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-4-higher-order-functions) Videos (https://www.youtube.com/watch?v=pveluZT0GJE&list=PL6BsET-8jgYXvcnnEX7x2_USaYug9xZFv) Slides (1pp) 04.py	Ch. 1.6 (https://www.composingprograms.com/pages/16-higher-order-functions.html)		Hog (/proj/hog/) Getting Started Videos (https://www.youtube.com/playlist?list=PLx38hZJ5RLZfpHDDcEnevQqIX4wTxuMAD)	Checkpt Thu 9/12 Early Due Wed 9/18 Due Thu 9/19
3	Mon 9/9	Environments Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-5-environments) Videos (https://www.youtube.com/watch?v=1P2UgdAWwyg&list=PL6BsET-8jgYXTuSIJNYQS740YMCrHT79g) Slides (1pp) 05.py	Ch. 1.6 (https://www.composingprograms.com/pages/16-higher-order-functions.html)	Lab 02: Higher-Order Functions, Lambda Expressions Due Wed 9/11 Solutions		
	Wed 9/11	Functional Abstraction Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-6-functional-abstraction) Videos (https://www.youtube.com/watch?v=PKlgS5eofFNy&list=PL6BsET-8jgYVSwkGjsM9y1j8RQsRwtDy3&ab_channel=JohnDeNero) Slides (1pp) 06.py		Disc 02: Environment Diagrams, Higher-Order Functions Solutions Video (https://www.youtube.com/playlist?list=PLx38hZJ5RLZewn613BpJGzDCmEh-br_Zn)		
	Fri 9/13	Function Examples Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-7-function-examples) Videos (https://www.youtube.com/watch?v=guc-Q1x2vAY&list=PL6BsET-8jgYX6yuG9s7zO8GA1xHwHARFX&ab_channel=JohnDeNero) Slides (1pp) 07.py				
	Mon 9/16	Midterm 1 (8pm-10pm)				
4	Wed 9/18	Recursion Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-8-recursion) Videos (https://www.youtube.com/watch?v=31EDjRN1x5k&list=PL6BsET-8jgYUUBHlgUAqjMUoPCGQcYdl&ab_channel=JohnDeNero) Slides (1pp) 08.py	Ch. 1.7 (https://www.composingprograms.com/pages/17-recursive-functions.html)	Disc 03: Recursion Solutions Video (https://www.youtube.com/playlist?list=PLx38hZJ5RLZfzZl-jztFnFhyfzjEgXYgt1)		
	Fri 9/20	Tree Recursion Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-9-tree-recursion) Videos (https://www.youtube.com/watch?v=VYYkJ1OLXBw&list=PL6BsET-8jgYUUPap4etQjZVWlWUeFxn0&ab_channel=JohnDeNero) Slides (1pp) 09.py	Ch. 1.7 (https://www.composingprograms.com/pages/17-recursive-functions.html)	HW 03: Recursion, Tree Recursion Solutions	Due Thu 9/26	

		Sequences			
Mon 9/23	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-10-sequences)		Ch. 21 (https://www.composingprograms.com/pages/21-introduction.html)		Lab 03: Recursion, Python Lists (/lab/lab03/) Due Wed 9/25 Solutions (/lab/sol-lab03/)
	Videos (https://www.youtube.com/watch?v=-Q45UcQ2XJk&list=PL6BsET-8jgYVfi7chdrXciKy8CP10tOcl&ab_channel=JohnDeNero)		Ch. 23 (https://www.composingprograms.com/pages/23-sequences.html)		
	Slides (pdf) (/assets/slides/10-Sequences.pdf) 10.py (/assets/slides/10.py)				
Containers					
Wed 9/25	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-11-containers)		Ch. 23 (https://www.composingprograms.com/pages/23-sequences.html)		Disc 04: Tree Recursion (/disc/disc04/) Solutions (/disc/sol-disc04/) Video (https://www.youtube.com/playlist?list=PLx38hZJ5RLZe0s_JOJ5895R1p98EYpazE) Cats (/proj/cats/) Checkpt Thu 10/3 Early Due Mon 10/7 Due Tue 10/8 Getting Started Videos (https://www.youtube.com/playlist?list=PLx38hZJ5RLZFqfRYgUehyb_HNRv_YCvEs)
	Videos (https://www.youtube.com/watch?v=aSqOIuZg7kQ&list=PL6BsET-8jgYVW50w7isVJs3YumstvFX1LY&ab_channel=JohnDeNero)				
	Slides (pdf) (/assets/slides/11-Containers.pdf) 11.py (/assets/slides/11.py)				
Data Abstraction					
Fri 9/27	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-12-data-abstraction)		Ch. 22 (https://www.composingprograms.com/pages/22-data-abstraction.html)		Lab 04: Tree Recursion, Data Abstraction (/lab/lab04/) Due Wed 10/2 Solutions (/lab/sol-lab04/)
	Videos (https://www.youtube.com/watch?v=nzP3nJ2np8w&list=PL6BsET-8jgYWCdz9cSNcWAhXe9NOWwjH&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/12-Data_Abstraction_1pp.pdf) 12.py (/assets/slides/12.py)				
Trees					
Mon 9/30	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-13-trees)		Ch. 23 (https://www.composingprograms.com/pages/23-sequences.html)		Disc 05: Trees (/disc/disc05/) Solutions (/disc/sol-disc05/)
	Videos (https://www.youtube.com/watch?v=qFCJANh5ht&list=PL6BsET-8jgYX7kDENvubNGDgI1wHL2PKC&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/13-Trees_1pp.pdf) 13.py (/assets/slides/13.py)				
Mutability					
Wed 10/2	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-14-mutability)		Ch. 24 (https://www.composingprograms.com/pages/24-mutable-data.html)		Disc 06: Generators (/disc/disc06/) Solutions (/disc/sol-disc06/) Video (https://www.youtube.com/playlist?list=PLx38hZJ5RLZeQ03Jkjl-SoZ2aHt(LavJ1))
	Videos (https://www.youtube.com/watch?v=Q-CewobDFZM&list=PL6BsET-8jgYVfS7Jqp64ni7uQLXLPWOBr&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/14-Mutability_1pp.pdf) 14.py (/assets/slides/14.py)				
Iterators					
Fri 10/4	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-15-iterators)		Ch. 42 (https://www.composingprograms.com/pages/42-implicit-sequences.html)		HW 04: Sequences, Data Abstraction, Trees (/hw/hw04/) Due Thu 10/10 Solutions (/hw/sol-hw04/)
	Videos (https://www.youtube.com/watch?v=On-kFyFp8HY&list=PL6BsET-8jgYVW7stiut93PHxGP6_QgBzVQ&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/15-Iterators_1pp.pdf) 15.py (/assets/slides/15.py)				
Generators					
Mon 10/7	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-16-generators)		Ch. 42 (https://www.composingprograms.com/pages/42-implicit-sequences.html)		Lab 05: Iterators, Mutability (/lab/lab05/) Due Wed 10/9 Solutions (/lab/sol-lab05/)
	Videos (https://www.youtube.com/watch?v=DyXPnQuaaOw&list=PL6BsET-8jgYXnY-7vDJXiv2N5xW98rJTZ&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/16-Generators_1pp.pdf) 16.py (/assets/slides/16.py)				
Objects					
Wed 10/9	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-17-objects)		Ch. 25 (https://www.composingprograms.com/pages/25-object-oriented-programming.html)		HW 05: Generators (/hw/hw05/) Due Thu 10/17 Solutions (/hw/sol-hw05/) Ants (/proj/ants/) Checkpt 1 Thu 10/17 Checkpt 2 Tue 10/22 Early Due Tue 10/29 Due Wed 10/30 Getting Started Videos (https://www.youtube.com/playlist?list=PLx38hZJ5RLZdH1AQFUuP-ixu7nAEK40LP)
	Videos (https://www.youtube.com/watch?v=XdRZkeCRxs4&list=PL6BsET-8jgYVz2dLlWRsktOrtqO8wWvRsy&ab_channel=JohnDeNero)				
	Slides (pdf) (/assets/slides/17-Objects.pdf) 17.py (/assets/slides/17.py)				
Attributes					
Fri 10/11	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-18-attributes)		Ch. 25 (https://www.composingprograms.com/pages/25-object-oriented-programming.html)		Lab 06: Object-Oriented Programming (/lab/lab06/) Due Wed 10/16 Solutions (/lab/sol-lab06/)
	Videos (https://www.youtube.com/watch?v=mimP7cNrSHA&list=PL6BsET-8jgYVhCKr4EHUE9mw9kcH7Kg7Y&ab_channel=JohnDeNero)				
	Slides (pdf) (/assets/slides/18-Attributes.pdf) 18.py (/assets/slides/18.py)				
Inheritance					
Mon 10/14	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-19-inheritance)		Ch. 25 (https://www.composingprograms.com/pages/25-object-oriented-programming.html)		Disc 07: OOP (/disc/disc07/) Solutions (/disc/sol-disc07/) Video (https://www.youtube.com/playlist?list=PLx38hZJ5RLZFk1NHziCsqdNVnoQOS6pwa)
	Videos (https://www.youtube.com/watch?v=Bqpe1yq5vE&list=PL6BsET-8jgYXU79nA2gvweTlHeGbvp6qv&ab_channel=JohnDeNero)				
	Slides (pdf) (/assets/slides/19-Inheritance.pdf) 19.py (/assets/slides/19.py)				
Representation					
Wed 10/16	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-20-representation)		Ch. 27 (https://www.composingprograms.com/pages/27-object-abstraction.html)		Disc 08: Linked Lists (/disc/disc08/) Solutions (/disc/sol-disc08/) Video (https://www.youtube.com/playlist?list=PLx38hZJ5RLZf_jx8K6BPGaNYJLMmDs8J)
	Videos (https://www.youtube.com/watch?v=DUSSKjzAgA&list=PL6BsET-8jgYVW8tpgR0-wtQEA2VYQyNXFB&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/20-Representation_1pp.pdf) 20.py (/assets/slides/20.py)				
Composition					
Fri 10/18	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-21-composition)				HW 06: Object-Oriented Programming, Linked Lists (/hw/hw06/) Due Thu 10/24
	Videos (https://www.youtube.com/watch?v=yC4WPw_6ehY&list=PL6BsET-8jgYVWnaras4ggDpnXGGD9GtjQS&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/21-Composition_1pp.pdf) 21.py (/assets/slides/21.py)				
Efficiency					
Mon 10/21	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-22-efficiency)		Ch. 28 (https://www.composingprograms.com/pages/28-efficiency.html)		Lab 07: Linked Lists, Inheritance (/lab/lab07/) Due Wed 10/23 Solutions (/lab/sol-lab07/)
	Videos (https://www.youtube.com/watch?v=DWwsOSHjY98&list=PL6BsET-8jgYU9eOK2Ft8hQuziWb4h-Tim&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/22-Efficiency_1pp.pdf) 22.py (/assets/slides/22.py)				
Decomposition					
Wed 10/23	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-23-decomposition)				Lab 08: Mutable Trees (/lab/lab08/) Due Wed 10/30 Solutions (/lab/sol-lab08/)
	Videos (https://www.youtube.com/watch?v=i7GFWtHCuzo&list=PL6BsET-8jgYXp_JnAEzO5gz2c5HY6bg3j&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/23-Decomposition_1pp.pdf) 23.py (/assets/slides/23.py)				
Data Examples					
Fri 10/25	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-24-data-examples)				Lab 09: Scheme Due Wed 11/6 HW 07: Scheme Due Thu 11/7
	Videos (https://www.youtube.com/watch?v=tpfpNR3u4zk&list=PL6BsET-8jgYX2qPZDaMm1DsBZe1Zu045G&ab_channel=JohnDeNero)				
	Slides (1pp) (/assets/slides/24-Data_Examples_1pp.pdf) 24.py (/assets/slides/24.py)				
Language Models (Optional)					
Mon 10/28	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-25-language-models-optional)				
Midterm Examples (Optional)					
10 Wed 10/30	Recording (https://bcourses.berkeley.edu/courses/1538118/pages/lecture-26-midterm-examples-optional)				
Slides (1pp) (/assets/slides/26-Midterm_Examples_1pp.pdf)					
Fri 11/1	Midterm 2 (7pm-9pm)				
Mon 11/4	Scheme		Ch. 31 (https://www.composingprograms.com/pages/31-introduction.html)		Lab 09: Scheme Due Wed 11/6 HW 07: Scheme Due Thu 11/7
	Videos (https://www.youtube.com/watch?v=eslvjecRFw&list=PL6BsET-8jgYWGDX7c-OKSMCh4QCBZ7Bs4)		Ch. 32 (https://www.composingprograms.com/pages/32-functional-programming.html)		
Wed 11/6	Scheme Lists		Ch. 32 (https://www.composingprograms.com/pages/32-functional-programming.html)		Disc 09: Scheme, Scheme Lists
	Videos (https://www.youtube.com/watch?v=M8nvWOAHLso&list=PL6BsET-8jgYW3h5HuWwcoTP4NTmLGB95p)				
Fri 11/8	Calculator		Ch. 33 (https://www.composingprograms.com/pages/33-exceptions.html)		HW 08: Scheme Lists Due Thu 11/14
	Videos (https://www.youtube.com/watch?v=tJSqAtJqI7Y&list=PL6BsET-8jgYXTtg_Yj3VT7507cy12luFz)		Ch. 34 (https://www.composingprograms.com/pages/34-interpreters-for-languages-with-combination.html)		

	Mon 11/11	No Lecture: Veterans Day			Lab 10: Interpreters	Due Wed 11/13					
12	Wed 11/13	Interpreters	Videos (https://www.youtube.com/watch?v=gm2PUh07bMI&list=PL6BsET-8jgYUC3YkTeRQ9fczBzTU84GC0)	Ch. 3.5 (https://www.composingprograms.com/pages/35-interpreters-for-languages-with-abstraction.html)	Disc 10: Interpreters		Scheme	Checkpt 1 Mon 11/18	Checkpt 2 Thu 11/21	Early Due Mon 11/25	Due Tue 11/26
	Fri 11/15	Programs as Data	Videos (https://www.youtube.com/watch?v=hceri4MIZvk&list=PL6BsET-8jgYVdPukP2j4MB2rwwkTCS4Fc)				HW 09: Programs as Data, Macros	Due Thu 11/21			
	Mon 11/18	Macros	Videos (https://www.youtube.com/watch?v=VDtc1GWRBxi&list=PL6BsET-8jgYXZBGvtOT3PnUhaWlvzN1FZ)		Lab 11: Programs as Data, Macros	Due Mon 12/2					
13	Wed 11/20	SQL			Disc 11: Macros						
	Fri 11/22	Tables					HW 10: SQL	Due Thu 12/5			
	Mon 11/25	Aggregation									
14	Wed 11/27	No Lecture: Thanksgiving									
	Fri 11/29	No Lecture: Thanksgiving									
	Mon 12/2	Databases			Lab 12: SQL	Due Wed 12/4					
15	Wed 12/4	Final Examples	Videos (https://www.youtube.com/watch?v=_wfb189nJA&list=PL6BsET-8jgYVlVyu77Ecd3Hyxiy~-Z9Ty)		Disc 12: SQL						
	Fri 12/6	Conclusion					HW 11: Finale	Due Sun 12/15			
	Mon 12/9	No Lecture: RRR Week									
16	Wed 12/11	No Lecture: RRR Week									
	Fri 12/13	No Lecture: RRR Week									
17	Wed 12/18	Final (7pm-10pm)									