CS110

DR JEFF SOFTWARE
INDIE APP DEVELOPER

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2017

Intro to Algorithms & Programming

Using JAVA

Dr Jeff Drobman

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website → drjeffsoftware.com

Today's Agenda

Week **4**

M - W

1) LECTURE (PPt slides): 2:00 – 3:15pm
   - ❑ Ch 4: Strings

2) BREAK: 3:15 – 3:30pm

3) LAB: 3:30 – 4:45pm
   - ❑ Exercises: revisit While, "parts"
   - ❑ Lab 2: Parts 1 and 2

4) Office hour: 4:45 – 5:45pm

HOLIDAYS

❖ Sep 4 – Labor Day

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Add/Drop & Waitlist

- Week 1
  - Enrollment: Open (class full)
  - Waitlist: must attend all classes
- Week 2
  - Enrollment: Closed
  - Waitlist: will be given permissions
- Week 3
  - Enrollment: last week to DROP
  - Waitlist: last week to use permissions ⇦
- Week 4+ → no changes
  - Enrollment: Closed + NO DROPS
  - Waitlist: permissions expired

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Course Overview

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Intro to

- ❖ **Problem Solving**

via

- ❖ **Algorithms**

implemented via

- ❖ **Programming**
  - ➢ I-P-O model

Relate to **SDLC**

- ❖ **Requirements**
- ❖ **Design**
- ❖ **Implementation**

Other major topics

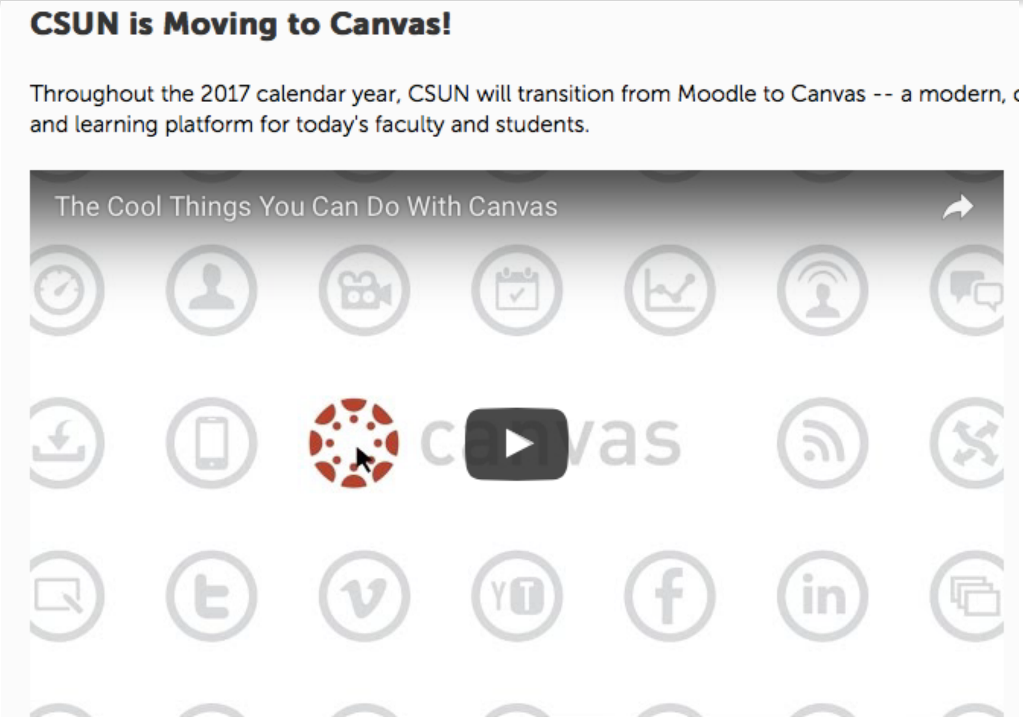
- ❖ *Structured* Programming
- ❖ OOP – *Object-Oriented* Programming

- ❖ Methods
- ❖ Classes

Programming Languages

- ❖ Using **JAVA**
- ❖ Compare to **C**, **C++**

LMS: Moodle → Canvas

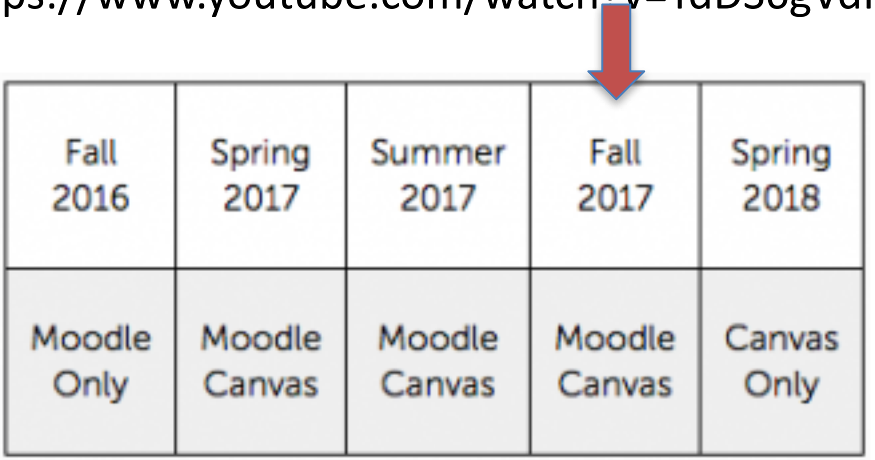


CSUN is Moving to Canvas!

Throughout the 2017 calendar year, CSUN will transition from Moodle to Canvas -- a modern, c
and learning platform for today's faculty and students.

The Cool Things You Can Do With Canvas

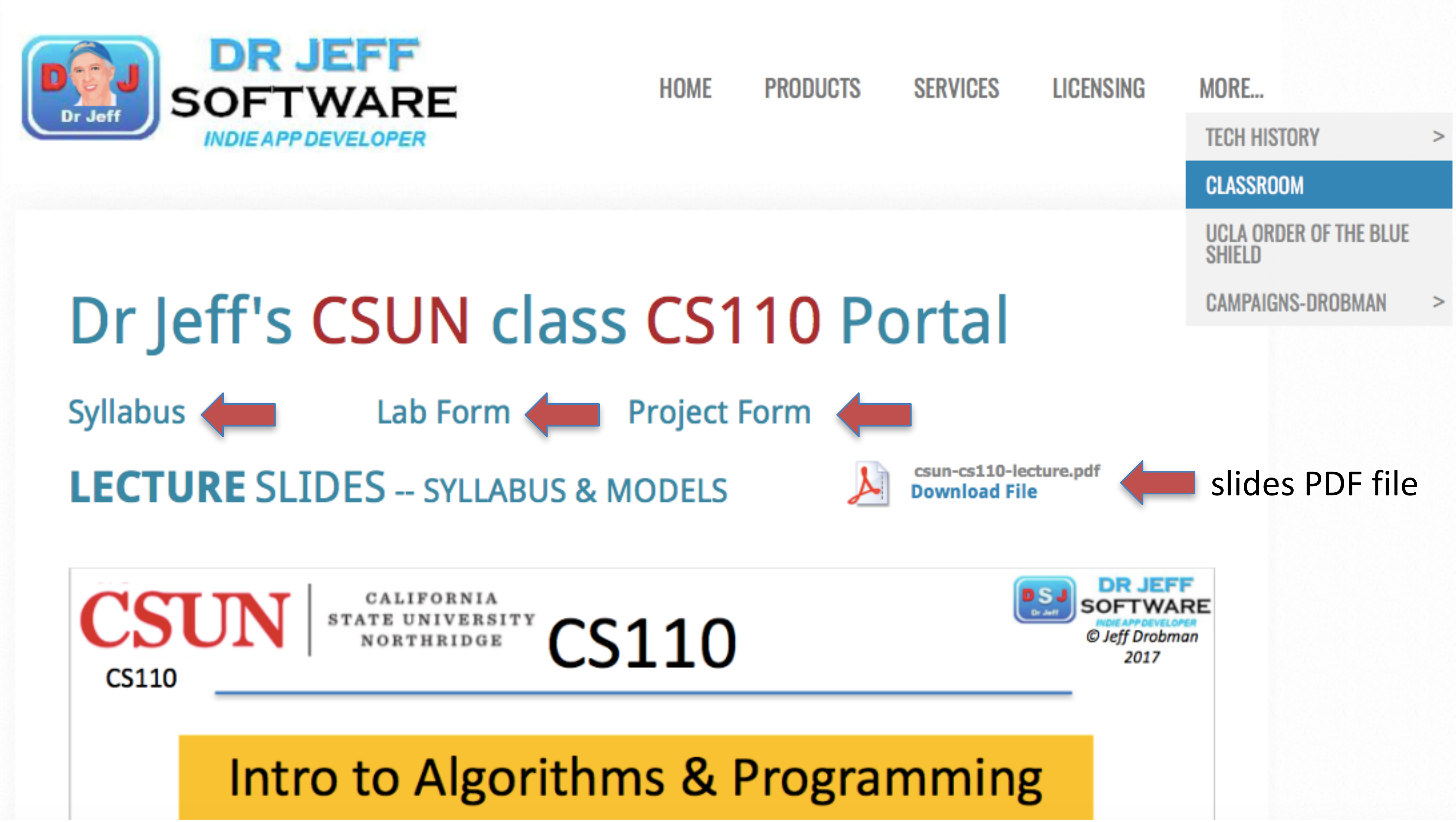
https://www.youtube.com/watch?v=TdDS6gVdI10



Fall 2016	Spring 2017	Summer 2017	Fall 2017	Spring 2018
Moodle Only	Moodle Canvas	Moodle Canvas	Moodle Canvas	Canvas Only

Class Website

http://drjeffsoftware.com/classroom.html



Dr Jeff's CSUN class CS110 Portal

Syllabus   Lab Form   Project Form

LECTURE SLIDES -- SYLLABUS & MODELS

csun-cs110-lecture.pdf
Download File

slides PDF file

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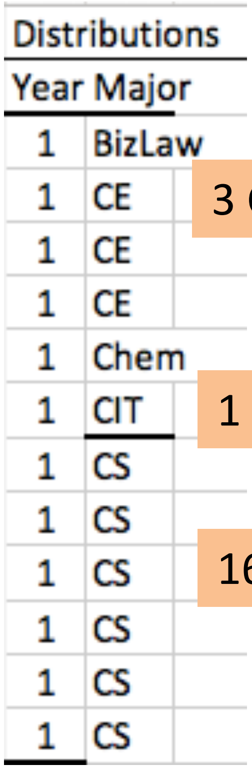
Intro to Algorithms & Programming

Class Years/Majors

12 Fr



Distributions

Year	Major
1	BizLaw
1	CE
1	CE
1	CE
1	Chem
1	CIT
1	CS
1	CS
1	CS
1	CS
1	CS
1	CS

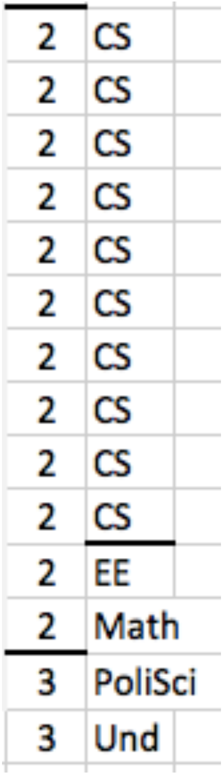
3 Ce

1 CIT

16 CS

6 other

10 So



2	CS
2	CS
2	CS
2	CS
2	CS
2	CS
2	CS
2	CS
2	CS
2	CS
2	EE
2	Math
3	PoliSci
3	Und

2 Jr

Section

Syllabus

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Curriculum-CS

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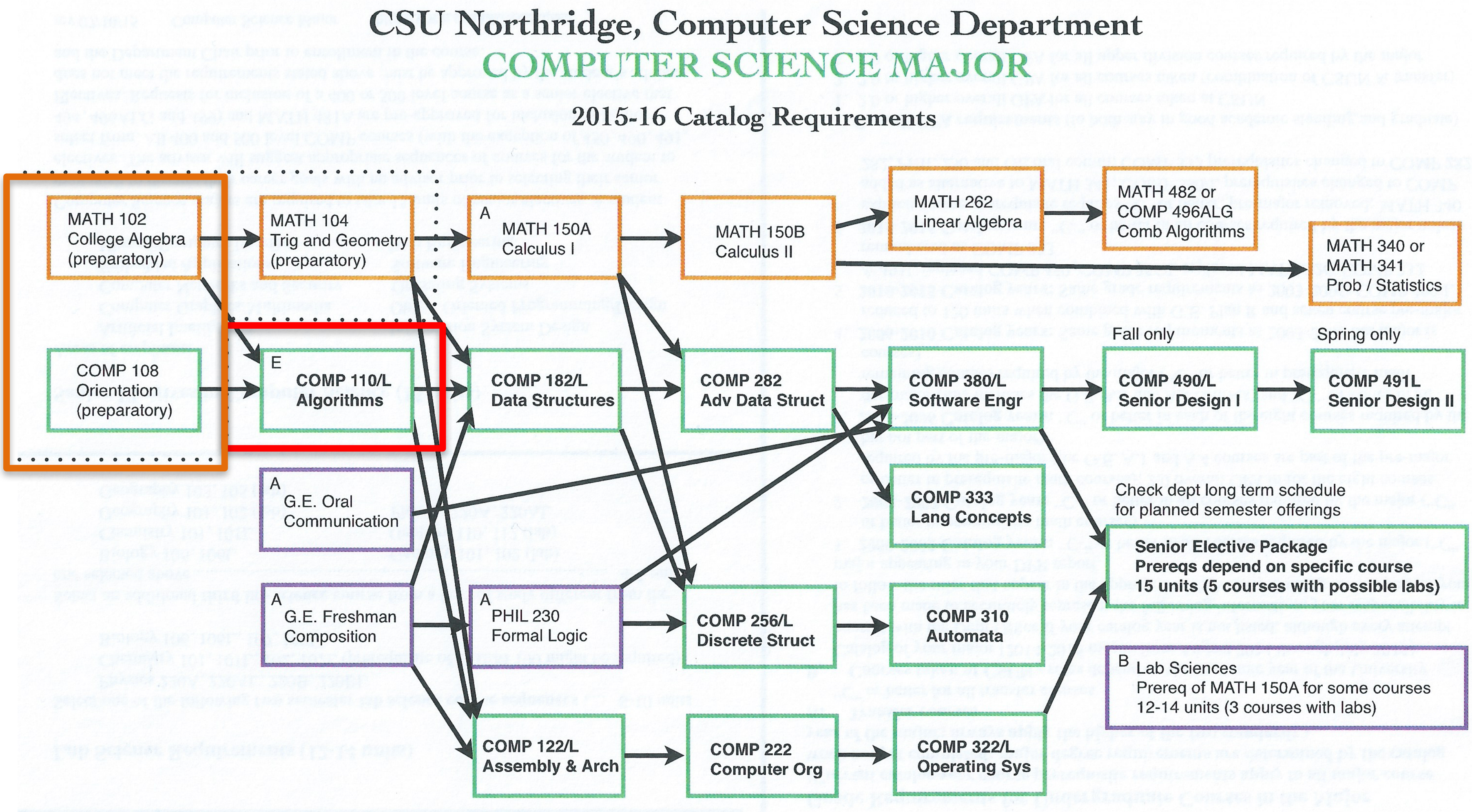

CSU Northridge, Computer Science Department

COMPUTER SCIENCE MAJOR

2015-16 Catalog Requirements

MATH 102 College Algebra (preparatory)

MATH 104 Trig and Geometry (preparatory)

A MATH 150A Calculus I

MATH 150B Calculus II

MATH 262 Linear Algebra

MATH 482 or COMP 496ALG Comb Algorithms

MATH 340 or MATH 341 Prob / Statistics

COMP 108 Orientation (preparatory)

E COMP 110/L Algorithms

COMP 182/L Data Structures

COMP 282 Adv Data Struct

COMP 380/L Software Engr

Fall only

COMP 490/L Senior Design I

Spring only

COMP 491L Senior Design II

A G.E. Oral Communication

COMP 333 Lang Concepts

Check dept long term schedule for planned semester offerings

Senior Elective Package
Prereqs depend on specific course
15 units (5 courses with possible labs)

A G.E. Freshman Composition

A PHIL 230 Formal Logic

COMP 256/L Discrete Struct

COMP 310 Automata

B Lab Sciences
Prereq of MATH 150A for some courses
12-14 units (3 courses with labs)

COMP 122/L Assembly & Arch

COMP 222 Computer Org

COMP 322/L Operating Sys

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Curriculum-IT

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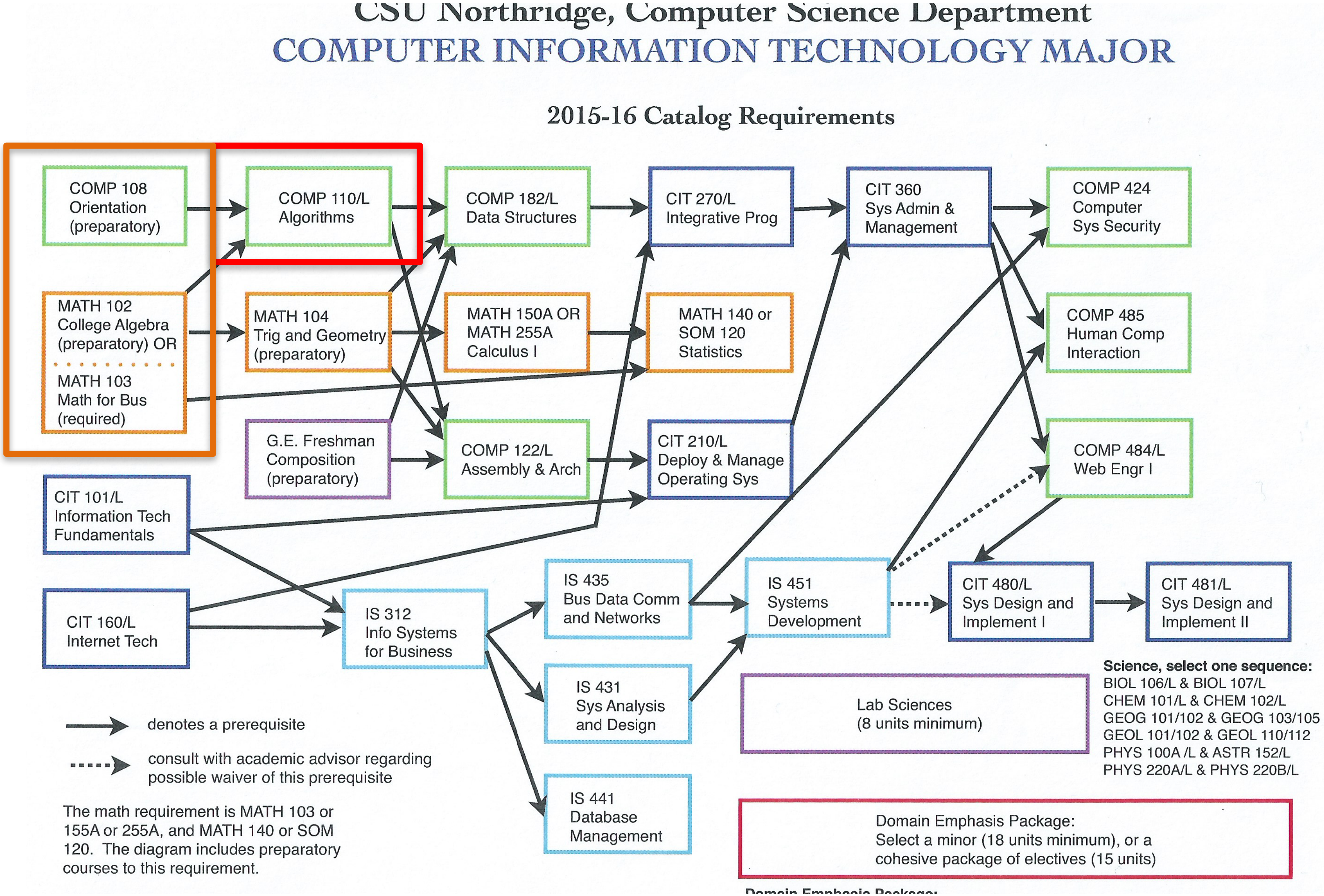


CSU Northridge, Computer Science Department

COMPUTER INFORMATION TECHNOLOGY MAJOR

2015-16 Catalog Requirements

COMP 108 Orientation (preparatory)

COMP 110/L Algorithms

COMP 182/L Data Structures

CIT 270/L Integrative Prog

CIT 360 Sys Admin & Management

COMP 424 Computer Sys Security

MATH 102 College Algebra (preparatory) OR

MATH 103 Math for Bus (required)

MATH 104 Trig and Geometry (preparatory)

MATH 150A OR MATH 255A Calculus I

MATH 140 or SOM 120 Statistics

COMP 485 Human Comp Interaction

G.E. Freshman Composition (preparatory)

COMP 122/L Assembly & Arch

CIT 210/L Deploy & Manage Operating Sys

COMP 484/L Web Engr I

CIT 101/L Information Tech Fundamentals

CIT 160/L Internet Tech

IS 312 Info Systems for Business

IS 435 Bus Data Comm and Networks

IS 451 Systems Development

CIT 480/L Sys Design and Implement I

CIT 481/L Sys Design and Implement II

IS 431 Sys Analysis and Design

IS 441 Database Management

Lab Sciences (8 units minimum)

Science, select one sequence:
BIOL 106/L & BIOL 107/L
CHEM 101/L & CHEM 102/L
GEOG 101/102 & GEOG 103/105
GEOL 101/102 & GEOL 110/112
PHYS 100A /L & ASTR 152/L
PHYS 220A/L & PHYS 220B/L

→ denotes a prerequisite

⇢ consult with academic advisor regarding possible waiver of this prerequisite

The math requirement is MATH 103 or 155A or 255A, and MATH 140 or SOM 120. The diagram includes preparatory courses to this requirement.

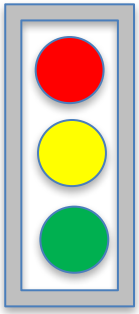
Domain Emphasis Package:
Select a minor (18 units minimum), or a cohesive package of electives (15 units)

Domain Emphasis Package:

Grading – Scale

Grade	Pct	Interpret
A+ **A** A-	98 **92** 90	VERY good
B+ **B** B-	88 **82** 80	PRETTY good
C+ **C** C-	78 **72** 70	BARELY good
D+ **D** D-	68 **62** 60	substandard
F	<60	failed

color coding



Grading – Weights

	Category	Weight	
8 @5 ea	Programs	**40**	Programming 65
2 @ 10, 15	Project	**25**	
	Quiz	**5**	Testing 35
	Midterm	**10**	
	Final	**20**	

→ Single COMBINED GRADE

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Textbook

Chapters

Part 1

1. Intro to Computers, Programs & Java
2. Elementary Programming

now Part 2

3. Selections
4. Math Fns, Chars, Strings
5. Loops

Part 3

6. **Methods**
7. Arrays, Single-dim
8. Arrays, Multi-dim

OOP Part 4

9. **Objects & Classes**
10. Thinking in Objects
11. Inheritance & Polymorphism
12. Exception Handling & Text I/O
13. Abstract Classes & Interfaces

FX

14. Java FX (GUI library)
15. Event-driven GUI & animation
16. Java FX cont'd
17. Binary I/O
18. Event-Driven Programming
19. Recursion

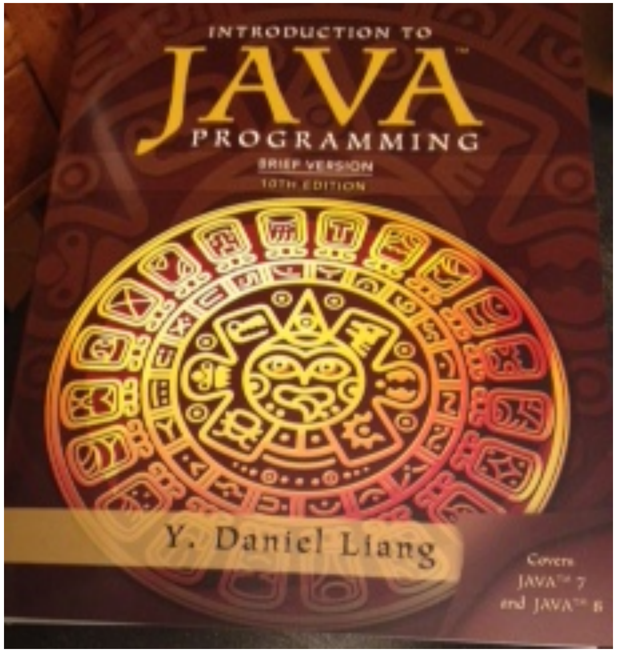
INTRODUCTION TO

JAVA

PROGRAMMING

by

Y. Daniel Liang



Reading

Week	1	2	3	4	5	6	7	8
Chapter	1/2	2/3	3/5	4	6	7A	7B	8

data types
I/O

if-then-else
case
loops

strings
float

methods

arrays[]

arrays[][]

Midterm

Week	9	10	11	12	13	14	15	
Chapter	12B	12A	9	9	9/10	10	11	Final

File I/O

Excepts

OOP

Final Prep
ArrayLists
(sec 11.11-13)

subject to change

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Assignments/Exams

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WEEK	1	2	3	4	5	6	7	8
	Lab 1	Lab 2	Lab 2	Lab 2	Lab 3	Lab 4	Lab 4	Lab 5
						Proj 1	Proj 1	Proj 1
					Quiz			Midterm

Mar 15

9	10	11	12	13	14	15	16
Lab 5	Lab 6	Lab 6	Lab 7	Lab 8	Lab 8		
					Proj 2	Proj 2	
							FINAL

- ❖ All assignments must be submitted by Dec 12

Lab Section

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- Exercises
  - Textbook
  - Internet

- Labs (Programs)
  - 8 programs
    - Continuing over 2 or more weeks

- Projects
  1. Embedded Control: Thermostat
  2. Simulation: Game playing

Projects

DSJ Dr Jeff
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❖Project 1: Embedded Control

DUE AT MIDTERM

- **Thermostat** → use Temp Conversion
  - ❑ Other examples
    - TV remote
    - Car transmission/acceleration

➢ while (true)

❖Project 2: Simulation

DUE AT FINAL

- **Card games** → use “Shuffling”
  - **Poker**
  - **Blackjack**
  - ***Thermonuclear War***
- ❑ Other examples
  - Weather → use Temp Conversion
  - Stock Market → ref my app (SMM)
  - US Economy (GDP, CPI, etc.)

➢ game playing
- random numbers

➢ Require USER GUIDE

Quizzes/Exams/Break

❖Quiz

- ➢ quarter point (4th week)
- ➢ Scantron multiple choice (short)

- ▪ Scantron only

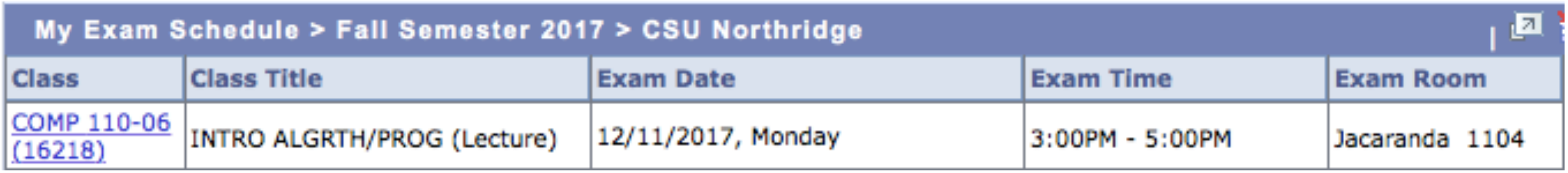
❖Midterm

- ➢ Mid course (8th week) – Wed Oct 18

- ▪ Both use Scantron +
- ▪ Write program segments

❖Final

- ➢ 16th week – Mon Dec 15



My Exam Schedule > Fall Semester 2017 > CSU Northridge

Class	Class Title	Exam Date	Exam Time	Exam Room
COMP 110-06 (16218)	INTRO ALGRTH/PROG (Lecture)	12/11/2017, Monday	3:00PM - 5:00PM	Jacaranda 1104

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Final

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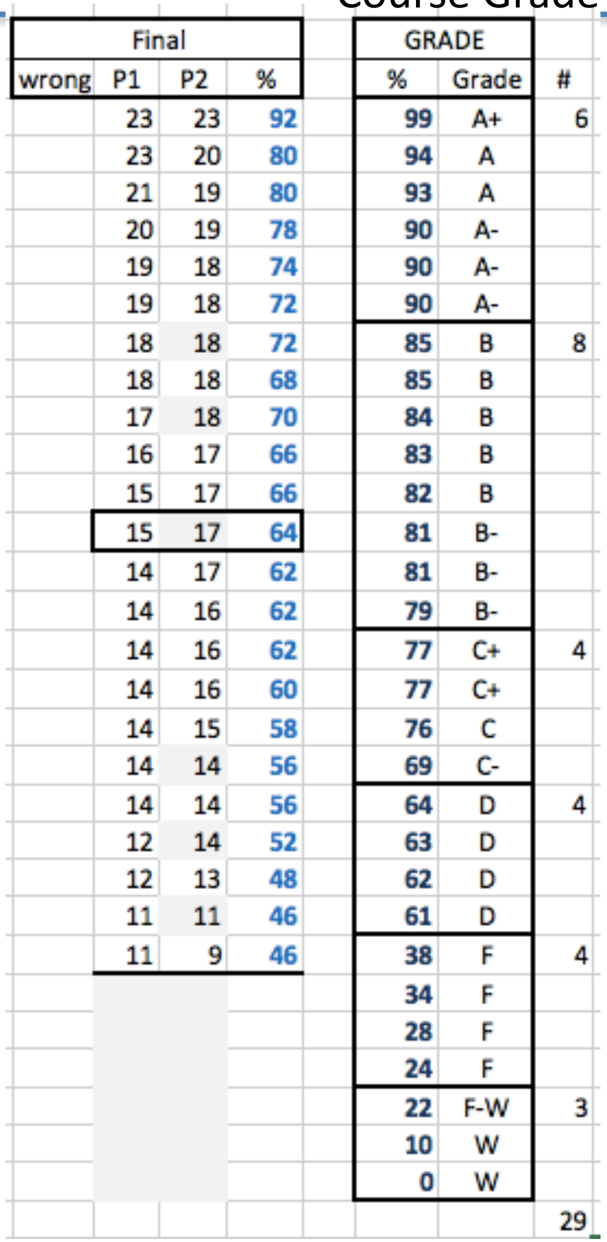
Fall 2016

Final Exam

Score distribution

Course Grade

Grade distribution



Final				GRADE		
wrong	P1	P2	%	%	Grade	#
	23	23	92	99	A+	6
	23	20	80	94	A	
	21	19	80	93	A	
	20	19	78	90	A-	
	19	18	74	90	A-	
	19	18	72	90	A-	
	18	18	72	85	B	8
	18	18	68	85	B	
	17	18	70	84	B	
	16	17	66	83	B	
	15	17	66	82	B	
	15	17	64	81	B-	
	14	17	62	81	B-	
	14	16	62	79	B-	
	14	16	62	77	C+	4
	14	16	60	77	C+	
	14	15	58	76	C	
	14	14	56	69	C-	
	14	14	56	64	D	4
	12	14	52	63	D	
	12	13	48	62	D	
	11	11	46	61	D	
	11	9	46	38	F	4
				34	F	
				28	F	
				24	F	
				22	F-W	3
				10	W	
				0	W	
						29

UW

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Final

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Course Grade

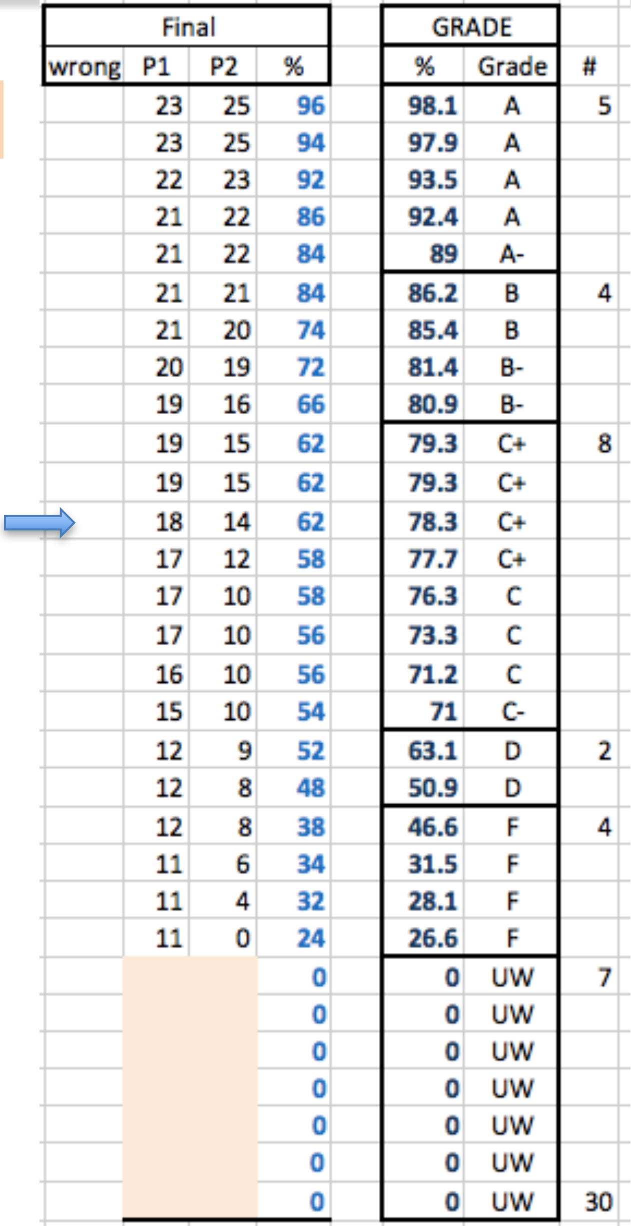
Spring 2017

Final Exam

Score distribution

Grade distribution

median



Final				GRADE		
wrong	P1	P2	%	%	Grade	#
	23	25	96	98.1	A	5
	23	25	94	97.9	A	
	22	23	92	93.5	A	
	21	22	86	92.4	A	
	21	22	84	89	A-	
	21	21	84	86.2	B	4
	21	20	74	85.4	B	
	20	19	72	81.4	B-	
	19	16	66	80.9	B-	
	19	15	62	79.3	C+	8
	19	15	62	79.3	C+	
	18	14	62	78.3	C+	
	17	12	58	77.7	C+	
	17	10	58	76.3	C	
	17	10	56	73.3	C	
	16	10	56	71.2	C	
	15	10	54	71	C-	
	12	9	52	63.1	D	2
	12	8	48	50.9	D	
	12	8	38	46.6	F	4
	11	6	34	31.5	F	
	11	4	32	28.1	F	
	11	0	24	26.6	F	
			0	0	UW	7
			0	0	UW	
			0	0	UW	
			0	0	UW	
			0	0	UW	
			0	0	UW	
			0	0	UW	30

UW

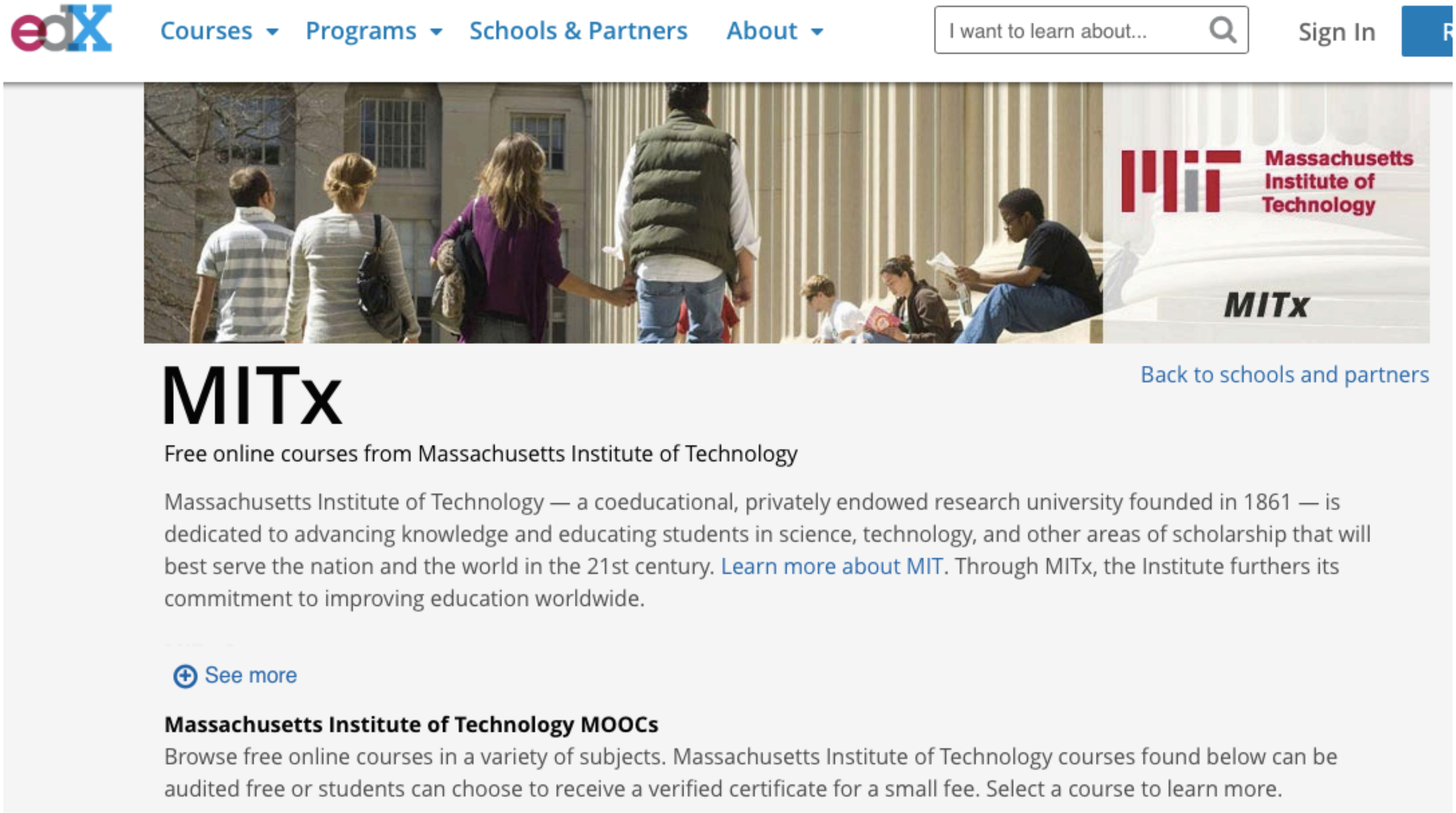
Section

Online Courses

Other Programming Courses

- **Universities**
  - MIT
  - Stanford
  - Harvard
- **Privates**
  - Online Courses
    - Code School
    - Code Academy
  - Tech “Boot Camps”
    - Udacity

MIT



Back to schools and partners

MITx

Free online courses from Massachusetts Institute of Technology

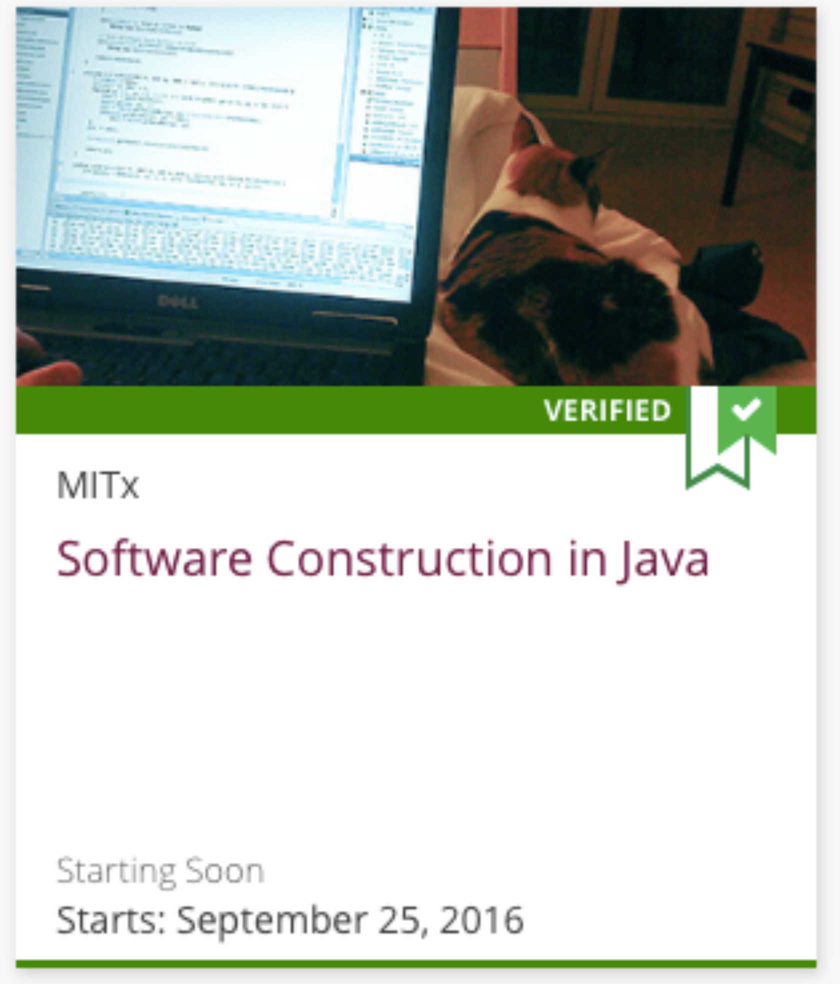
Massachusetts Institute of Technology — a coeducational, privately endowed research university founded in 1861 — is dedicated to advancing knowledge and educating students in science, technology, and other areas of scholarship that will best serve the nation and the world in the 21st century. Learn more about MIT. Through MITx, the Institute furthers its commitment to improving education worldwide.

⊕ See more

Massachusetts Institute of Technology MOOCs

Browse free online courses in a variety of subjects. Massachusetts Institute of Technology courses found below can be audited free or students can choose to receive a verified certificate for a small fee. Select a course to learn more.

MIT



VERIFIED

MITx

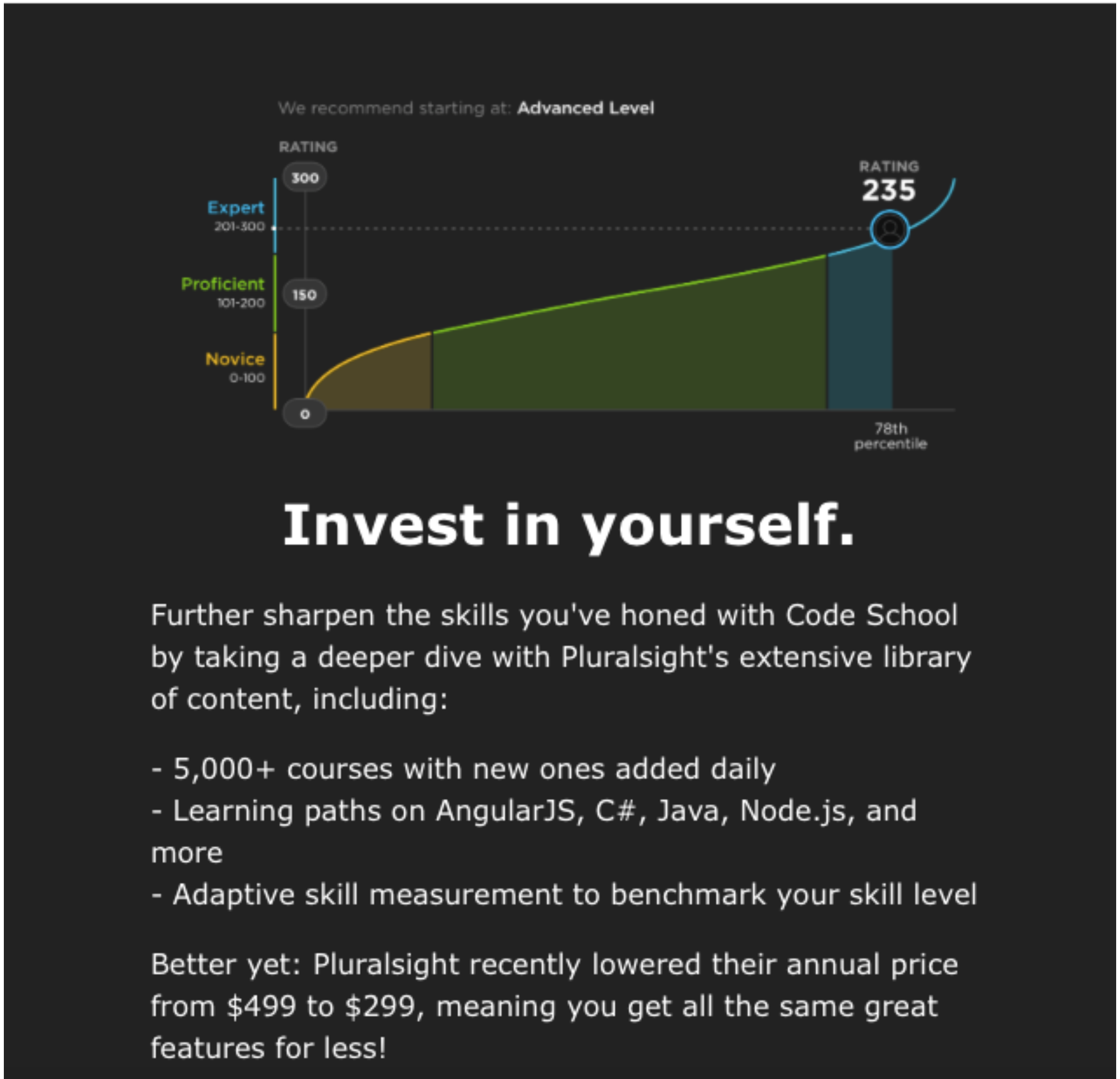
Software Construction in Java

Starting Soon

Starts: September 25, 2016

Code School

Code School



Invest in yourself.

Further sharpen the skills you've honed with Code School by taking a deeper dive with Pluralsight's extensive library of content, including:

- 5,000+ courses with new ones added daily
- Learning paths on AngularJS, C#, Java, Node.js, and more
- Adaptive skill measurement to benchmark your skill level

Better yet: Pluralsight recently lowered their annual price from $499 to $299, meaning you get all the same great features for less!

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Code School

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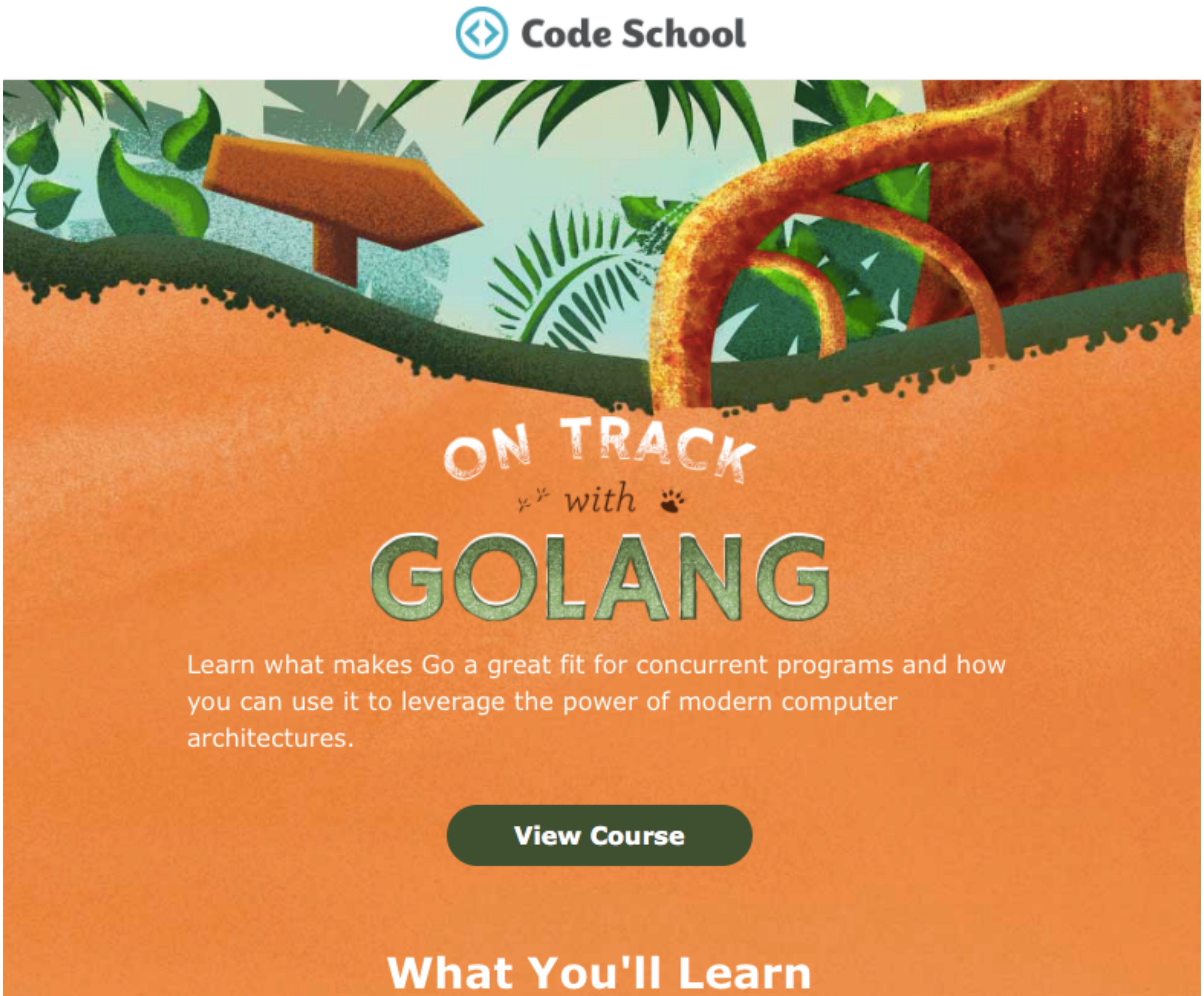


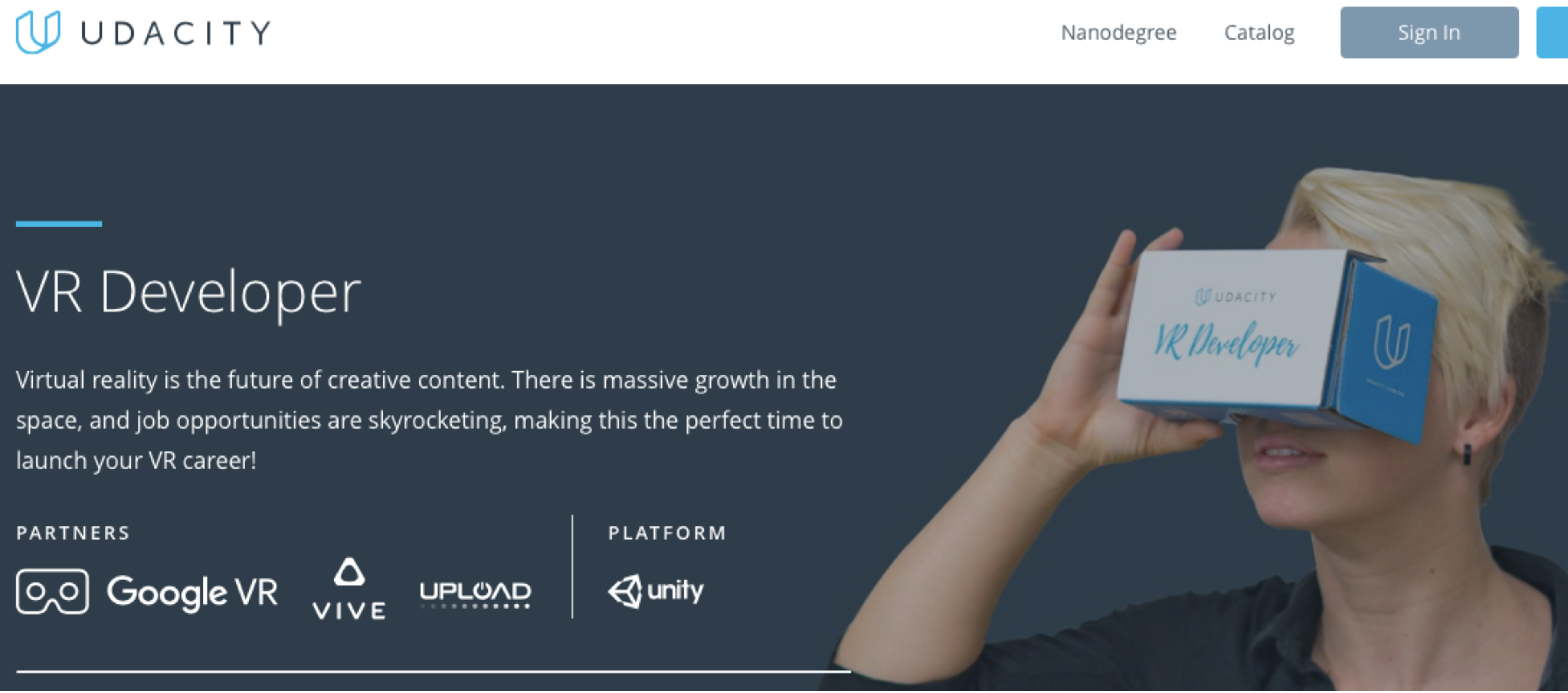
Code School

ON TRACK with GOLANG

Learn what makes Go a great fit for concurrent programs and how you can use it to leverage the power of modern computer architectures.

What You'll Learn

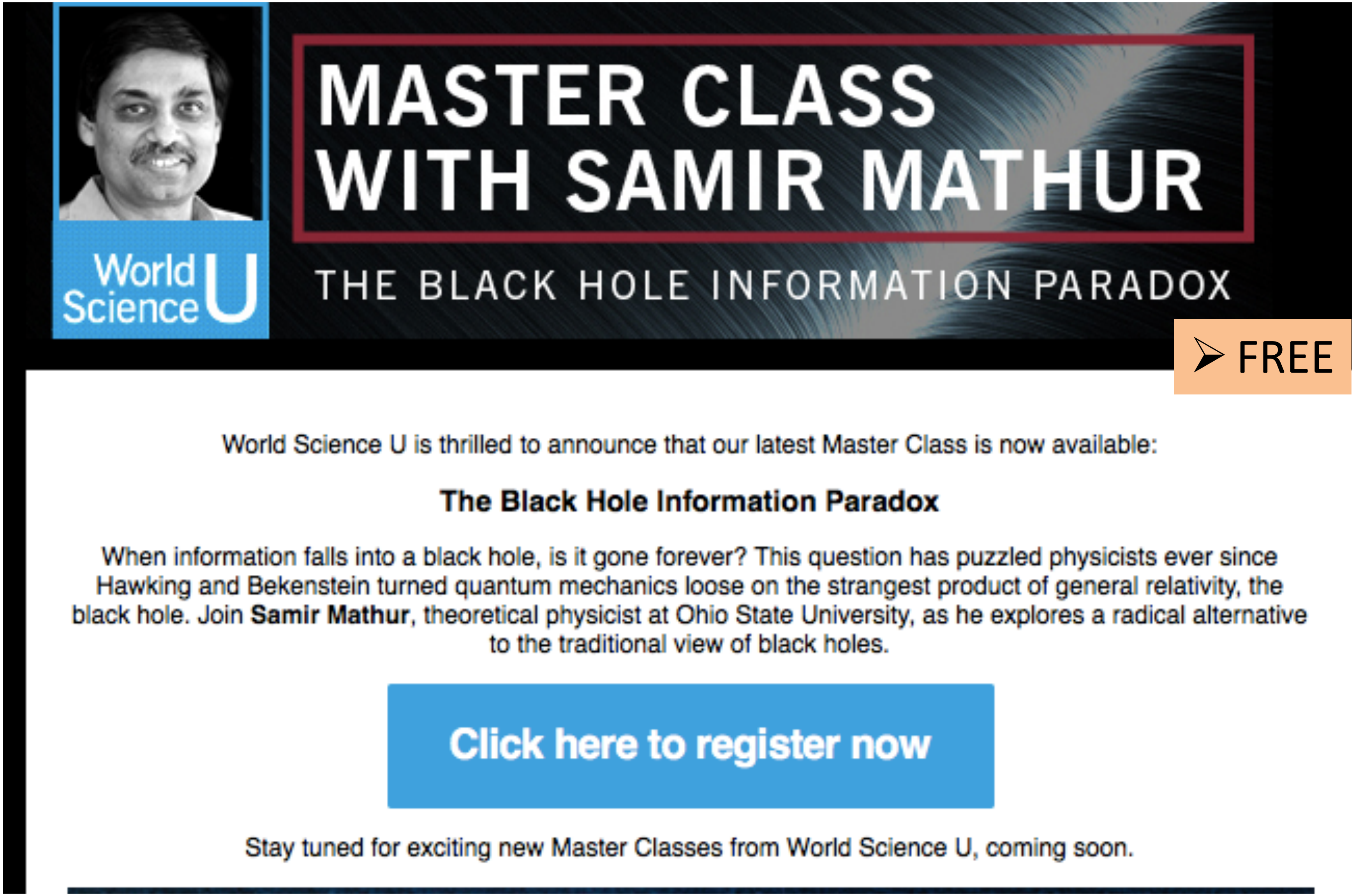
Udacity



VR Developer

Virtual reality is the future of creative content. There is massive growth in the space, and job opportunities are skyrocketing, making this the perfect time to launch your VR career!

World Science U



MASTER CLASS WITH SAMIR MATHUR

THE BLACK HOLE INFORMATION PARADOX

➢ FREE

World Science U is thrilled to announce that our latest Master Class is now available:

The Black Hole Information Paradox

When information falls into a black hole, is it gone forever? This question has puzzled physicists ever since Hawking and Bekenstein turned quantum mechanics loose on the strangest product of general relativity, the black hole. Join **Samir Mathur**, theoretical physicist at Ohio State University, as he explores a radical alternative to the traditional view of black holes.

Stay tuned for exciting new Master Classes from World Science U, coming soon.

News

New

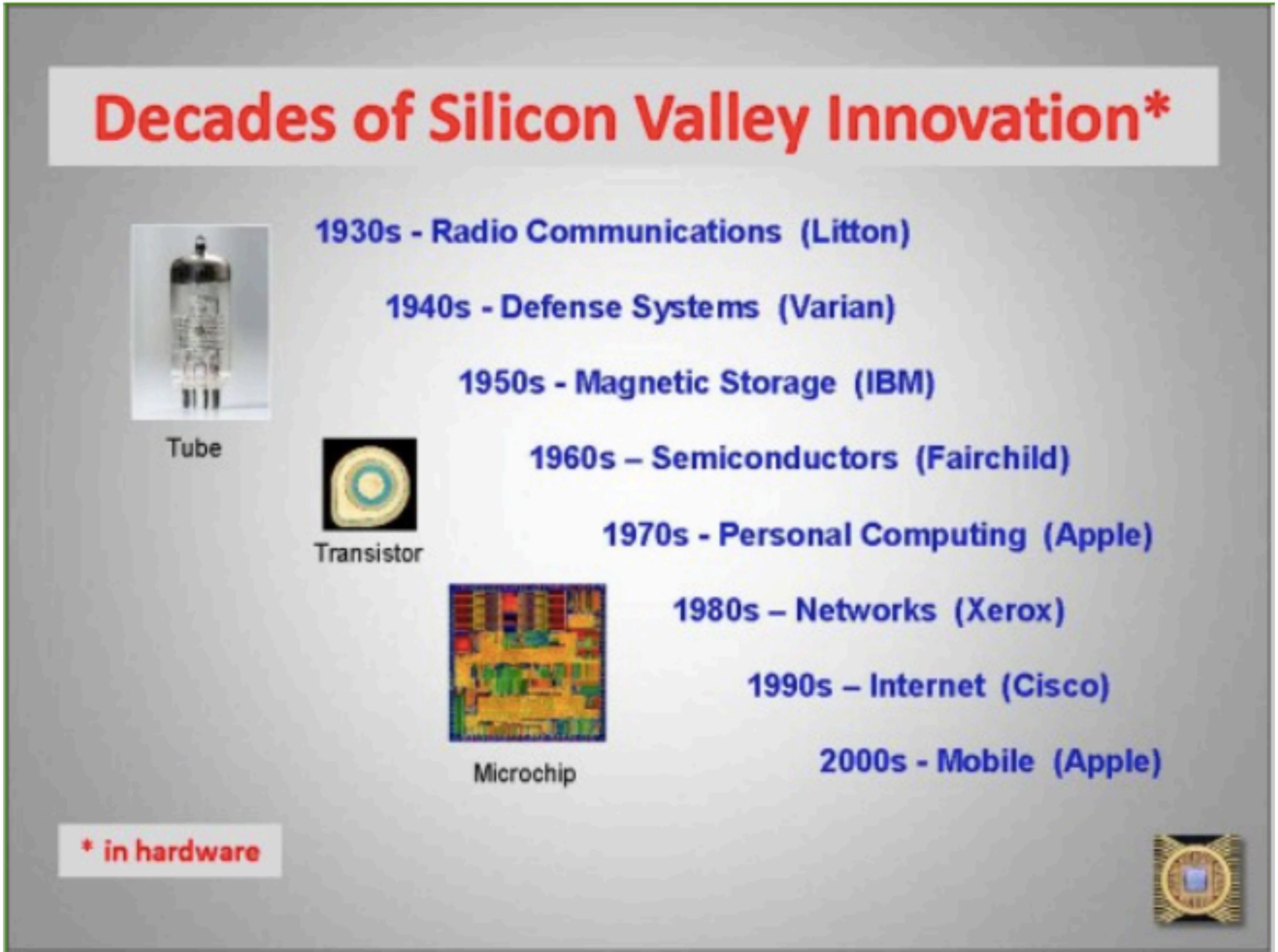
News

News

Old

News

CHM Timeline



Decades of Silicon Valley Innovation*

Tube

Transistor

Microchip

1930s - Radio Communications (Litton)

1940s - Defense Systems (Varian)

1950s - Magnetic Storage (IBM)

1960s – Semiconductors (Fairchild)

1970s - Personal Computing (Apple)

1980s – Networks (Xerox)

1990s – Internet (Cisco)

2000s - Mobile (Apple)

* in hardware

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Random Numbers

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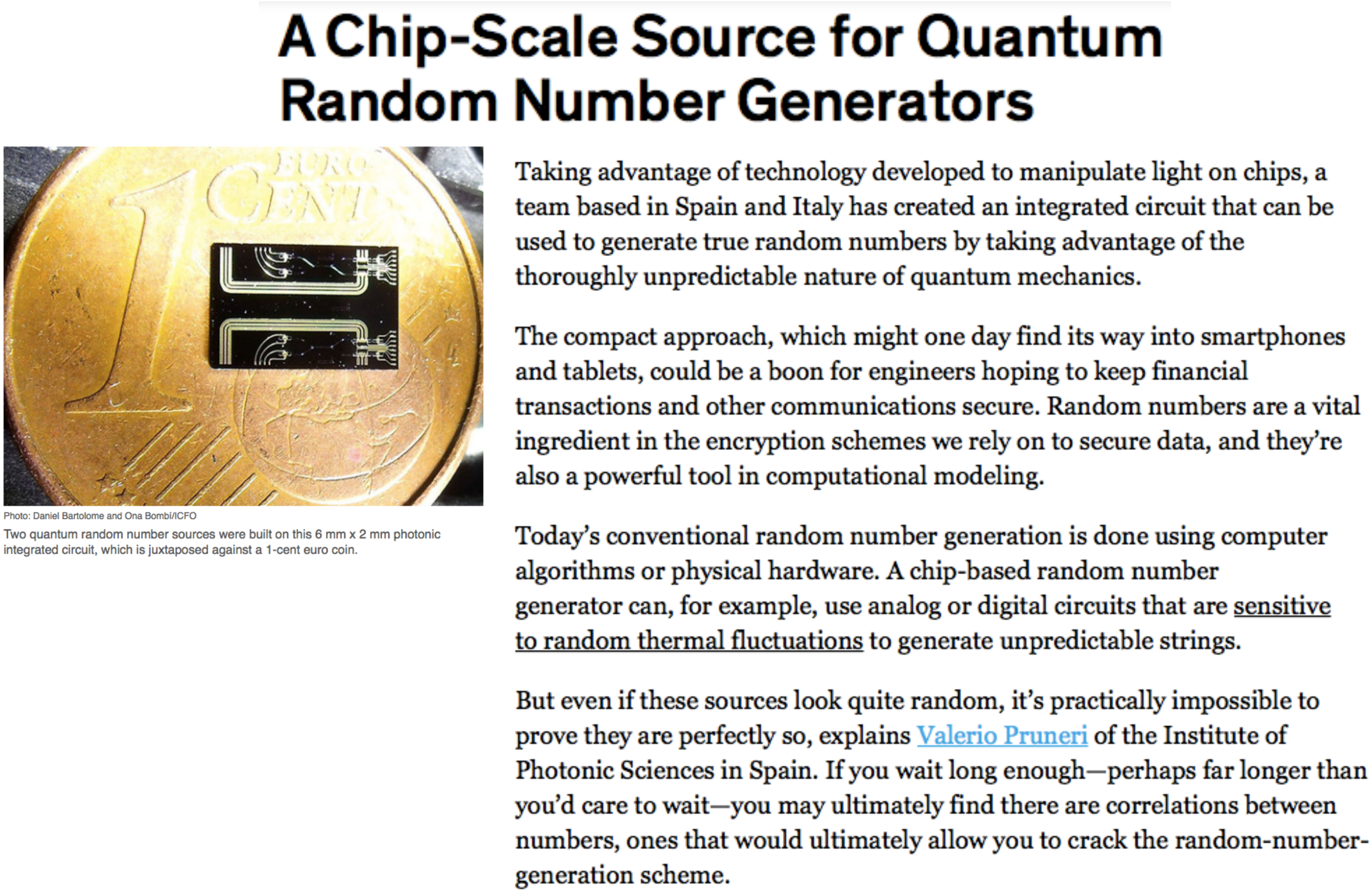

A Chip-Scale Source for Quantum Random Number Generators

Photo: Daniel Bartolome and Ona Bombi/ICFO

Two quantum random number sources were built on this 6 mm x 2 mm photonic integrated circuit, which is juxtaposed against a 1-cent euro coin.

Taking advantage of technology developed to manipulate light on chips, a team based in Spain and Italy has created an integrated circuit that can be used to generate true random numbers by taking advantage of the thoroughly unpredictable nature of quantum mechanics.

The compact approach, which might one day find its way into smartphones and tablets, could be a boon for engineers hoping to keep financial transactions and other communications secure. Random numbers are a vital ingredient in the encryption schemes we rely on to secure data, and they're also a powerful tool in computational modeling.

Today's conventional random number generation is done using computer algorithms or physical hardware. A chip-based random number generator can, for example, use analog or digital circuits that are sensitive to random thermal fluctuations to generate unpredictable strings.

But even if these sources look quite random, it's practically impossible to prove they are perfectly so, explains Valerio Pruneri of the Institute of Photonic Sciences in Spain. If you wait long enough—perhaps far longer than you'd care to wait—you may ultimately find there are correlations between numbers, ones that would ultimately allow you to crack the random-number-generation scheme.

CS Ed Globally

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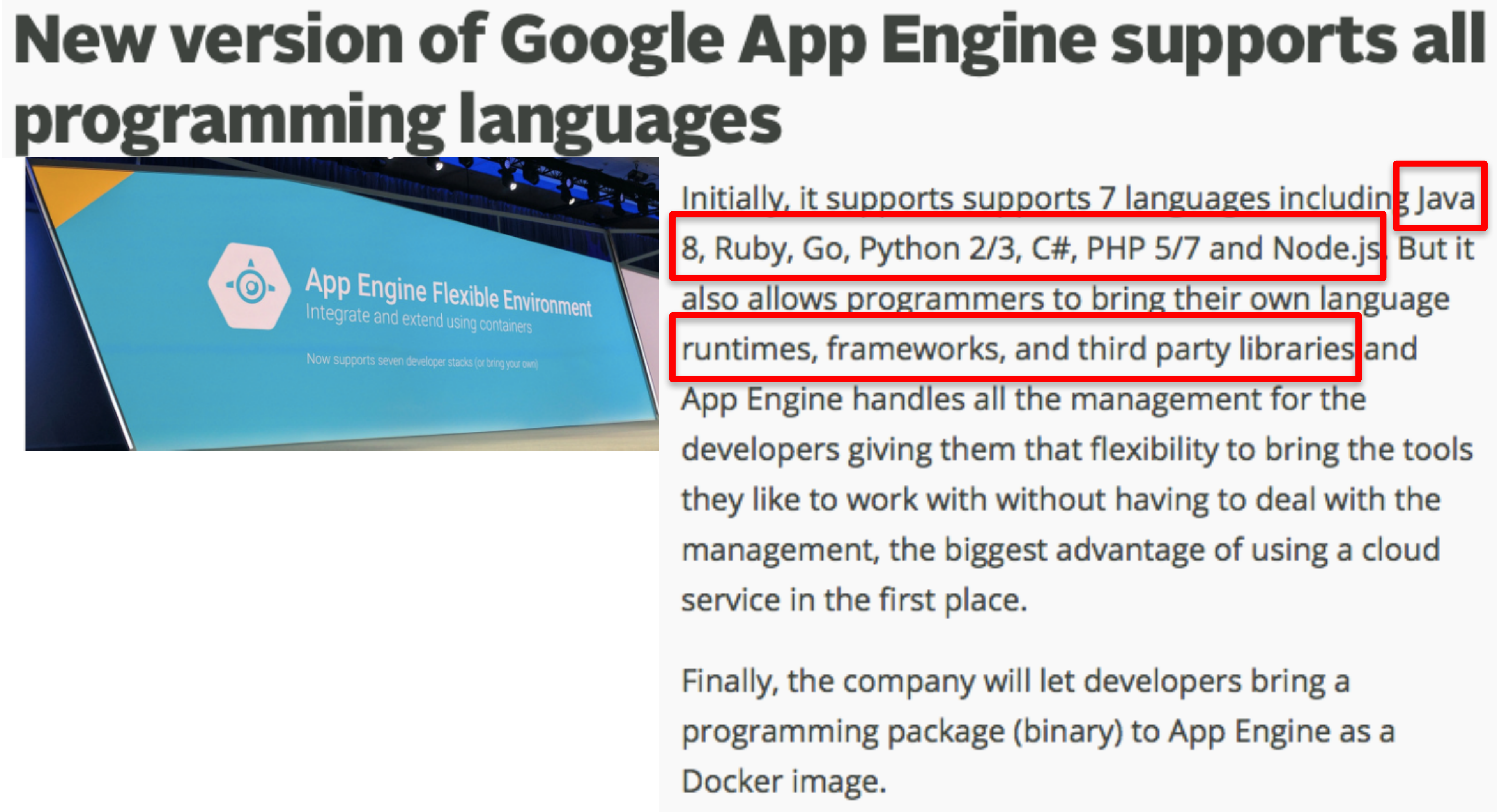
Who Would Win the Coding Olympics?
The Washington Post (08/30/16) Karen Turner

U.S. programmers landed in 28th place among their international peers in a HackerRank compilation of the results of 1.4 million coding challenges by approximately 300,000 developers. China topped the list of the most accomplished coders, followed by Russia, Poland, Switzerland, and Hungary. The ranking found China's top coding category was algorithms, while Russia's was data structures. A key factor in these nations' coding success is likely the introduction of math and computer education at a much earlier age than occurs in the U.S., says HackerRank CEO Vivek Ravisankar. "In my opinion, the U.S.'s position here mirrors a lot of the other world ranking reports, such as STEM (science, technology, engineering, and math) education performance, or even other international coding competitions," he says. Last year's Pew Research Center analysis of STEM test scores found U.S. students were middle-of-the-pack underperformers compared to those in Singapore and South Korea. Moreover, this year's International Olympiad in Informatics was led by Chinese, Russian, and Eastern European contestants, while the highest-scoring U.S. coder came in 15th place. The Chinese and Russians also scored victories at the ACM International Collegiate Programming Contest, and at Google Code Jam.

Google Cloud Apps



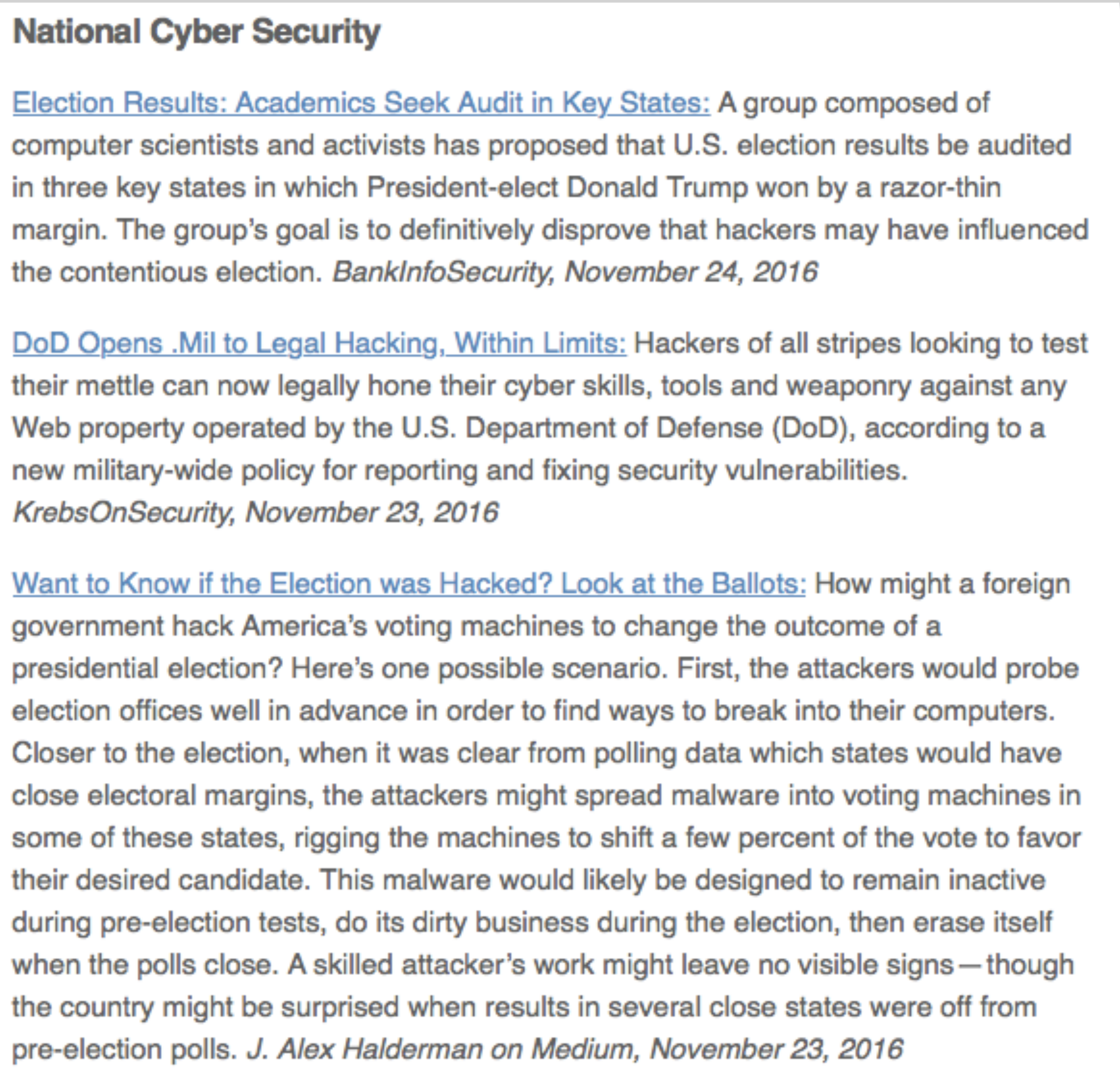
New version of Google App Engine supports all programming languages

App Engine Flexible Environment
Integrate and extend using containers
Now supports seven developer stacks (or bring your own)

Initially, it supports supports 7 languages including Java 8, Ruby, Go, Python 2/3, C#, PHP 5/7 and Node.js. But it also allows programmers to bring their own language runtimes, frameworks, and third party libraries and App Engine handles all the management for the developers giving them that flexibility to bring the tools they like to work with without having to deal with the management, the biggest advantage of using a cloud service in the first place.

Finally, the company will let developers bring a programming package (binary) to App Engine as a Docker image.

Cybersecurity



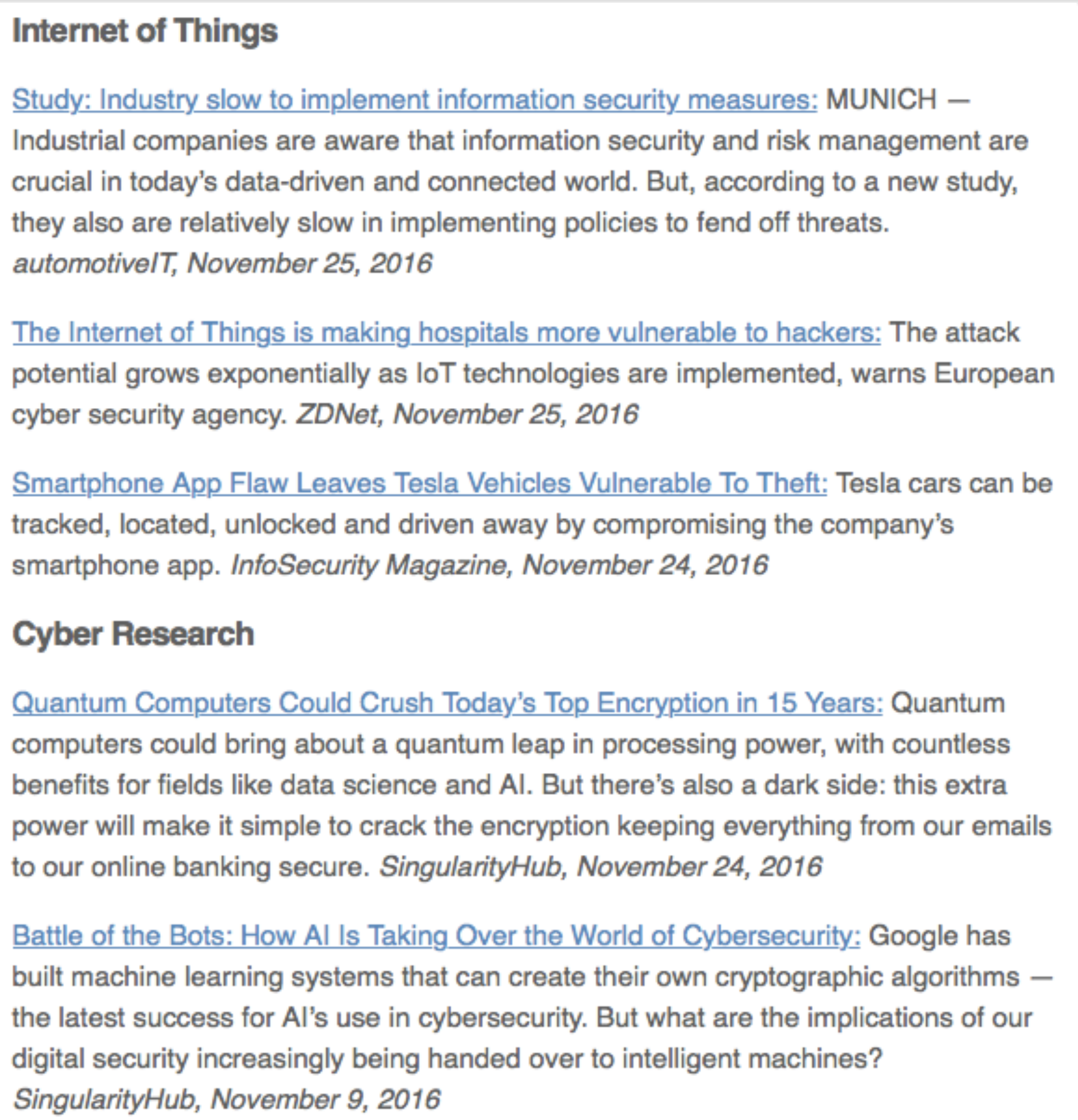
National Cyber Security

Election Results: Academics Seek Audit in Key States: A group composed of computer scientists and activists has proposed that U.S. election results be audited in three key states in which President-elect Donald Trump won by a razor-thin margin. The group's goal is to definitively disprove that hackers may have influenced the contentious election. *BankInfoSecurity, November 24, 2016*

DoD Opens .Mil to Legal Hacking, Within Limits: Hackers of all stripes looking to test their mettle can now legally hone their cyber skills, tools and weaponry against any Web property operated by the U.S. Department of Defense (DoD), according to a new military-wide policy for reporting and fixing security vulnerabilities. *KrebsOnSecurity, November 23, 2016*

Want to Know if the Election was Hacked? Look at the Ballots: How might a foreign government hack America's voting machines to change the outcome of a presidential election? Here's one possible scenario. First, the attackers would probe election offices well in advance in order to find ways to break into their computers. Closer to the election, when it was clear from polling data which states would have close electoral margins, the attackers might spread malware into voting machines in some of these states, rigging the machines to shift a few percent of the vote to favor their desired candidate. This malware would likely be designed to remain inactive during pre-election tests, do its dirty business during the election, then erase itself when the polls close. A skilled attacker's work might leave no visible signs — though the country might be surprised when results in several close states were off from pre-election polls. *J. Alex Halderman on Medium, November 23, 2016*

Cybersecurity



Internet of Things

Study: Industry slow to implement information security measures: MUNICH — Industrial companies are aware that information security and risk management are crucial in today's data-driven and connected world. But, according to a new study, they also are relatively slow in implementing policies to fend off threats. *automotiveIT, November 25, 2016*

The Internet of Things is making hospitals more vulnerable to hackers: The attack potential grows exponentially as IoT technologies are implemented, warns European cyber security agency. *ZDNet, November 25, 2016*

Smartphone App Flaw Leaves Tesla Vehicles Vulnerable To Theft: Tesla cars can be tracked, located, unlocked and driven away by compromising the company's smartphone app. *InfoSecurity Magazine, November 24, 2016*

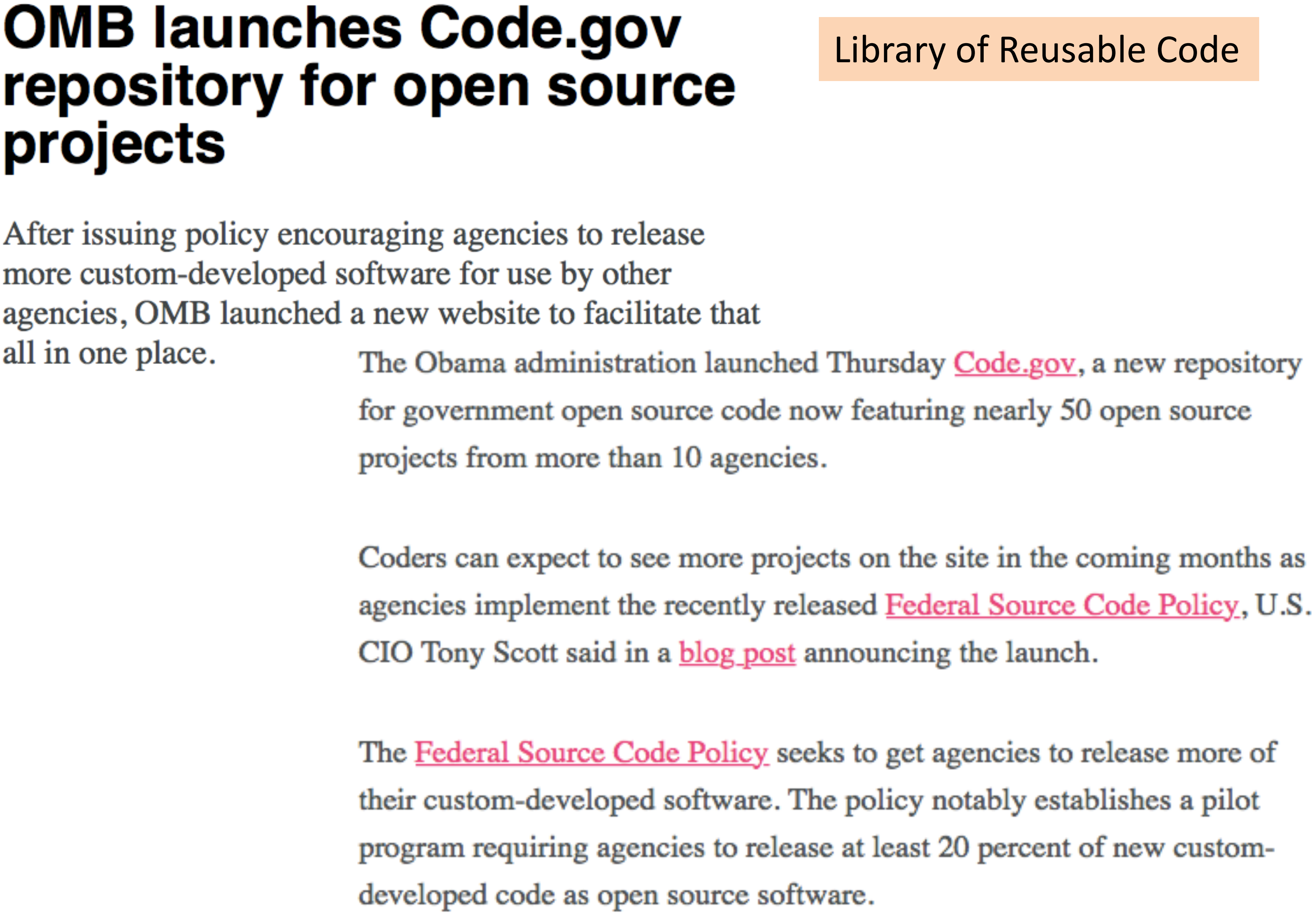
Cyber Research

Quantum Computers Could Crush Today's Top Encryption in 15 Years: Quantum computers could bring about a quantum leap in processing power, with countless benefits for fields like data science and AI. But there's also a dark side: this extra power will make it simple to crack the encryption keeping everything from our emails to our online banking secure. *SingularityHub, November 24, 2016*

Battle of the Bots: How AI Is Taking Over the World of Cybersecurity: Google has built machine learning systems that can create their own cryptographic algorithms — the latest success for AI's use in cybersecurity. But what are the implications of our digital security increasingly being handed over to intelligent machines? *SingularityHub, November 9, 2016*

Fed Govt Open Source

Library of Reusable Code



OMB launches Code.gov repository for open source projects

After issuing policy encouraging agencies to release more custom-developed software for use by other agencies, OMB launched a new website to facilitate that all in one place.

The Obama administration launched Thursday Code.gov, a new repository for government open source code now featuring nearly 50 open source projects from more than 10 agencies.

Coders can expect to see more projects on the site in the coming months as agencies implement the recently released Federal Source Code Policy, U.S. CIO Tony Scott said in a blog post announcing the launch.

The Federal Source Code Policy seeks to get agencies to release more of their custom-developed software. The policy notably establishes a pilot program requiring agencies to release at least 20 percent of new custom-developed code as open source software.

Data-Oriented Dev

Around 2008 I was being interviewed for a job in the finance industry. The guys at the interview were asking me to design classes for Animal/Dog/Cat and methods like Animal.Speak, etc. The classical OOP example. I was trying to explain them that you can do OOP, but if you're going to have thousands of objects it would make more sense to proceed DOD (data-oriented-development) and procedural programming, because that will run faster and will be more thread friendly in the end. I didn't get the job. As a feedback I was told that they thought that I didn't ***get*** OOP :) I laughed and I was glad to find a job elsewhere. I was coming from game development where DOD was a new trend (at least at DICE/Electronic Arts). If you wanted your game to work fast on PS3 you had to think about your data layouts. You had to slice up your data into minimal streams that are processed in one go in order to avoid jumping all over the memory. Writing code in procedural way goes hand in hand with that. It's much easier to parallelise your code if it's written in procedural, rather than OOP way.

I don't think this DOD and procedural programming will be a new trend. It never became one in mainstream development, because such top notch high-performance is not an issue in 99% of applications.

However, if anything were to replace OOP it can't be other than DOD. Nonetheless, I would highly recommend to familiarise yourself with DOD and procedural programming if you're interested in high performance computing.

47th Internet Anniversary

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2017

UCLA ENGINEERING
Henry Samueli School of
Engineering and Applied Science

Birthplace of the Internet

Happy Birthday, Internet!

To help us celebrate the birthday of the Internet
you and a guest are invited to attend a special screening of

LO and BEHOLD

Featuring a Q&A session with
Leonard Kleinrock
Emeritus Distinguished Professor of Compute

DATE
Saturday, October 29, 2016

TIME
2:30 p.m.
Doors open at 2:00 p.m.

LOCATION
Boelter Hall 3400
UCLA Henry Samueli School
of Engineering and Applied Science
Los Angeles, CA 90095

Movie snacks will be provided.

Engineering Salaries

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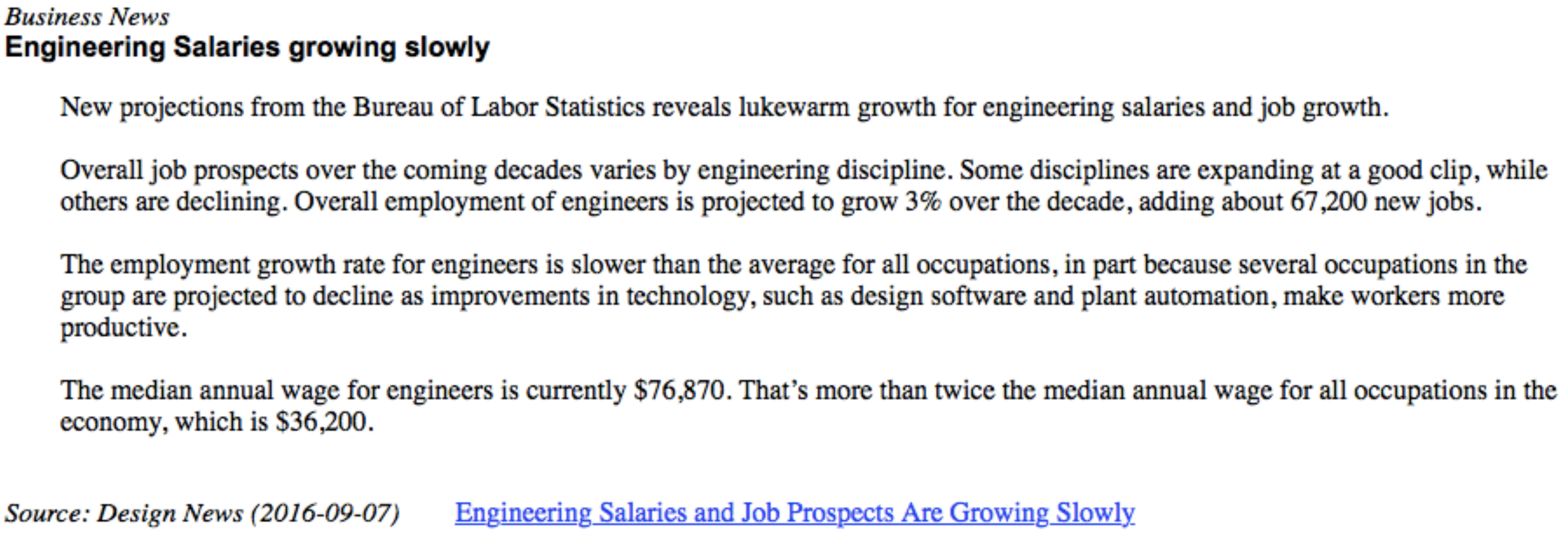


Business News

Engineering Salaries growing slowly

New projections from the Bureau of Labor Statistics reveals lukewarm growth for engineering salaries and job growth.

Overall job prospects over the coming decades varies by engineering discipline. Some disciplines are expanding at a good clip, while others are declining. Overall employment of engineers is projected to grow 3% over the decade, adding about 67,200 new jobs.

The employment growth rate for engineers is slower than the average for all occupations, in part because several occupations in the group are projected to decline as improvements in technology, such as design software and plant automation, make workers more productive.

The median annual wage for engineers is currently $76,870. That's more than twice the median annual wage for all occupations in the economy, which is $36,200.

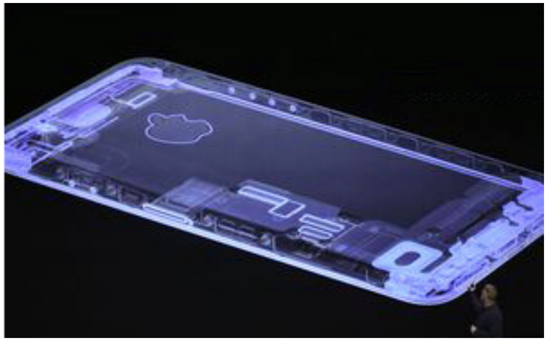
Source: Design News (2016-09-07) [Engineering Salaries and Job Prospects Are Growing Slowly]

Smartphones

- ❖ Samsung Galaxy Note 7 ➢ ON FIRE!
  - ❑ Biometrics for authentication
    - ➢ Iris scan
    - ➢ Fingerprints

- ❖ Apple iPhone 7
  - ❑ Wireless headphones
  - ❑ Biometrics for authentication
    - ➢ Iris scan?
    - ➢ Fingerprints
  - ❑ iOS 10
    - ➢ 10.0.1

Apple intros totally wireless AirPods that use new W1 chip



http://www.cnet.com/news/apple-unveils-new-iphone-7-is-a-familiar-phone-for-unfamiliar-challenges/?ftag=CAD-04-10aac3a&bhid=23599471486470272123438436875388&ftag=CAD-04-10aac3a

Acquisitions

- ❖ Broadcom buying Brocade
  - ❑ For **$6B**
- ❖ Qualcomm buying NXP Semi
  - ❑ For **$3.8B**
- ❖ AT&T buying Time-Warner
  - ❑ For **$85B**
- ❖ Oracle buying Netsuite
  - ❑ For **$9.3B**
- ❖ Verizon buying Yahoo
  - ❑ For **$4.8B**
- ❖ Softbank buying ARM
  - ❑ For **$32B**
- ❖ Microsoft buying LinkedIn
  - ❑ For **$26B**
    - ○ MS is $88B (revs)
    - ○ LI is $3.4B

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Rankings – 2016 Q1/2

1. Google ↑
   - ❑ 88% of global search
   - ❑ $21.5B (Q2) $20.3B(Q1) $21.3B
2. Facebook ↑
   - ❑ 1.7B active mbrs (DAU=45%)
   - ❑ $6.4B (Q2) $5.4B (Q1) $5.8B (Q4)
   - ❑ Mobile is 82% of ads
3. Yahoo
   - ❑ $1.3B (Q2) $1.1B (Q1) $1.3B (Q4)
4. Twitter ↓
   - ❑ 310M members (DAU=45%)
   - ❑ $602M(Q1) $595M (Q1) $710M (Q4)
5. LinkedIn →
   - ❑ 106M members
   - ❑ $933M (Q2) $861M (Q1)
6. Netflix ↓
   - ❑ 81.5M subscribers (58% US)
   - ❑ $2.1B (Q2) $1.96B (Q1) $1.8B (Q4)

1 Apple ↑
- ❑ $42.4B (Q2) $51.2B (Q1) $75.9B (Q4)
- ❑ 75% rev iPhones; GM=38%
- ❑ 40.4M(51) iPh, 10M(10) iPads, 6M iW

2 AT&T
- ❑ $40.5B (Q1) $42.1B (Q4) $39.1B (Q3)

3 GM
- ❑ $38.8B (Q3) Ford $39.5B (Q2) $35.3B

4 Amazon
- ❑ $30.4B (Q2) $29.1B(Q1) $35.8B $25.4B

5 IBM
- ❑ $20.2B (Q2) $18.7B (Q1) $22.1B (Q4)

6 Microsoft
- ❑ $22.6B (Q2) $22.1B (Q1) $21.7B (Q3)

7 Intel ↓
- ❑ $13.5B (Q2) $13.8B (Q1) $14.9B (Q4)

8 Cisco
- ❑ $11.8B (Q4)

9 Ebay 10 Tesla $1.6B (Q2) $1.6B $1.75B
- ❑ $2.2B (Q2) $2.0B (Q1) $2.3B (Q4)

Rankings – 2016 Q3

1. Google
   - □ 88% of global search
   - □ $xxxB (Q3) $21.5B(Q2) $20.3B
2. Facebook
   - □ 1.7B active mbrs (DAU=45%)
   - □ $xxxB (Q3) $6.4B (Q2) $5.4B
   - □ Mobile is 82% of ads
3. Yahoo
   - □ $1.3B (Q3) $1.3B (Q2) $1.3B (Q1)
4. Twitter
   - □ 310M members (DAU=45%)
   - □ $xxxM(Q3) $602M (Q2) $595M
5. LinkedIn
   - □ 106M members
   - □ $xxxM (Q3) $933M (Q2) $861M
6. Netflix
   - □ 81.9M subscribers (58% US)
   - □ $2.5B (Q3) $2.1B (Q2) $2.0B (Q1)
7. Ebay
   - □ $2.2B (Q2) $2.0B (Q1) $2.3B (Q4)

1 Apple
- □ $42.4B (Q2) $51.2B (Q1) $75.9B (Q4)
- □ 75% rev iPhones; GM=38%
- □ 40.4M(51) iPh, 10M(10) iPads, 6M iW

2 AT&T
- □ $40.5B (Q1) $42.1B (Q4) $39.1B (Q3)

3 GM
- □ $38.8B (Q3) Ford $39.5B (Q2) $35.3B

4 Amazon
- □ $30.4B (Q2) $29.1B(Q1) $35.8B $25.4B

5 IBM
- □ $20.2B (Q2) $18.7B (Q1) $22.1B (Q4)

6 Microsoft
- □ $22.6B (Q2) $22.1B (Q1) $21.7B (Q3)

7 Intel
- □ $15.8B (Q3) $13.6B (Q2) $13.8B (Q1)

8 Cisco
- □ $11.8B (Q4)

9 Tesla $1.6B (Q2) $1.6B $1.75B

Section

Exam Prep

Quiz Prep

- ❖ Java SDK/IDE
- ❖ Identifiers
- ❖ ALU expressions
- ❖ Conditionals:
  - □ IF-THEN-ELSE
  - □ Switch-Case
- ❖ Loops
- ❖ Strings
- ❖ I/O
  - □ Console
  - □ GUI (Swing)
- ❖ Labs 1 & 2

total = 15

➢ Open book (notes, PC, Internet)

Quiz Prep: ALU

- Arithmetic expressions
  - Operator precedence (implicit/explicit)
- Logic expressions
  - Operator precedence
  - Relational (< == > != <= >=)
  - Boolean (&& || ^ !)
    - T or F dominance in AND, OR

Quiz– Spring 2017

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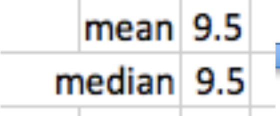
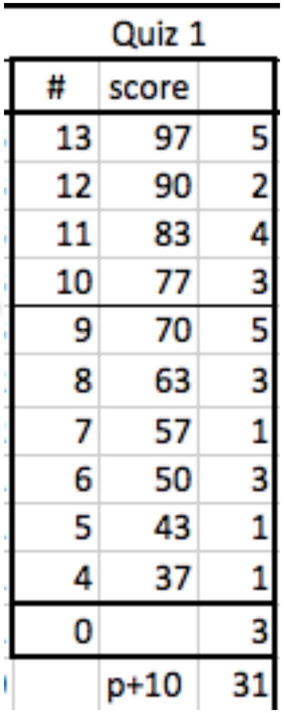
Score distribution

+10% adjustment

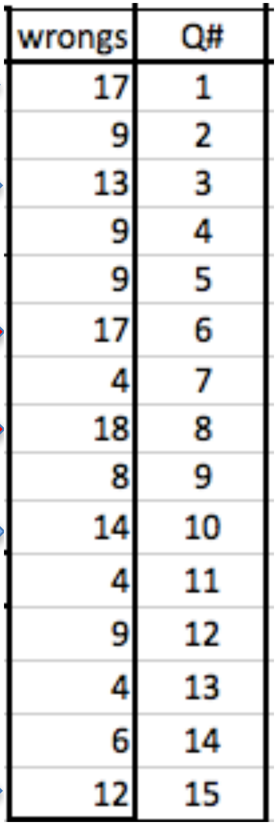


mean	9.5
median	9.5



Quiz 1		
#	score	
13	97	5
12	90	2
11	83	4
10	77	3
9	70	5
8	63	3
7	57	1
6	50	3
5	43	1
4	37	1
0		3
	p+10	31

mean = median 73.5



wrongs	Q#
17	1
9	2
13	3
9	4
9	5
17	6
4	7
18	8
8	9
14	10
4	11
9	12
4	13
6	14
12	15

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Quiz– Fall 2016

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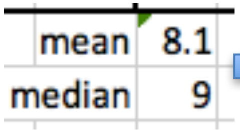
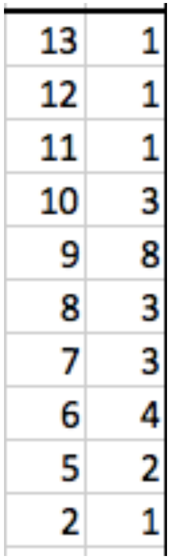


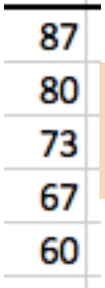
mean	8.1
median	9

Score distribution



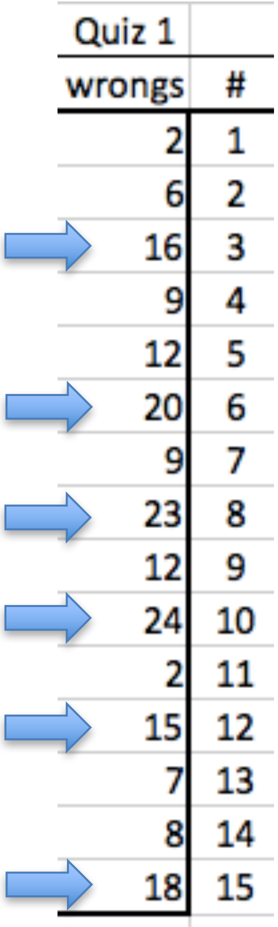
13	1
12	1
11	1
10	3
9	8
8	3
7	3
6	4
5	2
2	1

pct



87
80
73
67
60

+10% adjustment



Quiz 1	
wrongs	#
2	1
6	2
16	3
9	4
12	5
20	6
9	7
23	8
12	9
24	10
2	11
15	12
7	13
8	14
18	15

Midterm Prep

- ❖ ALU expressions (5)
- ❖ Switch-Case (1)
- ❖ Strings (2)
- ❖ Arrays (2)
- ❖ Quiz top 3 (3)
- ❖ Labs 2-4 (3)

total = 16

- ❖ Write code (3 @3 each)

total = 9

Grand total = 25

- ➢ Open book (notes, PC, Internet)

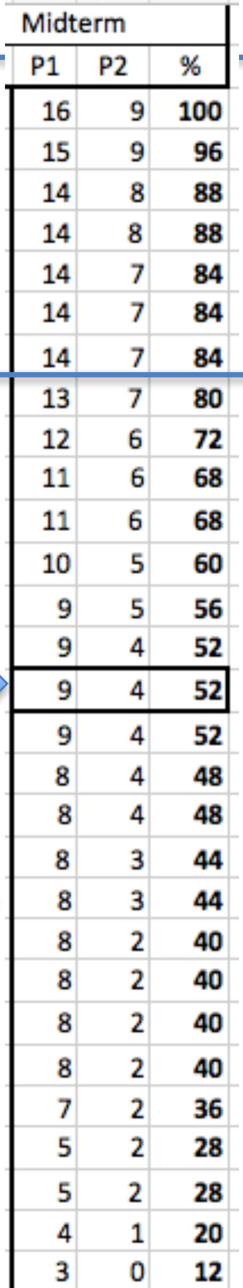
- ❖ 1 hour total – half hour each
  - ➢ Part 1: @2 min each = 32 min
  - ➢ Part 2: @10 min each = 30 min

Midterm – Spring 2017

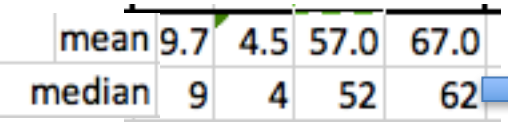
Score distribution

pct

+10% adjustment



Midterm		
P1	P2	%
16	9	100
15	9	96
14	8	88
14	8	88
14	7	84
14	7	84
14	7	84
13	7	80
12	6	72
11	6	68
11	6	68
10	5	60
9	5	56
9	4	52
9	4	52
9	4	52
8	4	48
8	4	48
8	3	44
8	3	44
8	2	40
8	2	40
8	2	40
8	2	40
7	2	36
5	2	28
5	2	28
4	1	20
3	0	12



mean	9.7	4.5	57.0	67.0
median	9	4	52	62

50%

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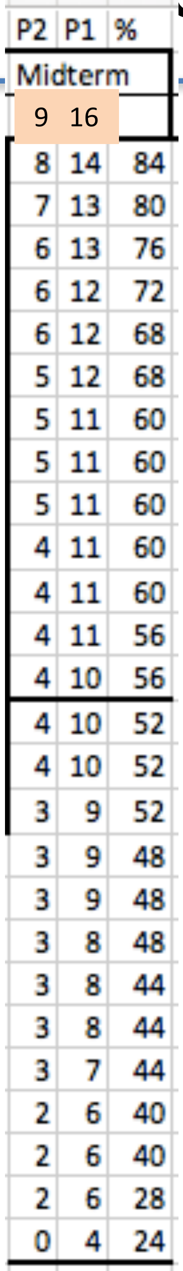
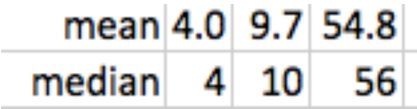
Score distribution



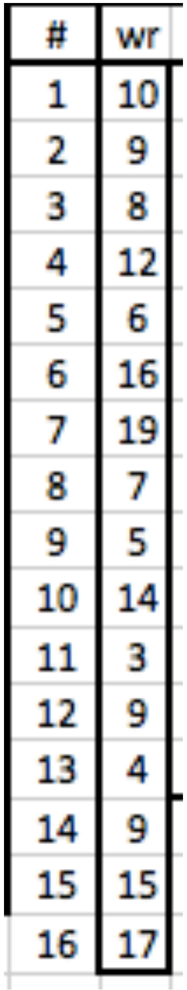
P2	P1	%
Midterm		
9	16	
8	14	84
7	13	80
6	13	76
6	12	72
6	12	68
5	12	68
5	11	60
5	11	60
5	11	60
4	11	60
4	11	60
4	11	56
4	10	56
4	10	52
4	10	52
3	9	52
3	9	48
3	9	48
3	8	48
3	8	44
3	8	44
3	7	44
2	6	40
2	6	40
2	6	28
0	4	24

pct

+15% adjustment

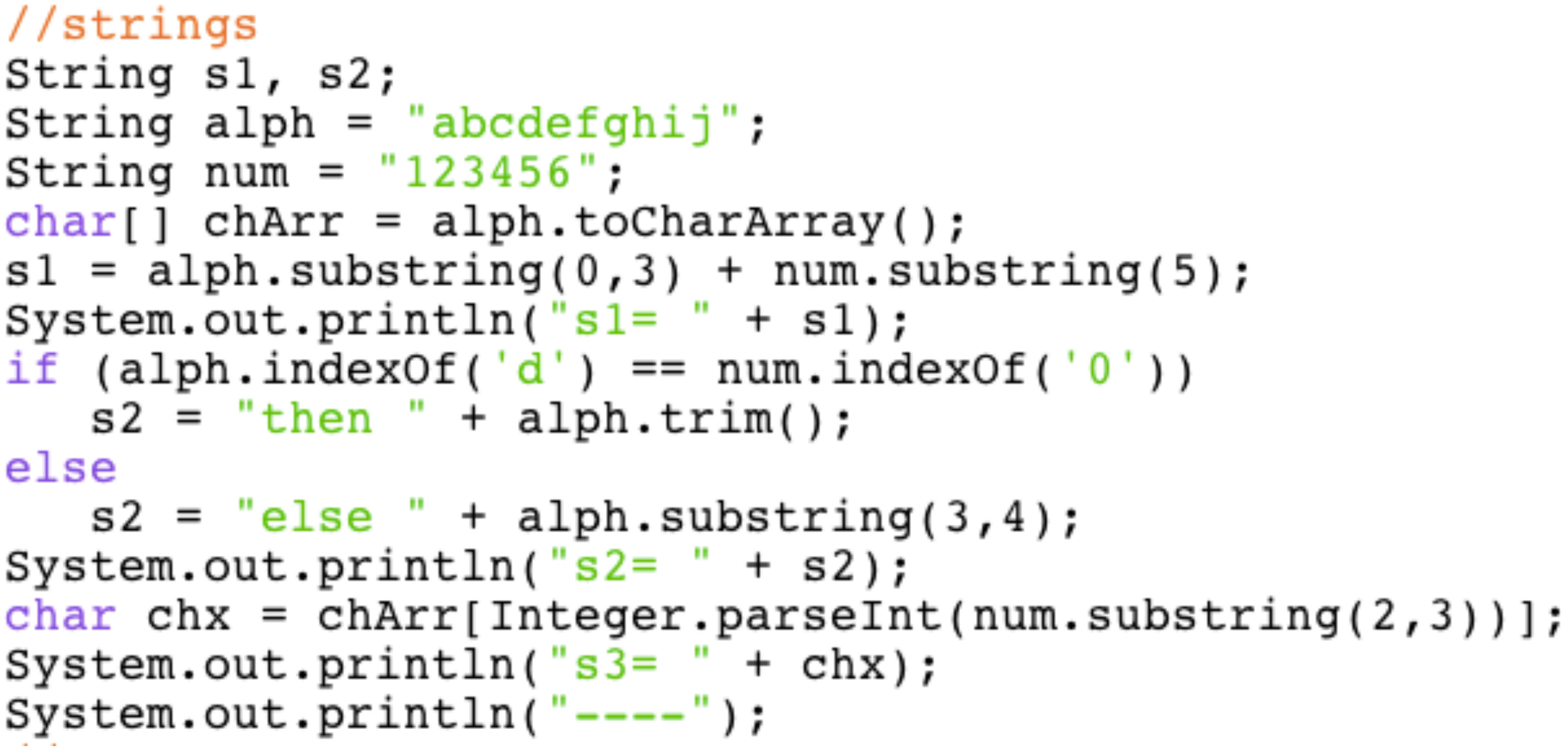


mean	4.0	9.7	54.8
median	4	10	56

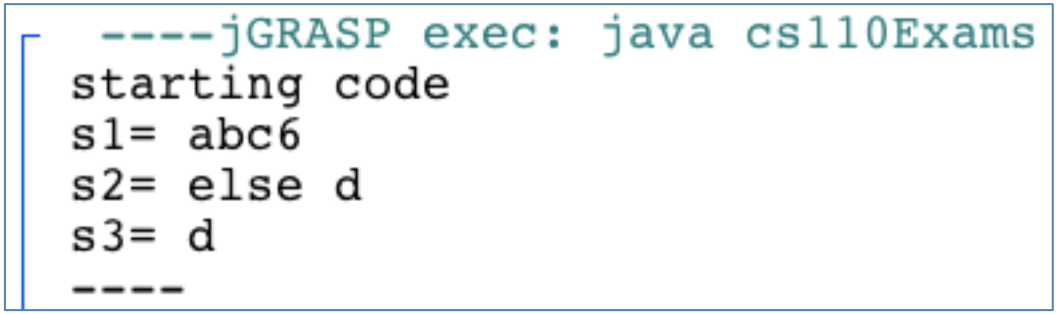


#	wr
1	10
2	9
3	8
4	12
5	6
6	16
7	19
8	7
9	5
10	14
11	3
12	9
13	4
14	9
15	15
16	17

Midterm Examples—Strings



```
//strings
String s1, s2;
String alph = "abcdefghij";
String num = "123456";
char[] chArr = alph.toCharArray();
s1 = alph.substring(0,3) + num.substring(5);
System.out.println("s1= " + s1);
if (alph.indexOf('d') == num.indexOf('0'))
   s2 = "then " + alph.trim();
else
   s2 = "else " + alph.substring(3,4);
System.out.println("s2= " + s2);
char chx = chArr[Integer.parseInt(num.substring(2,3))];
System.out.println("s3= " + chx);
System.out.println("----");
```



```
  ----jGRASP exec: java cs110Exams
 starting code
 s1= abc6
 s2= else d
 s3= d
 ----
```

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Midterm Examples—Arrays

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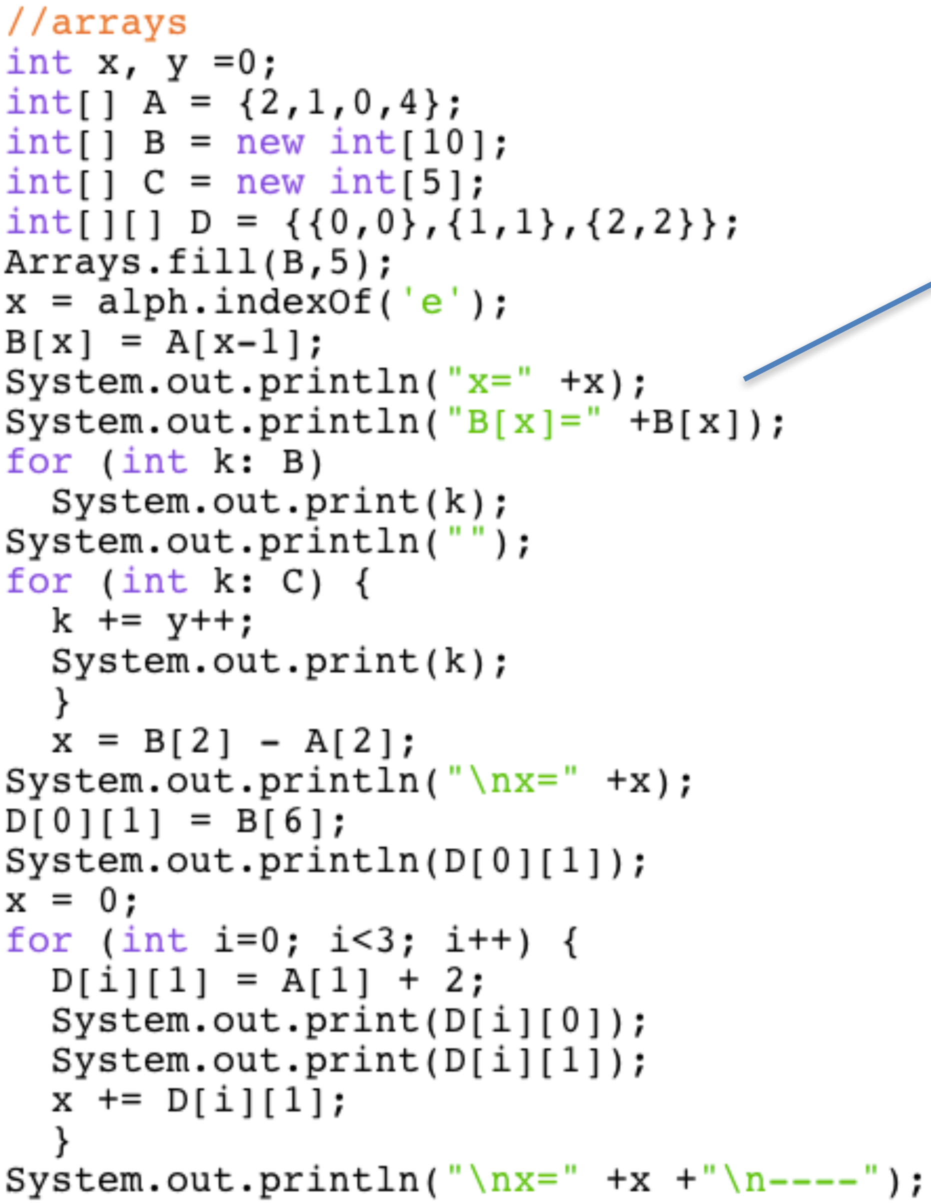
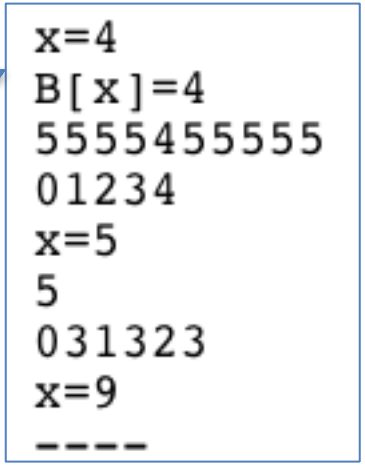


```
//arrays
int x, y =0;
int[] A = {2,1,0,4};
int[] B = new int[10];
int[] C = new int[5];
int[][] D = {{0,0},{1,1},{2,2}};
Arrays.fill(B,5);
x = alph.indexOf('e');
B[x] = A[x-1];
System.out.println("x=" +x);
System.out.println("B[x]=" +B[x]);
for (int k: B)
  System.out.print(k);
System.out.println("");
for (int k: C) {
  k += y++;
  System.out.print(k);
  }
  x = B[2] - A[2];
System.out.println("\nx=" +x);
D[0][1] = B[6];
System.out.println(D[0][1]);
x = 0;
for (int i=0; i<3; i++) {
  D[i][1] = A[1] + 2;
  System.out.print(D[i][0]);
  System.out.print(D[i][1]);
  x += D[i][1];
  }
System.out.println("\nx=" +x +"\n----");
```



```
x=4
B[x]=4
5555455555
01234
x=5
5
031323
x=9
----
```

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Midterm Review

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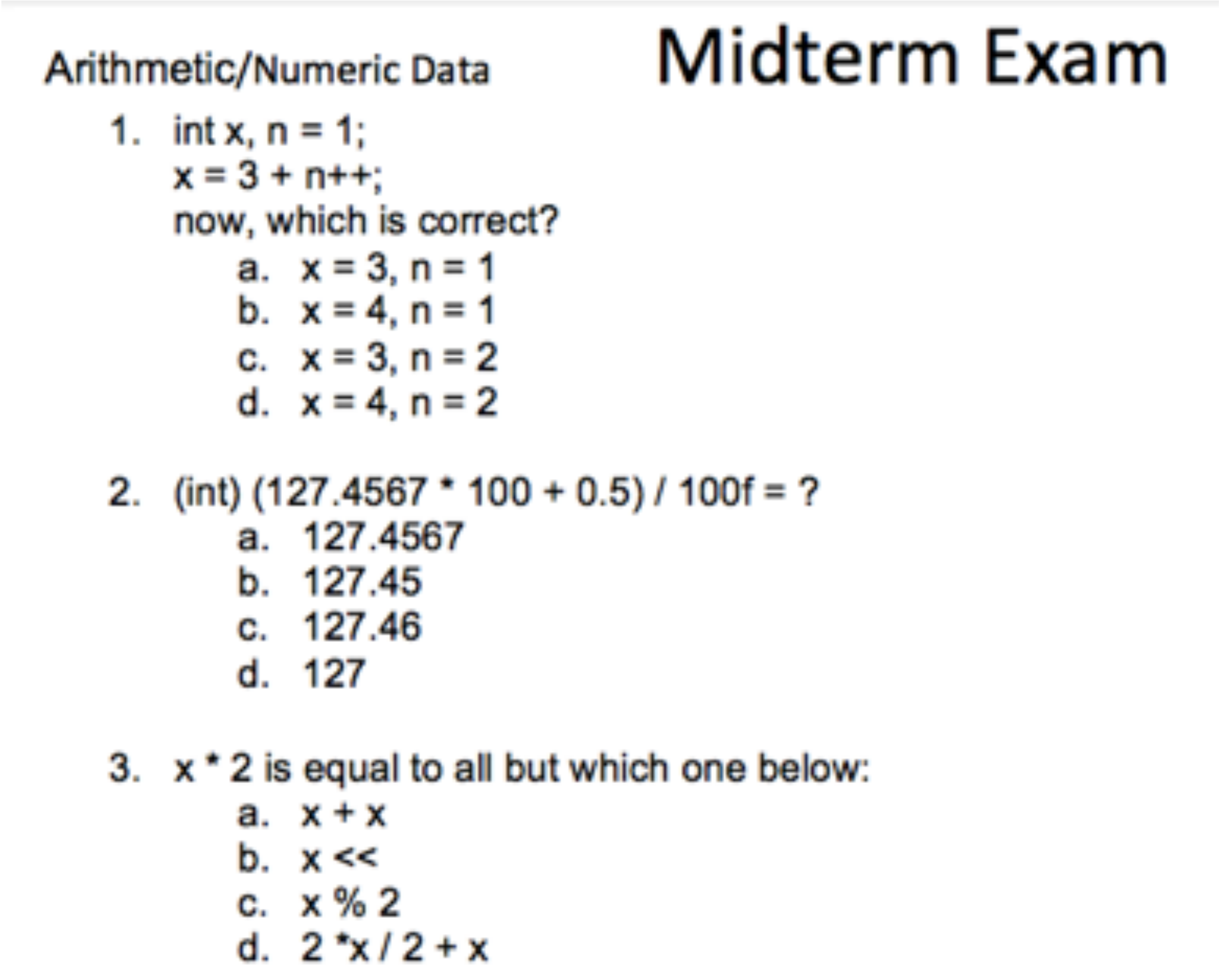


Midterm Exam

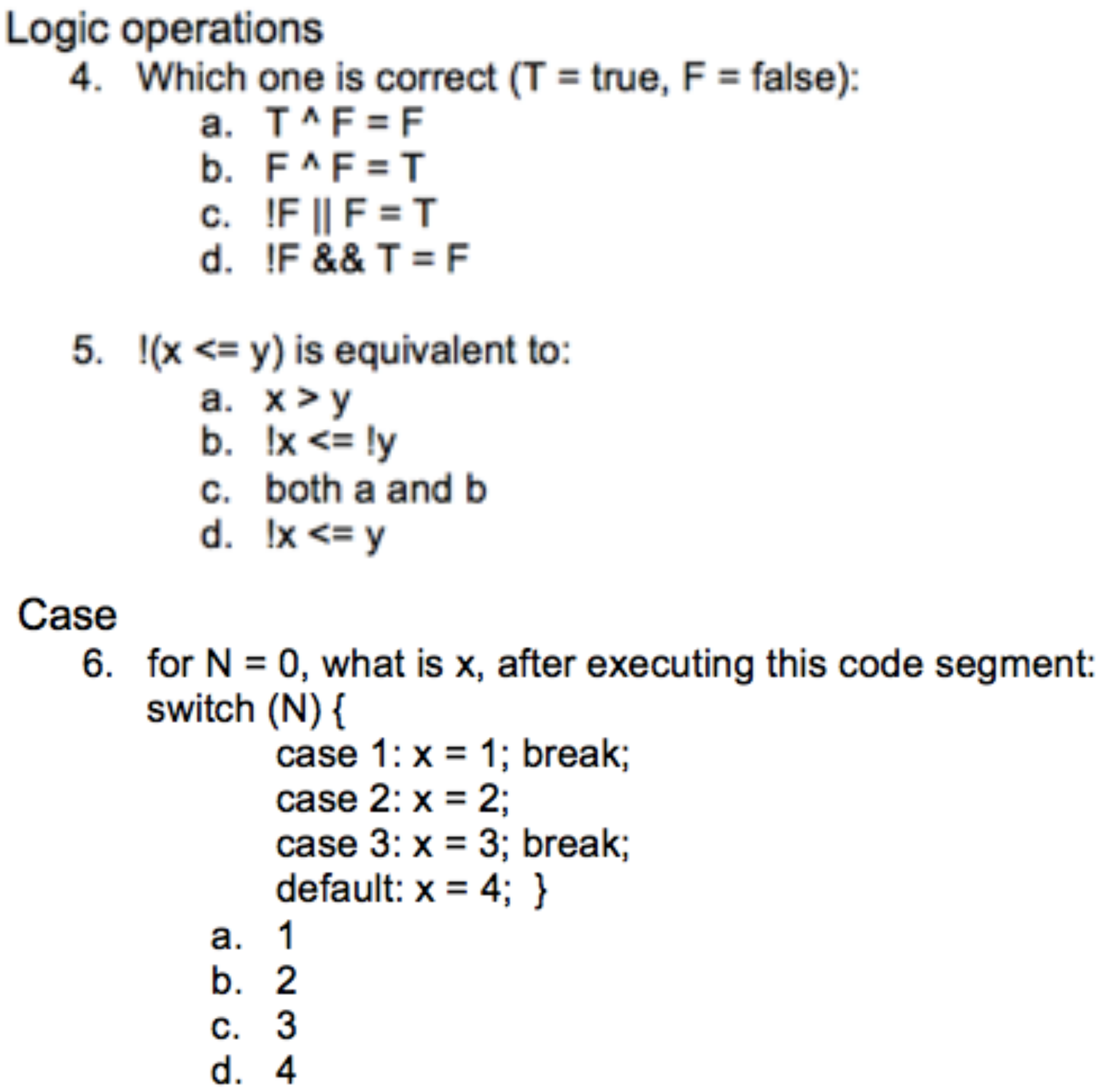
Arithmetic/Numeric Data

1. int x, n = 1;
   x = 3 + n++;
   now, which is correct?
   a. x = 3, n = 1
   b. x = 4, n = 1
   c. x = 3, n = 2
   d. x = 4, n = 2

2. (int) (127.4567 * 100 + 0.5) / 100f = ?
   a. 127.4567
   b. 127.45
   c. 127.46
   d. 127

3. x * 2 is equal to all but which one below:
   a. x + x
   b. x <<
   c. x % 2
   d. 2 *x / 2 + x

Midterm Review



Logic operations

4. Which one is correct (T = true, F = false):
   a. T ^ F = F
   b. F ^ F = T
   c. !F || F = T
   d. !F && T = F

5. !(x <= y) is equivalent to:
   a. x > y
   b. !x <= !y
   c. both a and b
   d. !x <= y

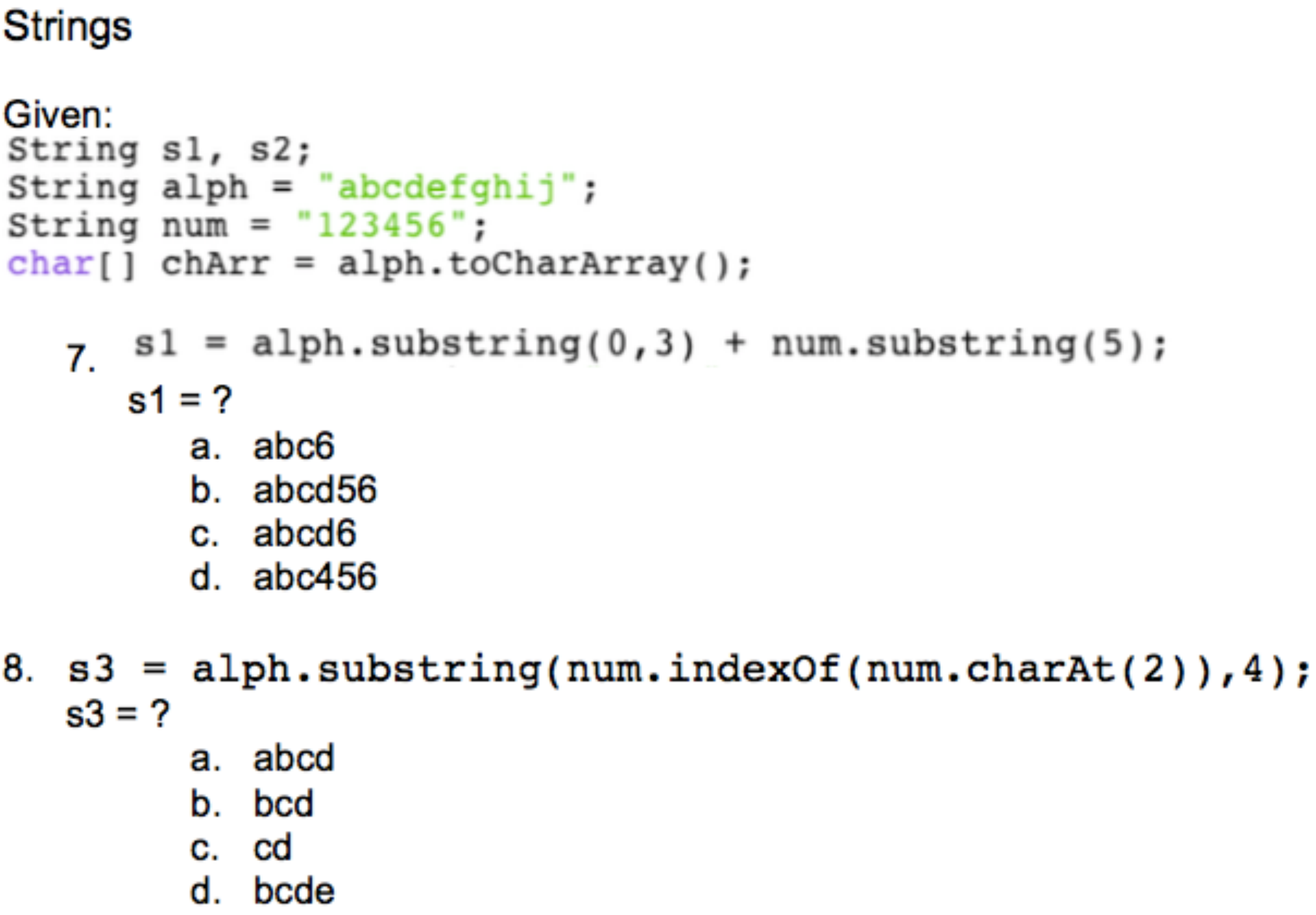
Case

6. for N = 0, what is x, after executing this code segment:

```
switch (N) {
        case 1: x = 1; break;
        case 2: x = 2;
        case 3: x = 3; break;
        default: x = 4;  }
```

   a. 1
   b. 2
   c. 3
   d. 4

Midterm Review



Strings

Given:

```
String s1, s2;
String alph = "abcdefghij";
String num = "123456";
char[] chArr = alph.toCharArray();
```

7. `s1 = alph.substring(0,3) + num.substring(5);`

   s1 = ?

   a. abc6
   b. abcd56
   c. abcd6
   d. abc456

8. `s3 = alph.substring(num.indexOf(num.charAt(2)),4);`

   s3 = ?

   a. abcd
   b. bcd
   c. cd
   d. bcde

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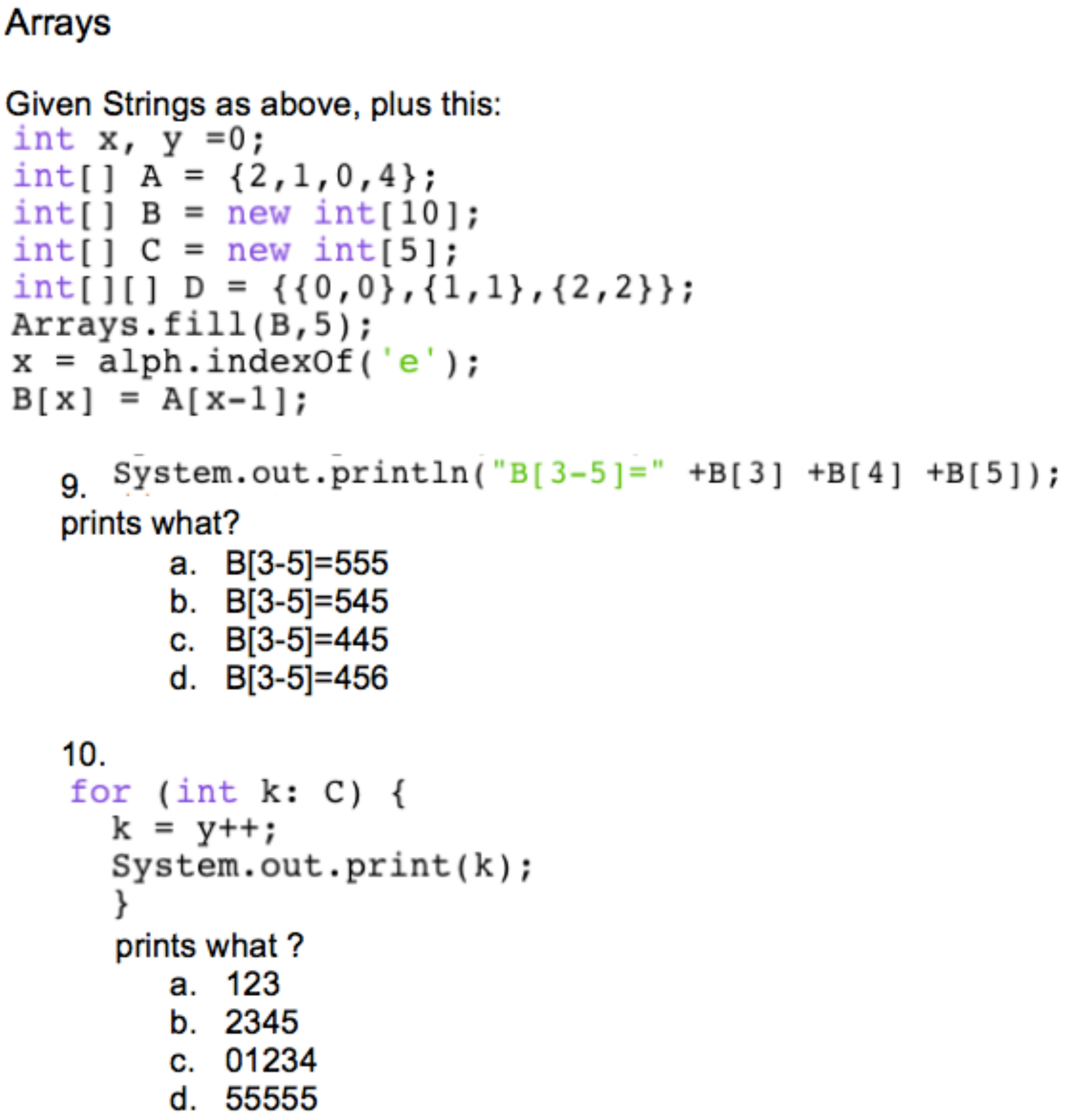

Arrays

Given Strings as above, plus this:

```
int x, y =0;
int[] A = {2,1,0,4};
int[] B = new int[10];
int[] C = new int[5];
int[][] D = {{0,0},{1,1},{2,2}};
Arrays.fill(B,5);
x = alph.indexOf('e');
B[x] = A[x-1];
```

9. `System.out.println("B[3-5]=" +B[3] +B[4] +B[5]);`

prints what?

a. B[3-5]=555
b. B[3-5]=545
c. B[3-5]=445
d. B[3-5]=456

10.

```
for (int k: C) {
   k = y++;
   System.out.print(k);
   }
```

prints what ?

a. 123
b. 2345
c. 01234
d. 55555

CS110

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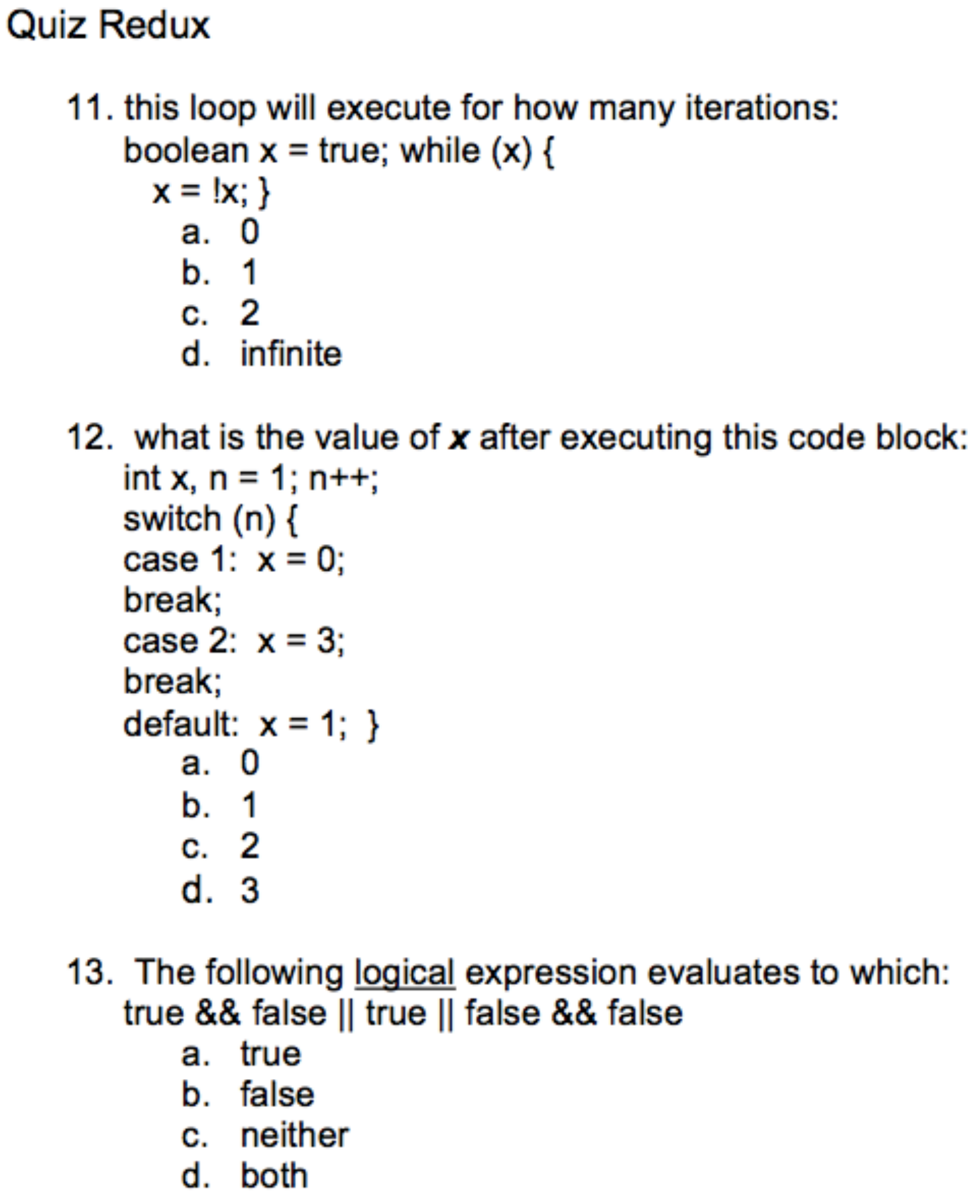

Quiz Redux

11. this loop will execute for how many iterations:

```
boolean x = true; while (x) {
  x = !x; }
```

  a. 0
  b. 1
  c. 2
  d. infinite

12. what is the value of ***x*** after executing this code block:

```
int x, n = 1; n++;
switch (n) {
case 1:  x = 0;
break;
case 2:  x = 3;
break;
default:  x = 1;  }
```

  a. 0
  b. 1
  c. 2
  d. 3

13. The following logical expression evaluates to which:

```
true && false || true || false && false
```

  a. true
  b. false
  c. neither
  d. both

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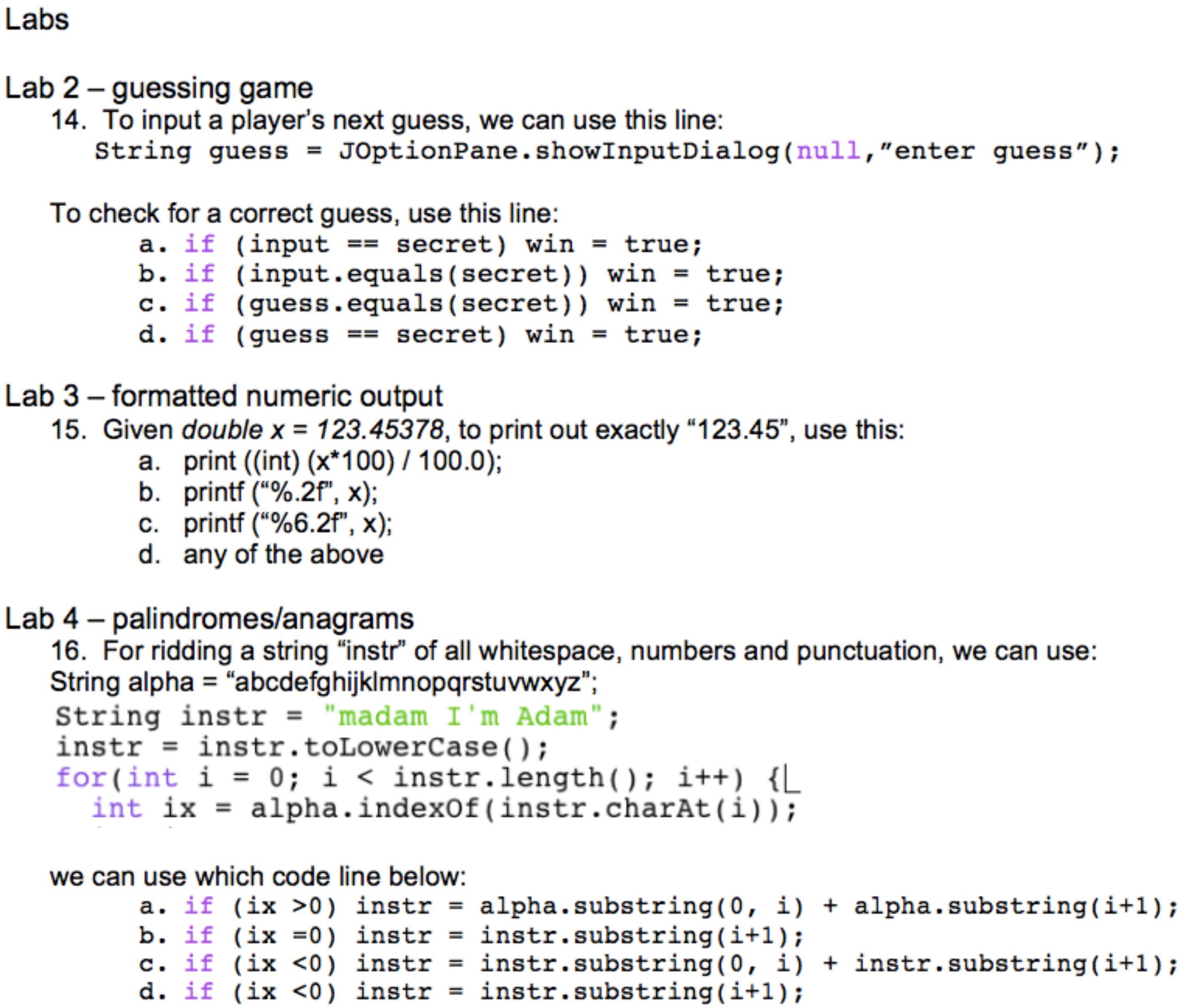

Labs

Lab 2 – guessing game

14. To input a player's next guess, we can use this line:

```
String guess = JOptionPane.showInputDialog(null,"enter guess");
```

To check for a correct guess, use this line:

```
a. if (input == secret) win = true;
b. if (input.equals(secret)) win = true;
c. if (guess.equals(secret)) win = true;
d. if (guess == secret) win = true;
```

Lab 3 – formatted numeric output

15. Given *double x = 123.45378*, to print out exactly "123.45", use this:

a. print ((int) (x*100) / 100.0);
b. printf ("%.2f", x);
c. printf ("%6.2f", x);
d. any of the above

Lab 4 – palindromes/anagrams

16. For ridding a string "instr" of all whitespace, numbers and punctuation, we can use:

String alpha = "abcdefghijklmnopqrstuvwxyz";

```
String instr = "madam I'm Adam";
instr = instr.toLowerCase();
for(int i = 0; i < instr.length(); i++) {
  int ix = alpha.indexOf(instr.charAt(i));
```

we can use which code line below:

```
a. if (ix >0) instr = alpha.substring(0, i) + alpha.substring(i+1);
b. if (ix =0) instr = instr.substring(i+1);
c. if (ix <0) instr = instr.substring(0, i) + instr.substring(i+1);
d. if (ix <0) instr = instr.substring(i+1);
```

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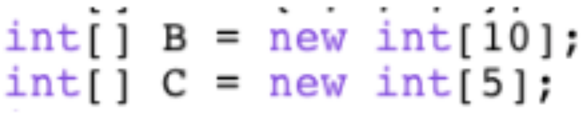
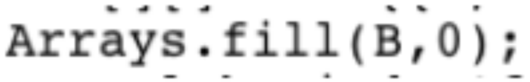
Part 2

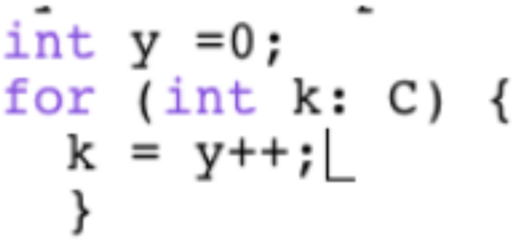
1. Given the same Arrays as earlier, write code to initialize:
   a. array B to all 0's
   b. array C to {0,1,2,3,4}



```
int[] B = new int[10];
int[] C = new int[5];
```



```
Arrays.fill(B,0);
```

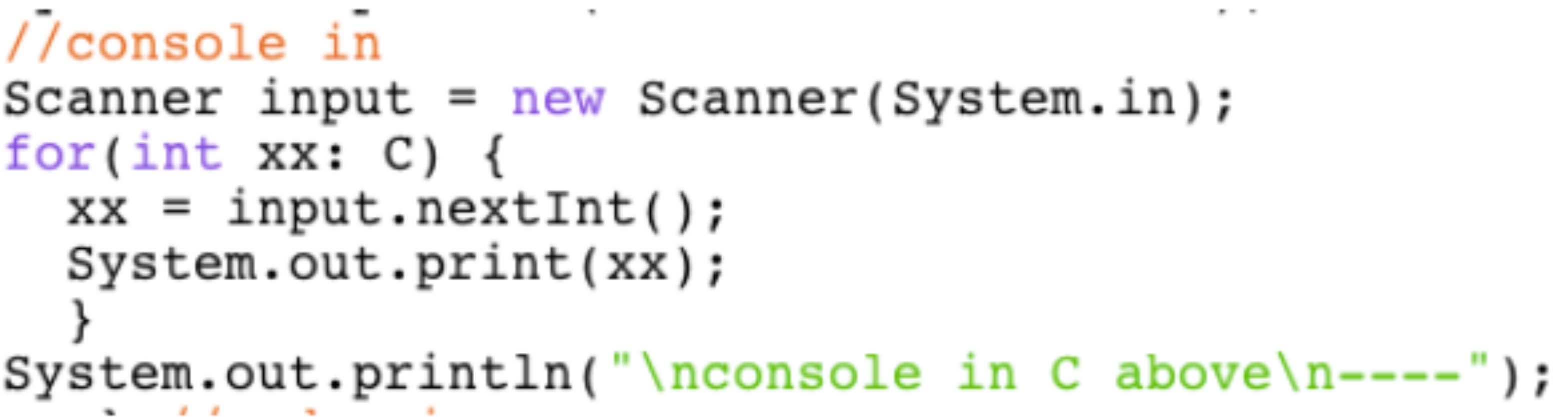


```
int y =0;
for (int k: C) {
   k = y++;
   }
```

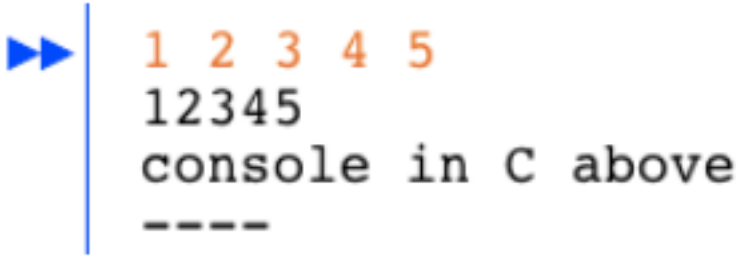
Midterm Review

Part 2

2. Write Console input code to input 5 integers and assign them to array C (as above)



```
//console in
Scanner input = new Scanner(System.in);
for(int xx: C) {
   xx = input.nextInt();
   System.out.print(xx);
   }
System.out.println("\nconsole in C above\n----");
```

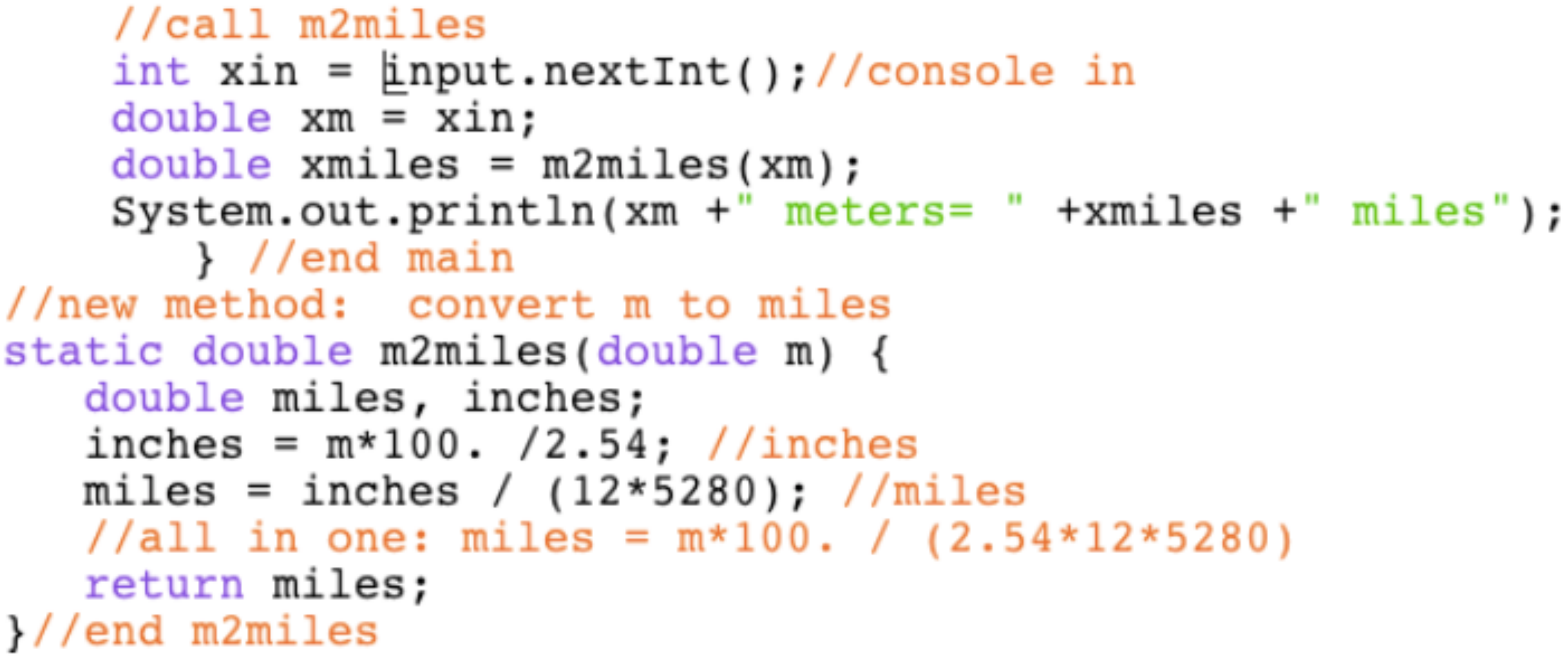


```
1 2 3 4 5
12345
console in C above
----
```

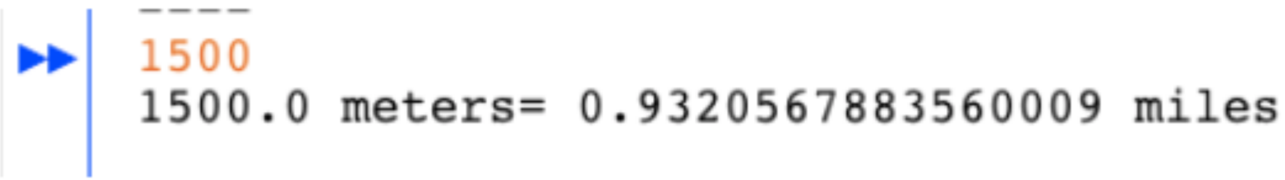
Midterm Review

Part 2

3. Write a **method** to convert meters to miles, which *returns* number of miles as *double*.
use this conversion: 1 inch = 2.54 cm, 1 mile = 5280 ft



```
    //call m2miles
    int xin = input.nextInt();//console in
    double xm = xin;
    double xmiles = m2miles(xm);
    System.out.println(xm +" meters= " +xmiles +" miles");
       } //end main
//new method:  convert m to miles
static double m2miles(double m) {
   double miles, inches;
   inches = m*100. /2.54; //inches
   miles = inches / (12*5280); //miles
   //all in one: miles = m*100. / (2.54*12*5280)
   return miles;
}//end m2miles
```



```
----
1500
1500.0 meters= 0.9320567883560009 miles
```

Final Exam Prep

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- General (3)
- Strings (3)
- Arrays (3)
- Midterm top 3 (3)
- Exceptions (2)
- Methods (3)
- OOP – Classes (5)
- Labs 5-7 (3)

total = 25

- 2 hours total
  - budget your time
  - Open book (notes, PC, Internet)
- Multiple choice (Scantron)
- 1 hour → 2.4 mins ea

- Write code snippets (5 @5 each)
  - ❑ Labs 5-7, Project 2
  - ❑ UML <-> code

total = 25

Grand total = **50**

- Write on separate paper
- 1 hour → 12 mins ea