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# COMP110

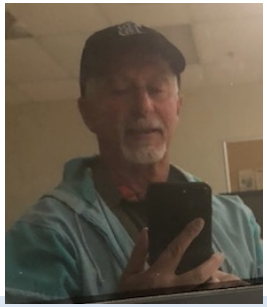


Fall 2022

## Intro to Algorithms & Programming

Using JAVA

# Syllabus



Dr Jeff Drobman
UCLA BS, MS, PhD

email → *jeffrey.drobman@csun.edu*

website → *drjeffsoftware.com/classroom.html*

- **AMD** (1979-82)
  - 8085, Z8000
  - RAM
- **IDT** (1989-97)
  - **MIPS**
  - SRAM (DP/FIFO)
  - Logic

# Index

# 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 + Add by petition
  - Waitlist: permissions expired

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# Class Slides on Website



http://drjeffsoftware.com/classroom.html

## Dr Jeff's CSUN class COMP110 Portal

Syllabus | Lab Form | Project Form

### LECTURE SLIDES -- SYLLABUS

LAST UPDATE: AUG 19, 2019


csun-cs110-syllabus.pdf
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### LECTURE SLIDES -- JAVA- PARTS 1 & 2

LAST UPDATE-- JAVA 1: AUG 19, 2019
JAVA 2: AUG 19, 2019


csun-cs110-java-1.pdf
Download File


csun-cs110-java-2.pdf
Download File

### LAB SLIDES

LAST UPDATE-- LAB 1: AUG 19, 2019
LAB 2: AUG 19 2019


csun-cs110-lab-1.pdf
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csun-cs110-lab-2.pdf
Download File

# Section



## Textbooks

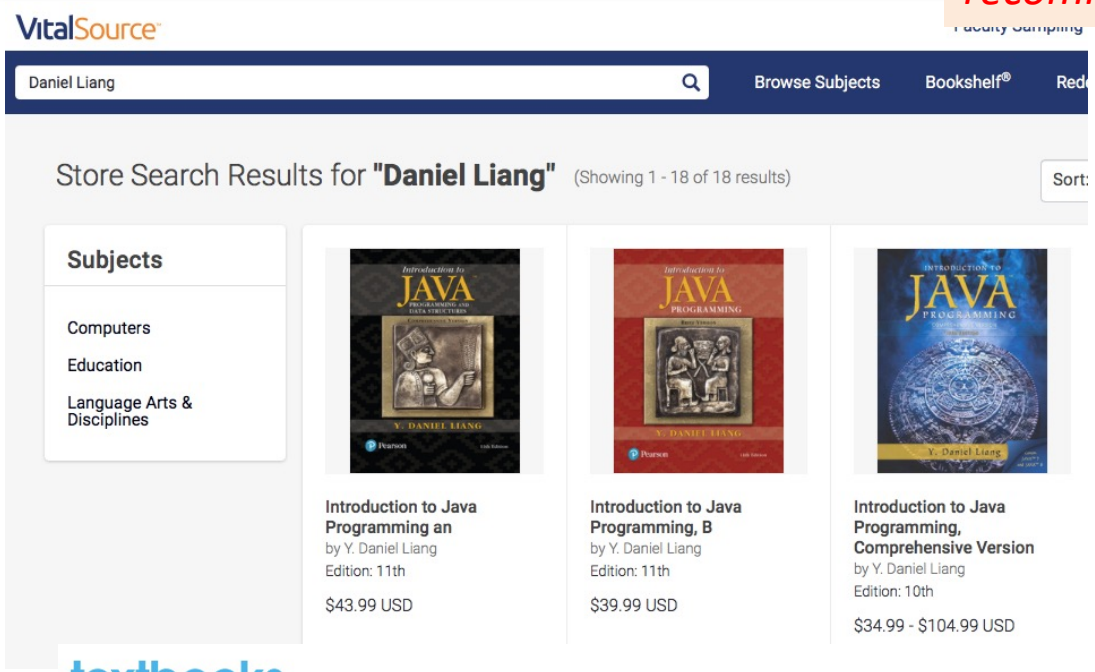
*recommended*
- Liang

*required*
- ***zyBooks*** with *zyLabs*)

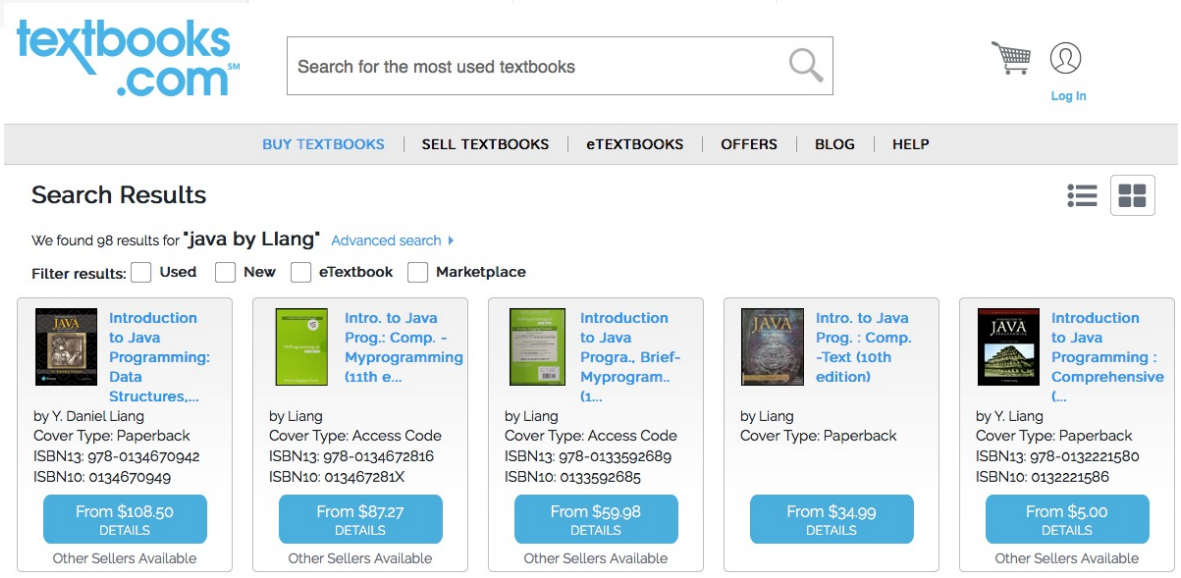
# Textbook: Liang




*recommended*




- *Brief* version
- *11th* edition
- ISBN-10: 0-13-461103-9
- ISBN-13: 978-0-13-461103-7



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# Textbook: Liang



Chapters

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

Part 2
3. *Selections*
4. Math Fns, Chars, Strings
5. *Loops*

Part 3
6. **Methods**
7. Arrays, Single-dim
8. Arrays, Multi-dim

➢ **STRUCTURE**

OOP — Part 4
9. **Objects & Classes**
10. Thinking in Objects
11. Inheritance & Polymorphism
12. Exception Handling & Text I/O

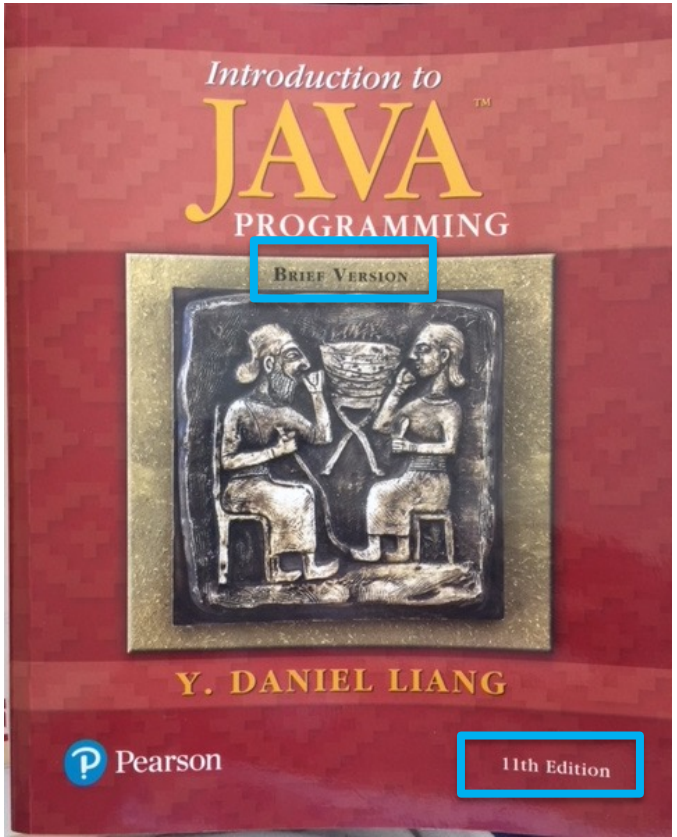
13. Abstract Classes & Interfaces

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

➢ ADD GUI: *javax.swing.JOptionPane*

INTRODUCTION TO
**JAVA**
PROGRAMMING
by
Y. Daniel Liang



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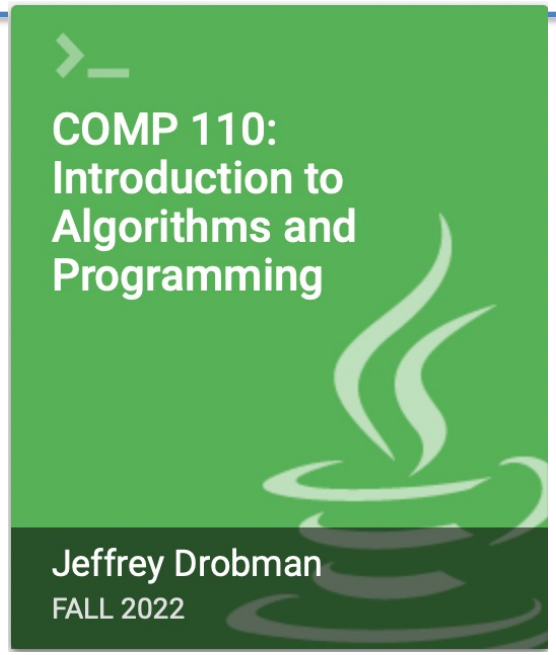
# zyBook






Create your account at

learn.zybooks.com

1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code

   **CSUNCOMP110DrobmanFall2022**

3. Subscribe

$77

A subscription is **$77**. Students may begin subscribing on Aug 15, 2022 and the cutoff to subscribe is Dec 05, 2022. Subscriptions will last until Jan 02, 2023.

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# Free Books for Frosh



**Re: CSUN Ready - free course materials for first-time freshmen**

RM

**Robert Munck (0150) <r.munck@follett.com>** Today at 11:33 PM

**To:** Drobman, Jeffrey H; **Cc:** Keila Reyes Lezama (0150)

Great. I will coordinate with our zyBooks representative this week (hopefully on Monday), and would expect them to get the codes to us within a day or two from that point. I would be surprised if your FTF students are not receiving their emails notifying them that these are ready for them by the end of the week, and more likely sooner.

Thanks again,

**Robert Munck**
Textbook Manager

Follett

Tel: 818.677.2913 | Fax: 818.677.4728
Email: r.munck@follett.com
Follett Higher Education Group
CSUN Campus Store #0150
California State University Northridge

# zyBook Terms



## Pricing Information

- Most zyBook subscriptions start at $58. No cost for instructors or TAs.
- A student's subscription will expire two weeks after the term ends. The instructor's subscription does not expire.
- Students can extend their subscription for a nominal fee of $18 for one year. They cannot use the zyBook for another course - it's just for personal use.
- Students can save a zyBook as a searchable PDF.

## Full Refund/One Free Retake

- If a student has to retake the same course using the same topic zyBook again, they can email support and ask for one free subscription.
- If a student drops out of the class, they can find the *Request a refund* button on the *My subscription* tab in their zyBook (we can only refund direct purchases).

# zyBook Terms



## Student Can't Pay Right Away

- Students can subscribe to a zyBook and pay $0. They will only have access to Chapter 1. This is helpful if they are on a waitlist or they're not sure if they will stay in the class. The instructor will not see the student in the class zyBook roster the subscription is purchased. But, all activity is recorded and time-stamped.

- Students can ask for a temporary subscription for up to 30 days if they need time to pay for their zyBook. On the Payment page, they would click Have payment questions? Then, **What if I can't pay right away?**

## Discounts/Bookstore

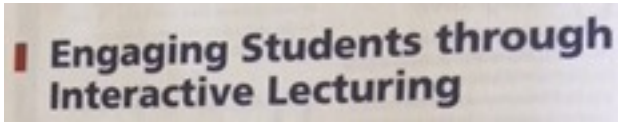
- If students need to use the same topic zyBook for another course (CS 1 uses the Java zyBook, CS 2 uses a combination of the Java and Data Structures zyBooks), our system detects they are a repeat user of the same topic zyBook and give them an automatic 50% discount off of their subscription; we don't discount zyLabs ($19). This discount is available for up to one year after the previous zyBook expires (only applies to direct purchases).

- If a student must purchase their zyBook through the bookstore (financial aid), we provide the bookstore access keys at a 10% discount (to offset any bookstore markup), then bill the bookstore after the add/drop date passes, for the number of keys that were sold.

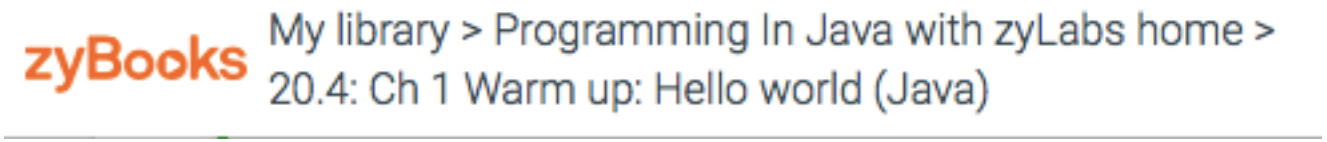
# ZyBooks Benefits



- **Interactive**




  - Immediate feedback
  - Forces participation
- Progress monitor (both students + instructor)
- Labs integrated (more feedback)



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# eBook: zyBook

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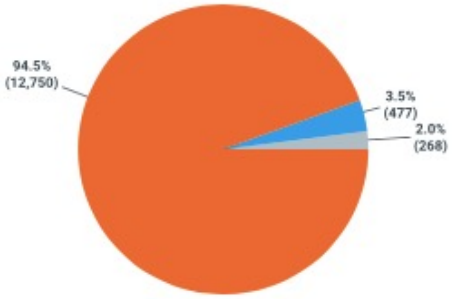
zyBooks
A Wiley Brand

Why zyBooks? Catalog Success Stories Instructors Students Blog Sign In

## Fall 2019 Student Survey

Student Feedback is vital to creating an effective learning experience. We survey all students at the end of every semester to gauge student satisfaction and to benchmark how we compare to other tools they use—so that we can keep improving. Below are the results from the November 2019 survey.




**94.5% report** that zyBooks helps them learn.

zyBooks **helped** my learning. Neutral Hinderance

**88.3% agree** that zyBooks is easy to use.

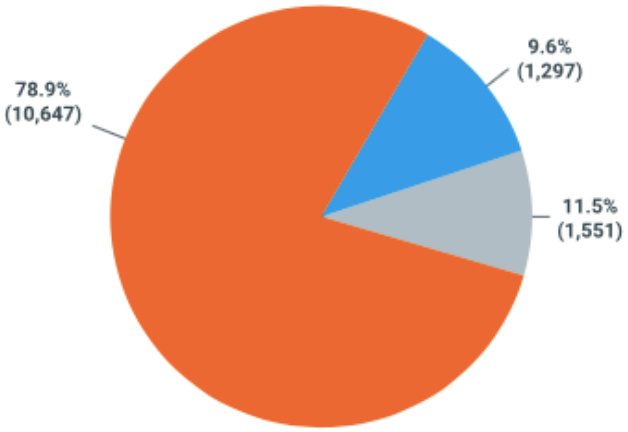
# eBook: zyBook



zyBooks A Wiley Brand | Why zyBooks? | Catalog | Success Stories | Instructors | Students | Blog | Sign In

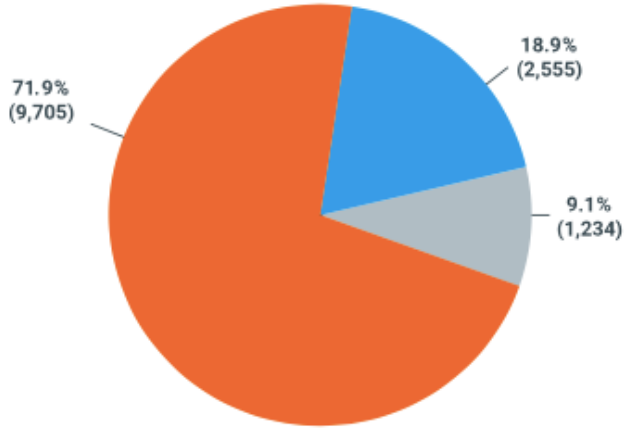
## Students **prefer using zyBooks** over traditional textbooks or digital alternatives.

**How students feel about zyBooks vs. traditional textbooks**




Prefer **zyBooks** over traditional
Neutral
Prefer traditional textbook

**How students feel about other digital learning solutions**




**zyBooks** is favorite
No favorite
Other favorite

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# Textbook: zyBooks



*required* eBook

## Proven to improve college STEM grades

### Interactive content for better learning

- Animations
- Learning questions
- Tools & simulators

### Integrated homework for easy assessments

- Auto-graded challenge activities
- Built-in programming assignments

### Instructor tools for effective teaching

- Configurable content
- Student activity analysis
- Instructor notes

**Adopted by over:**

**450** institutions

**1,400** instructors

**200,000** students

✓ **96%** of instructors say zyBooks **boosts students' confidence.**

✓ zyBooks **improved student letter grades** by up to 2/3.

### System and platform issues

support@zybooks.com

If you have any issues with our system, please email support@zybooks.com. *Please don't bother your instructor;* we want them to focus on teaching. If you are having a technical issue, please tell us what browser (like Chrome, Firefox, Safari, etc.), operating system (Windows 10, MacOS, iOS, etc.), and zyBook you are using (just copy-paste the URL or the zyBook code).

Web browsers aren't perfect. zyBooks make extensive use of HTML5 features, which browsers are supposed to support. But browsers do have bugs. If something doesn't work, before emailing support, please try refreshing or restarting the web browser. You might even try a different web browser, such as Firefox or Chrome.

# Textbook: zyBooks

CONTENTS *required* eBook

zyBooks My library > COMP 110 home

https://learn.zybooks.com/zybook/CSUNCOMP110**Drobman**Fall2021

❖ PART 1

now

- ☐ 1. Introduction to Java
- ☐ 2. Variables / Assignments
- ☐ 3. Branches
- ☐ 4. Loops
- ☐ 5. Arrays
- ☐ 6. User-Defined Methods
- ☐ 7. Input / Output
- ☐ 8. Exceptions
- ☐ 9. Searching and Sorting Algorithms
- ☐ 10. Memory Management

❖ PART 2 (OOP)

11. Objects and Classes
12. Inheritance
13. Abstract Class and Interfaces
14. Recursion

➢ Almost the same as *Liang* book

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# zyBook



## Ch 2

- 2.1 Variables and assignments (general)
- 2.2 Variables (int)
- 2.3 Identifiers
- 2.4 Arithmetic expressions (general)
- 2.5 Arithmetic expressions (int)
- 2.6 Example: Health data
- 2.7 Floating-point numbers (double)
- 2.8 Scientific notation for floating-point literals
- 2.9 Constant variables
- 2.10 Using math methods
- 2.11 Integer division and modulo
- 2.12 Type conversions
- 2.13 Binary
- 2.14 Characters
- 2.15 Strings
- 2.16 Integer overflow
- 2.17 Numeric data types
- 2.18 Random numbers — Optional
- 2.19 Reading API documentation — Optional
- 2.20 Debugging
- 2.21 Style guidelines
- 2.22 Java example: Salary calculation with variables
- 2.23 Java example: Married-couple names with variables
- 2.24 Lab 2: Temperature conversion — Lab

# zyBook





## 3. Branches

# zyBook




➢ Graded CA's

Ch 4

## 4. Loops

- 4.1 Loops (general)
- 4.2 While loops
- 4.3 More while examples
- 4.4 For loops
- 4.5 More for loop examples
- 4.6 Loops and strings
- 4.7 Nested loops
- 4.8 Developing programs incrementally
- 4.9 Break and continue
- 4.10 Variable name scope
- 4.11 Enumerations *optional*
- 4.12 Java example: Salary calculation with loops
- 4.13 Java example: Domain name validation with loops
- 4.14 Lab 4

# zyBook





## 5. Arrays

- 5.1 Array concept (general)
- 5.2 Arrays
- 5.3 Array iteration drill
- 5.4 Iterating through arrays
- 5.5 Multiple arrays
- 5.6 Swapping two variables (General)
- 5.7 Loop-modifying or copying/comparing arrays
- 5.8 Debugging example: Reversing an array
- 5.9 Two-dimensional arrays
- 5.10 Enhanced for loop: Arrays
- 5.11 Java example: Salary calculation with arrays
- 5.12 Java example: Domain name validation with arrays
- 5.13 Lab 5: Homonynms

# zyBook




- Graded CA's

Ch 6

## 6. User-Defined Methods



Arrays

optional

# zyBook



Ch 7

- [ ] 7. Input / Output
  - [ ] 7.1 OutputStream and System.out
  - [ ] 7.2 InputStream and System.in
  - [ ] 7.3 Output formatting
  - [ ] 7.4 Streams using Strings
  - [ ] 7.5 File input and output
  - 7.6 LAB: Warm up: Parsing strings Lab
  - 7.7 LAB*: Program: Data visualization Lab
  - 7.8 LAB: Parsing dates New Lab

Console

File

NO Lab 7

# zyBook




Ch 8

- [ ] 8. Exceptions
  - [ ] 8.1 Exception basics
  - [ ] 8.2 Exceptions with methods
  - [ ] 8.3 Multiple handlers
  - [ ] 8.4 Exception handling in file input/output
  - [ ] 8.5 Java example: Generate number format exception

File

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# zyBook

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INDIE APP DEVELOPER


Ch 10

## 10. Memory Management

10.1 Introduction to memory management **new**

10.2 A first linked list ← 182!

10.3 Memory regions: Heap/Stack

10.4 Basic garbage collection

10.5 Garbage collection and variable scope Optional

10.6 Java example: Employee list using ArrayLists Optional

10.7 LAB: Warm up: Contacts Lab

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# zyBook

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INDIE APP DEVELOPER


- Graded CA's

Ch 11

## 11. Objects and Classes

| | |
|---|---|
| 11.1 Objects: Introduction | |
| 11.2 Using a class | |
| 11.3 Defining a class | |
| 11.4 Mutators, accessors, and private helpers | |
| 11.5 Initialization and constructors | |
| 11.6 Choosing classes to create | |
| 11.7 Defining main() in a programmer-defined class | |
| 11.8 Unit testing (classes) | |
| 11.9 Constructor overloading | |
| 11.10 Objects and references | |
| 11.11 The 'this' implicit parameter | |
| 11.12 Primitive and reference types | |
| 11.13 ArrayList | Optional |
| 11.14 Classes, ArrayLists, and methods: A seat reservation example | Optional |
| 11.15 ArrayList ADT | Optional |
| 11.16 Java documentation for classes | Optional |
| 11.17 Parameters of reference types | Optional |
| 11.18 Static fields and methods | |
| 11.19 Java example: Salary calculation with classes | Optional |
| 11.20 Java example: Domain name availability with classes | Optional |

optional

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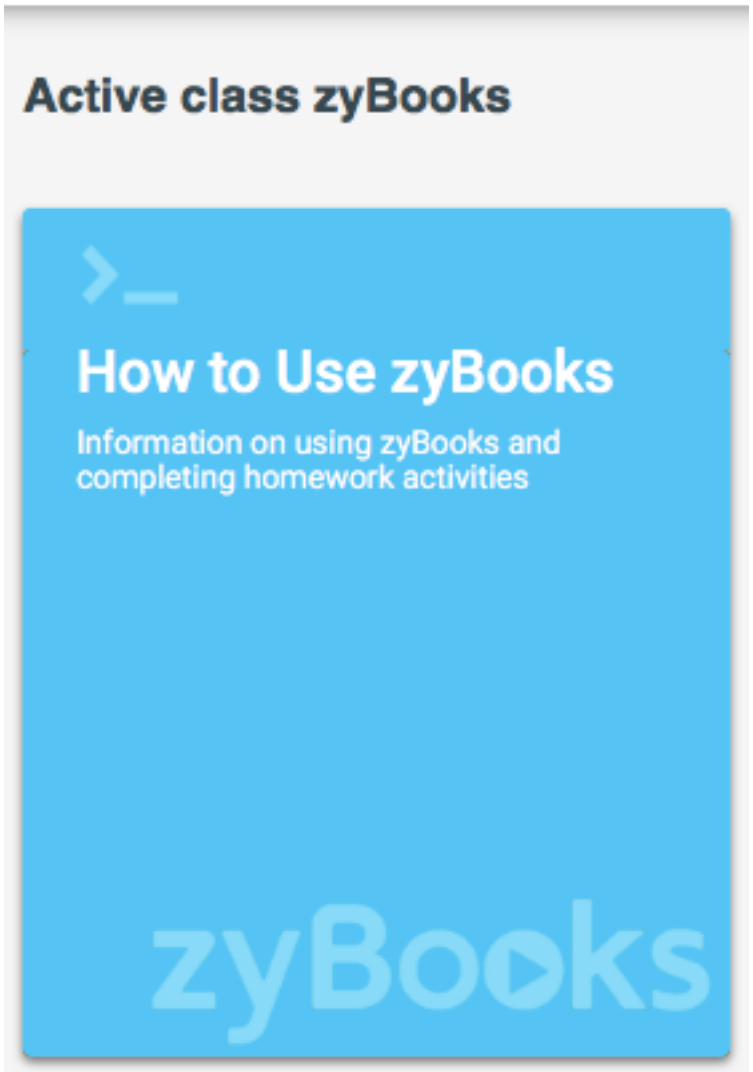
# zyBooks: How to Use



*Recommended* eBook



# Textbook: zyBooks

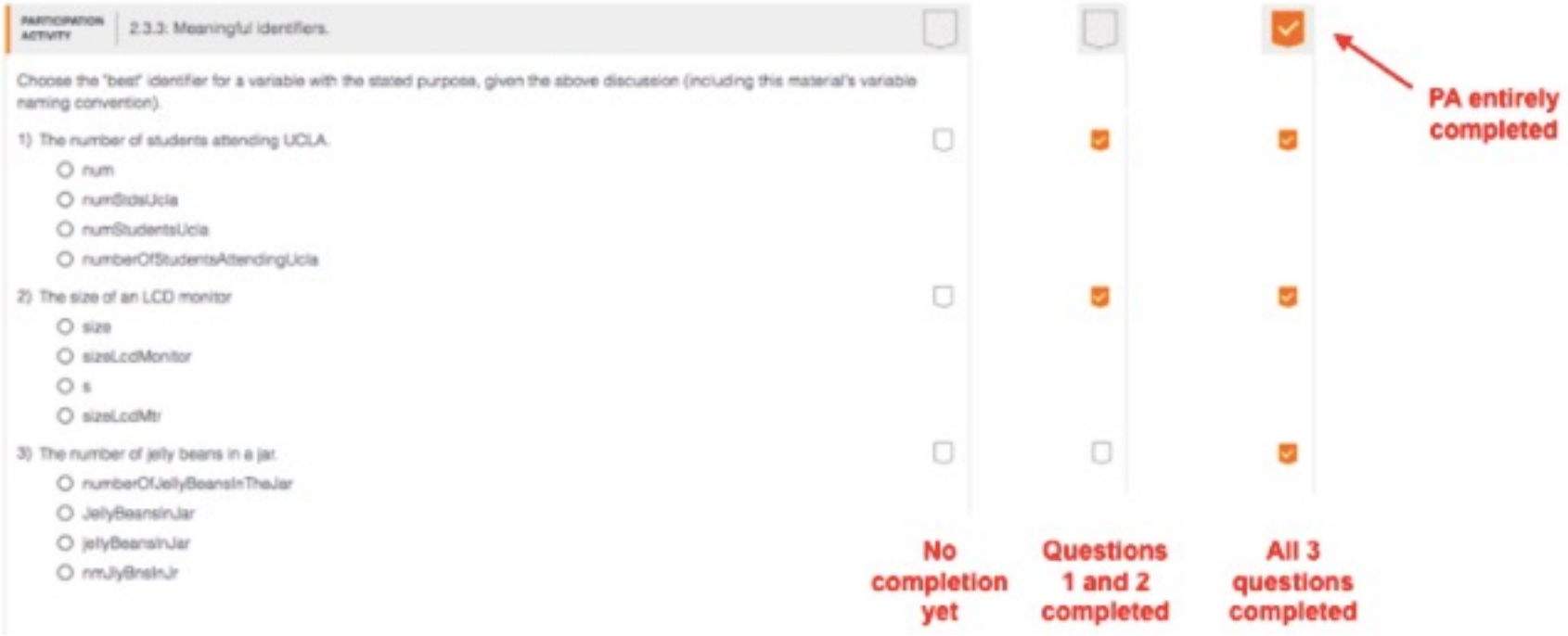


*required* eBook

- PA = *Participation* activity
- CA = *Challenge* activity

➢ Some (5) graded

Figure 1.1.1: PA completion icons filling in as learning questions are correctly answered.



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# Textbook: zyBooks

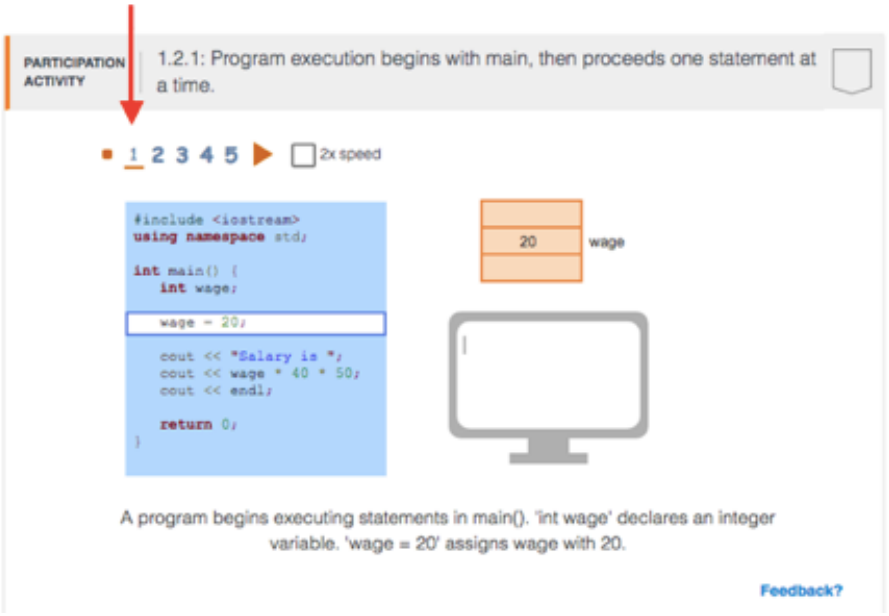
*required* eBook



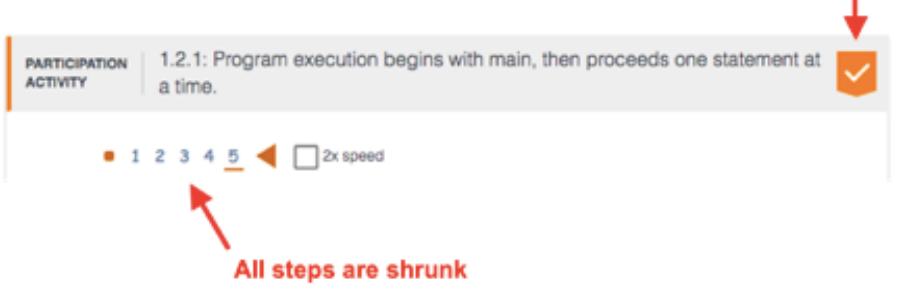
- PA = *Participation* activity

Figure 1.1.2: Step numbers shrinking and PA completion icon filling in as an animation's steps are watched entirely.

**Step number shrinks after step is watched entirely**




**Icon fills in after all steps watched entirely**




**All steps are shrunk**

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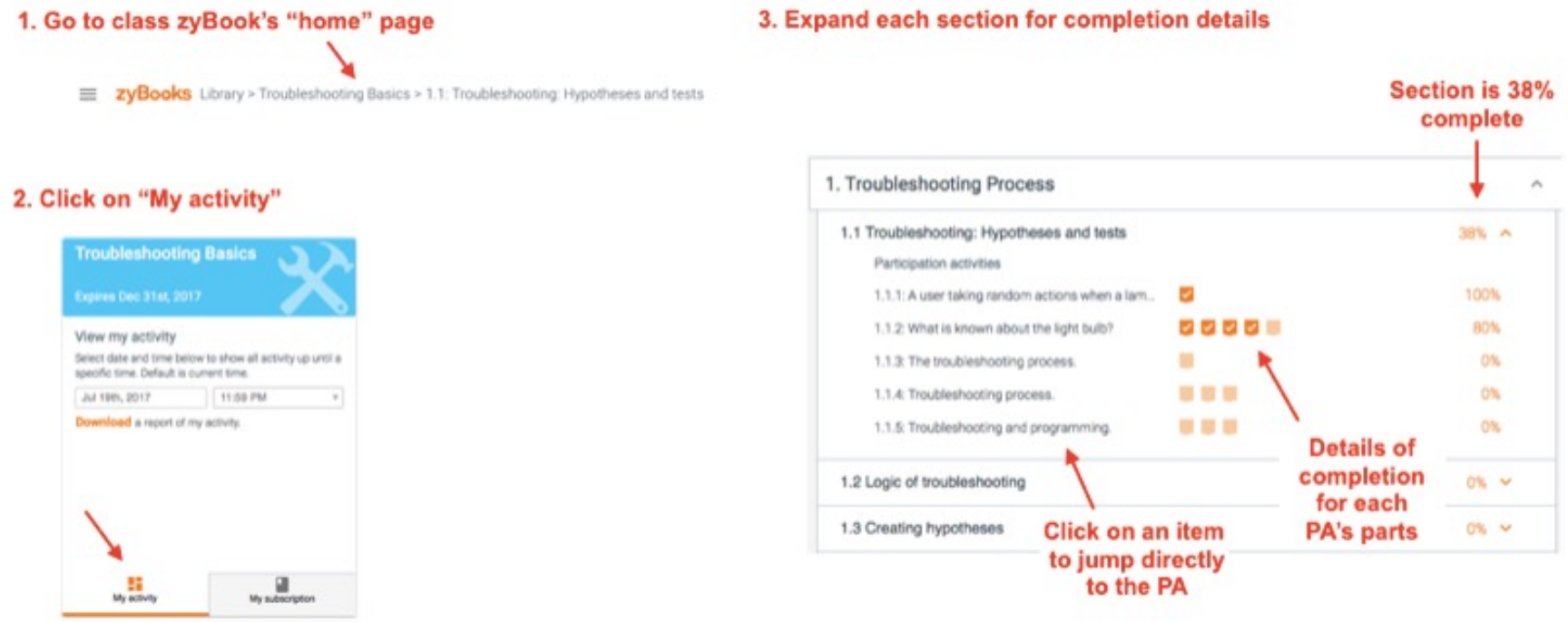
# Textbook: zyBooks

*required* eBook



Figure 1.1.3: Checking section activity completion on a zyBook's Home/TOC page.



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# Textbook: zyBooks

*required* eBook



Figure 1.5.1: Viewing one's zyBooks.com profile.

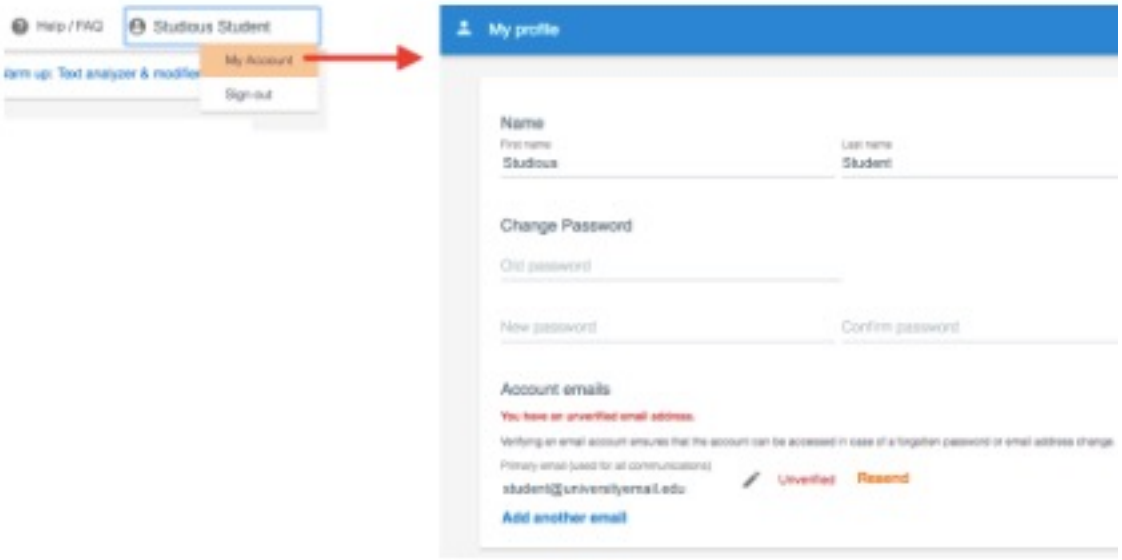
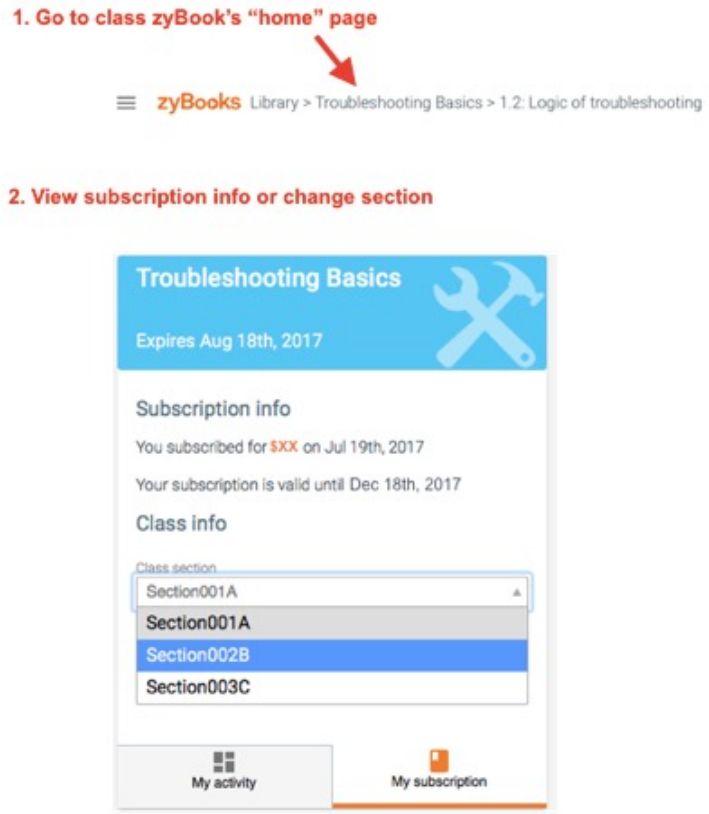



Figure 1.5.2: Viewing subscription information.

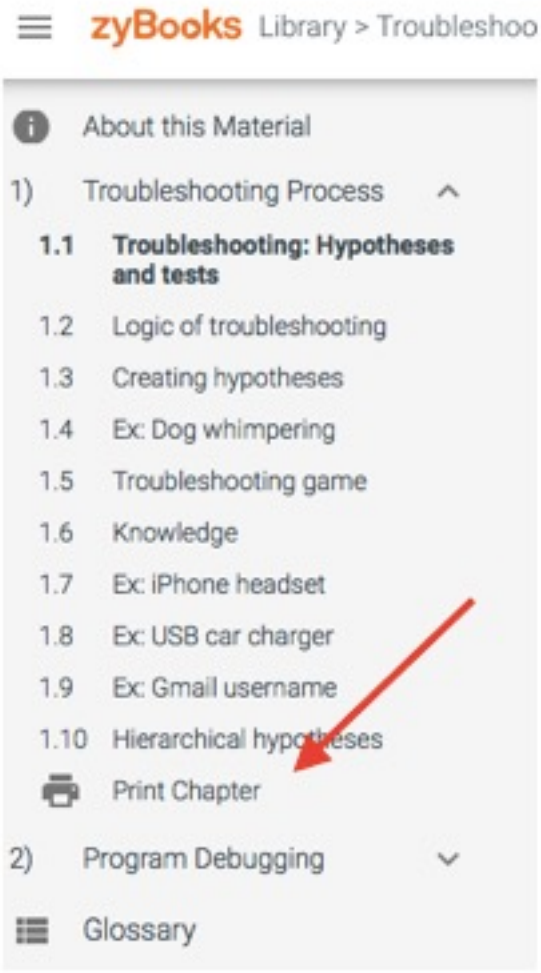


# Textbook: zyBooks




*required* eBook

Figure 1.5.4: Printing a chapter (typically to PDF).



# Presentations/Tools



- My Slides (lecture)
- zyBook (interactive)
- Lab IDE: jGRASP

- We will use all 3
- Complementary
- Graded on:
  - ✓ zyBook CAs (5)
  - ✓ zyBook Labs (7)
  - ✓ Lab Reports (8)

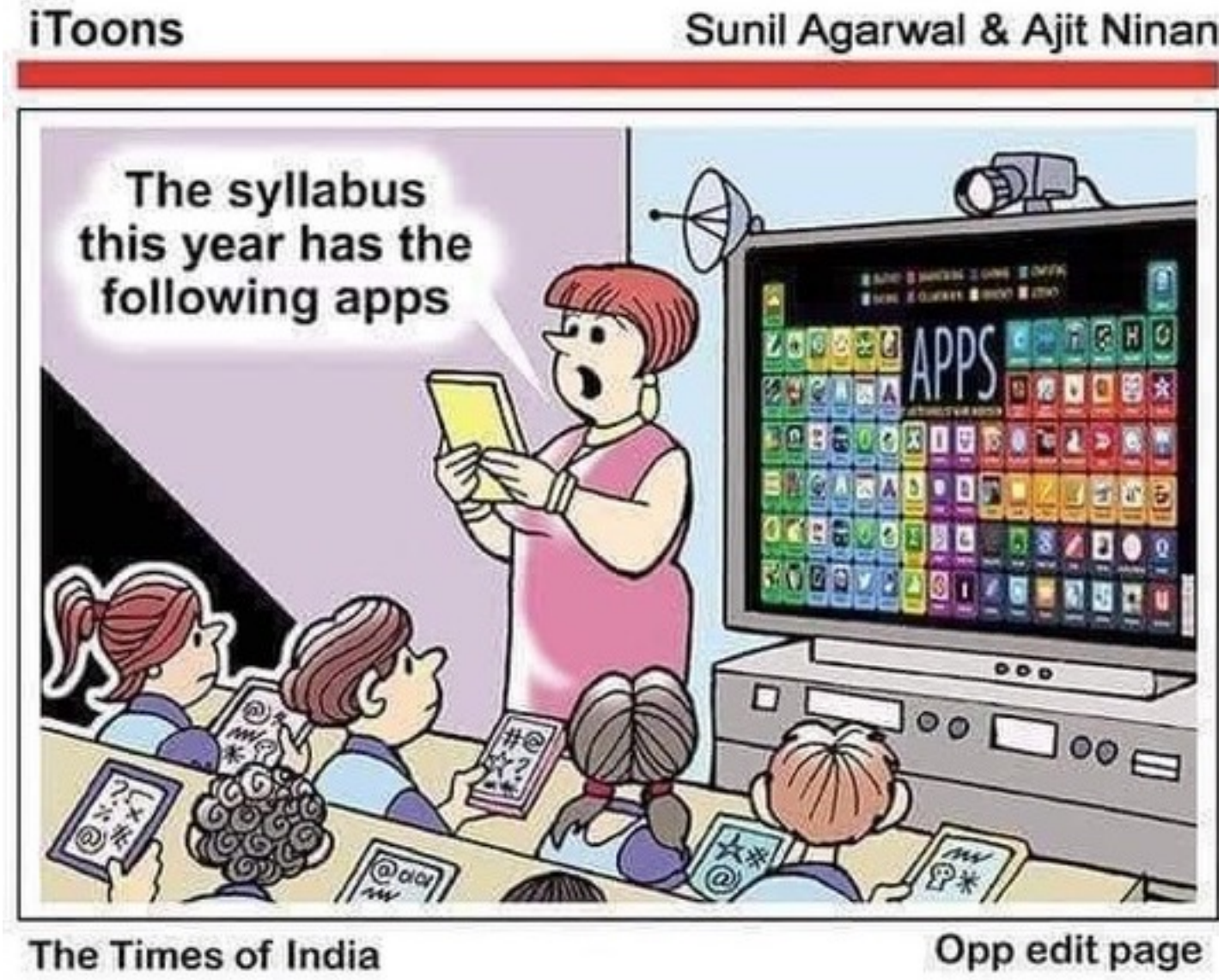
# Section



## Syllabus

# Syllabus Apps





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# *Computer Science* Sub-Fields



- Problem solving and Algorithms
- Programming (OOP)
- Software Engineering (SDLC, IPO, structured design, design patterns)

1st course
- Desktop

- Automata theory
- Systems programming
  - OS (shell, kernel, I/O)
  - Compiler construction
- Data
  - Database management & models (DBMS)
  - Data science & Mining
- Graphics (gaming, VR, animation)
- AI
  - Game playing with Heuristics
  - Machine learning (Deep learning) & robotics
  - Pattern recognition (fingerprints, facial, etc.)
- Cryptography & Cybersecurity
- Simulation & Modeling
  - Queueing theory

Application Realms
- Desktop
- Mobile
- Website
- Embedded

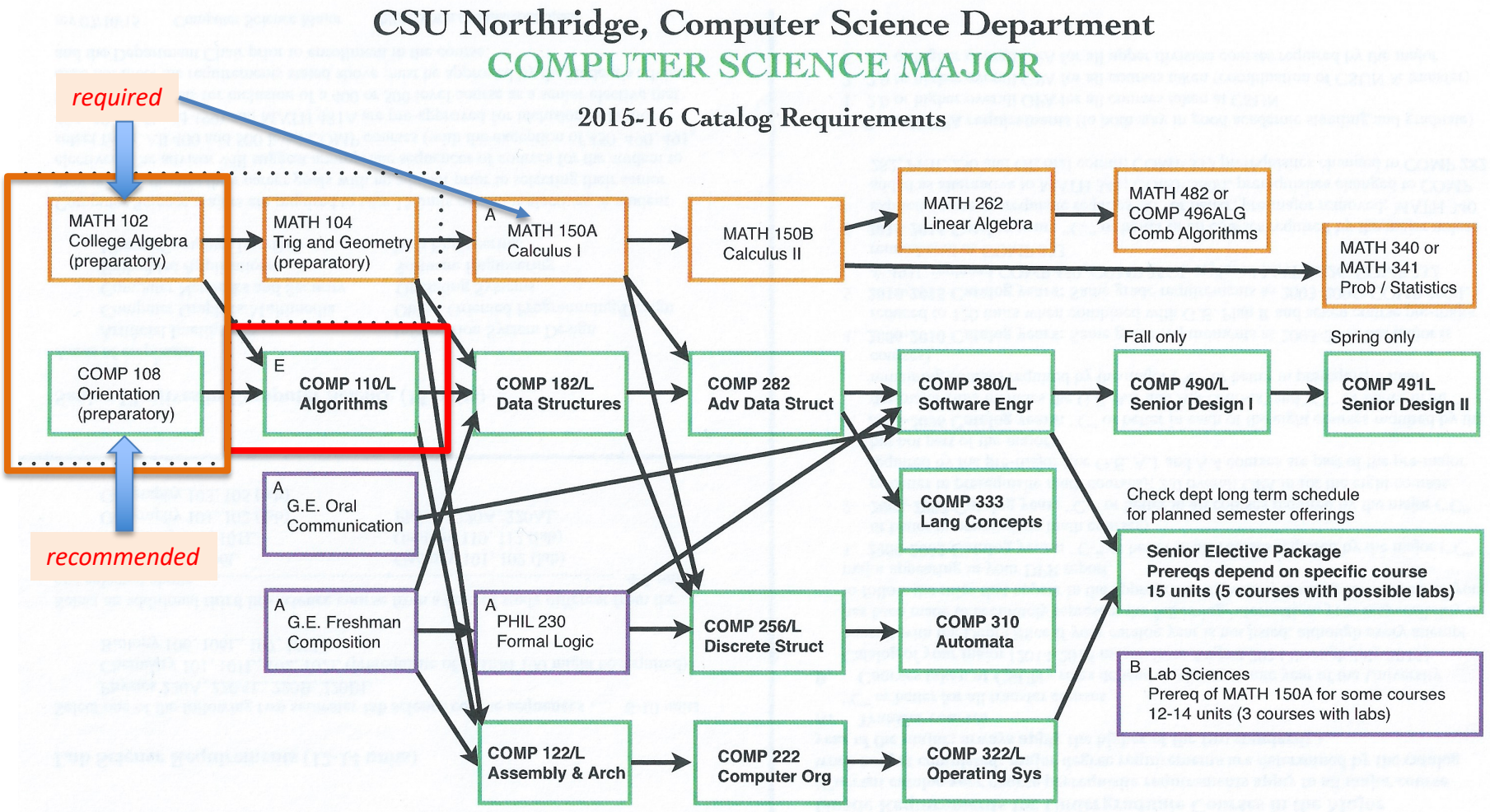
- Digital System design (logic design)
- Computer Architecture (ISA, SIMD, caches, multi-threading)
- Numerical Analysis & Control (DNC), CAM

*Computer Engineering*

- Information Technology (IT/CIT)

# Curriculum-CS





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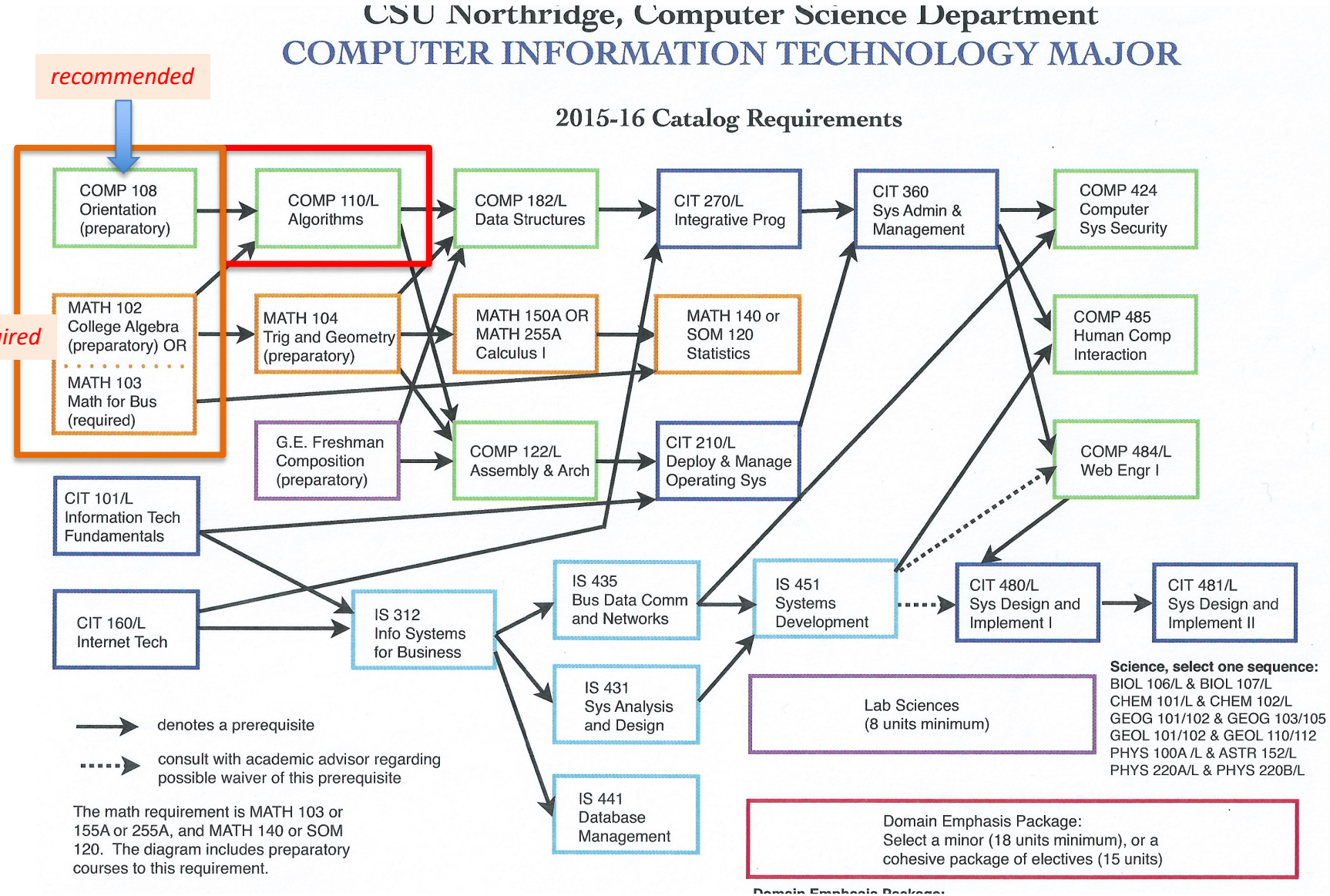
# Curriculum-CIT





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# Prerequisites <-> Grades



Spring 2019

Course Indicators — Find

| | Student ID | Name | MATH 102 | MATH 103 | MATH 104 | MATH 105 | MATH 150A | MPT1 | MPT2 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 105724318 | | | | | | | | |
| 2 | 109465328 | | | | | | A- | | |
| 3 | 109848178 | | B+ | | | A | | | |
| 4 | 109864194 | | | B+ | | | | | |
| 5 | 109878702 | | | | | | | | |
| 6 | 109885202 | | B+ | | | ENR | | | |
| 7 | 109893496 | | A | | | ENR | | | |
| 8 | 109931443 | | | | | C+ | | | |
| 9 | 200110423 | | B+ | | | ENR | | | |
| 10 | 200139114 | | D | | | ENR | | | |
| 11 | 200145861 | | | | | A | ENR | | |
| 12 | 200146901 | | A | | | ENR | | | |
| 13 | 200189736 | | | | | | | | |
| 14 | 200193753 | | A | | | ENR | | | |
| 15 | 200204933 | | | | | A | ENR | | |
| 16 | 200206857 | | A | | | ENR | | | |
| 17 | 200261717 | | B | | | ENR | | | |
| 18 | 200266800 | | | B+ | | | | | |
| 19 | 200267125 | | | | | | | | |
| 20 | 200318644 | | | | | | B- | | |
| 21 | 200328849 | | F | | | ENR | | | |
| 22 | 200329395 | | | | | | | | |
| 23 | 200340133 | | | | | | B+ | | |
| 24 | 200343006 | | A | | | ENR | | | |
| 25 | 200480234 | | B+ | | | ENR | | | |
| 26 | 200540021 | | | | | ENR | C | | |
| 27 | 200542608 | | | | | | B | | |
| 28 | 200623351 | | | | | B | ENR | | |

# Class Years/Majors



Spring 2020

0 Sr
0 Jr
2 So
26 Fr

Distributions

| Year | Major | Sex | Ethnic |
|---|---|---|---|
| 2 | Biz-IS | F | Arm |
| 2 | CE | F | Arm |
| 1 | CE | F | Arm |
| 1 | CE | F | Arm |
| 1 | CIT | F | Asian |
| 1 | CIT | F | Asian |
| 1 | CS | F | Asian |
| 1 | CS | F | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | Hisp |
| 1 | CS | M | ME |
| 1 | CS | M | ME |
| 1 | CS | M | ME |
| 1 | CS | M | W |
| 1 | CS | M | W |
| 1 | CS | M | W |

8 F

3 CE

2 CIT

22 CS

15 Hisp

3 W

0 other

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# Comp Sci Majors



| Academic Year | Fall Enrollment By Year | | | | Total BSCS Enrollment | BSCS Degrees Awarded |
|---|---|---|---|---|---|---|
| | Fr | So | Jr | Sr | | |
| 2017-2018 | 273 | 137 | 232 | 297 | 939 | |
| 2016-2017 | 215 | 118 | 193 | 247 | 773 | 106 |
| 2015-2016 | 217 | 87 | 193 | 198 | 695 | 67 |
| 2014-2015 | 109 | 61 | 153 | 162 | 485 | 69 |
| 2013-2014 | 99 | 55 | 118 | 174 | 446 | 67 |

# Comp Engr Majors



| Academic Year | Fall Enrollment By Year | | | | Total BSCompE Enrollment | BSCompE Degrees Awarded |
|---|---|---|---|---|---|---|
| | Fr | So | Jr | Sr | | |
| 2017-2018 | 129 | 69 | 67 | 98 | 363 | |
| 2016-2017 | 122 | 58 | 67 | 103 | 350 | 41 |
| 2015-2016 | 162 | 61 | 63 | 93 | 379 | 24 |
| 2014-2015 | 140 | 50 | 59 | 90 | 339 | 21 |
| 2013-2014 | 117 | 51 | 63 | 76 | 307 | 17 |

# CSUN Top Choice



## CSUN Most Popular College Application Choice Among LAUSD Seniors, Study Finds

More Los Angeles Unified School District seniors apply to CSUN than to any other university, a recent study found. CSUN is attractive due to its nationally recognized programs, its diversity and its affordability.

# School Costs



Student Loan Hero | by lendingtree

Student Loans Products Calculat

## The 10 Most Affordable Four-Year Hispanic-Serving Institutions for In-State Students Living on Campus

| Rank | Institution | Location | Full-Time Retention Rate | Estimated Avg Attendance Costs In-State | Listed Attended Costs In-State | Avg Awarded Scholarships & Grants (2016-17) |
|---|---|---|---|---|---|---|
| 1 | Texas A & M International University | Laredo, Texas | 76 | $9,214 | $17,983 | $8,769 |
| 2 | Oklahoma Panhandle State University | Goodwell, Okla. | 40 | $9,771 | $14,080 | $4,309 |
| 3 | California State University-Fresno | Fresno, Calif. | 81 | $10,394 | $20,431 | $10,037 |
| 4 | The University of Texas Rio Grande Valley | Edinburg, Texas | 79 | $10,639 | $20,035 | $9,396 |
| 5 | Dalton State College | Dalton, Ga. | 68 | $10,871 | $15,915 | $5,044 |
| 6 | Texas Woman's University | Denton, Texas | 78 | $11,279 | $19,723 | $8,444 |
| 7 | University of Houston-Victoria | Victoria, Texas | 56 | $11,623 | $19,639 | $8,016 |
| 8 | California State University-Stanislaus | Turlock, Calif. | 80 | $11,661 | $20,554 | $8,893 |
| 9 | California State University-Northridge | Northridge, Calif. | 80 | $12,374 | $22,127 | $9,753 |
| 10 | University of Houston-Clear Lake | Houston, Texas | 74 | $12,377 | $23,918 | $11,541 |

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# CSUN Rankings

## Money Magazine



Money | Best Colleges For Your Money 2019 | Build Your Own Rankings | Popular Rankings | Search for a college | SEARCH

| Rank | College Name | Median SAT/ACT score | Est. price 2019-20 without aid | Est. price 2019-20 with avg. grant | % of students who get any grants | Average student debt | Early career earnings |
|---|---|---|---|---|---|---|---|
| 24 | Houston, TX | 1540/34 | $66,000 | $25,800 | 61% | $11,200 | $69,200 |
| 25 | **Massachusetts Maritime Academy**<br>Buzzards Bay, MA | 1120/23 | $26,800 | $15,500 | 48% | $26,930 | $67,200 |
| 26 | **Washington and Lee University**<br>Lexington, VA | 1420/32 | $68,900 | $26,700 | 57% | $19,920 | $63,200 |
| 27 | **Georgia Institute of Technology**<br>Atlanta, GA | 1310/32 | $30,000 | $16,900 | 62% | $23,750 | $70,800 |
| 28 | **The University of Texas at Austin**<br>Austin, TX | 1340/30 | $26,600 | $15,300 | 50% | $21,500 | $59,100 |
| 29 | **California State University-Northridge**<br>Northridge, CA | 1020/20 | $23,100 | $6,400 | 70% | $13,830 | $49,600 |
| 30 | **University of California-Santa Barbara**<br>Santa Barbara, CA | 1300/31 | $37,700 | $17,200 | 62% | $16,300 | $57,300 |
| 30 | **University of Notre Dame**<br>Notre Dame, IN | 1450/33 | $72,500 | $29,300 | 62% | $21,430 | $64,700 |

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# CSUN Rankings



## Money Magazine

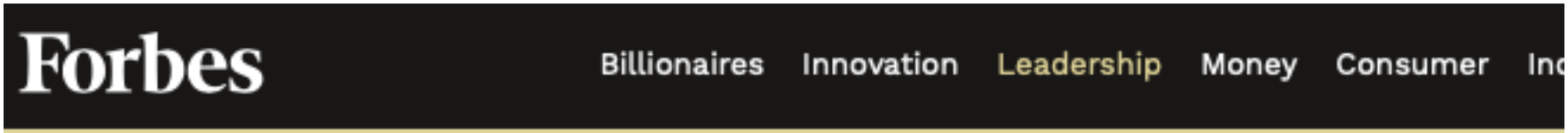
**Money Magazine** 2019-20 "Best College Value" ranking:

1 **UCI**,, 2 CUNY, 3 Princeton, 4 **UCLA**, 5 **UCD**, 6 Stanford, 7 MIT, 8 Michigan, 9 **UCSD**, 10 Virginia, 11 **UCB**, 12 **UCR**, 13 **CSULB**, 14 Harvard, 15 Vanderbilt, 16 CalTech, 17 Yale, 18 Texas A&M, 19 Duke, 20 Illinois, 21 Florida, 22 **CSUF**, 23 Washington, 24 Rice, 25 Mass. Maritime, 26 Washington & Lee, 27 Georgia Tech, 28 Texas, 29 **CSUN**, 30T **UCSB**, 30T Notre Dame, 32 Penn, 33 Binghamton, 34 Virginia Poly, 35 CUNY Brooklyn, 36 **CSULA**, 37 Swarthmore, 38 Bates, 39 Williams, 40 No. Carolina State, 41 **California Poly** Pomona, 42 Connecticut, 43T Maryland, 43T Holy Cross, 45 William & Mary, 46 Wisconsin, 47 Stony Brook, 48 New Jersey, 49 VMI, 50 Rutgers, 51 **CSU** Fresno, 52 No. Carolina, 53 CUNY John Jay, 54 Colgate, 55 Purdue, 56 **CSU** Chico, 57 James Madison, 58 Union College, 59 Michigan State, 60 Pomona, 61 Georgetown, 62 Northwestern, 63 **CSU** Monterey Bay, 64T George Mason, 64T Amherst, ... 68 **CSU** Stanislaus, ..., 70 **CSU** San Bernardino, ..., 72 Brown, ..., 74 **CSU** San Diego, 75 **California Poly** SLO, 77 U of Chicago, 78 Clemson, 79 Boston College, 81 Columbia, 91 Cornell, 93 **CSU** CI, 95 Dartmouth, 96 **CSU** Dominguez Hills, 97 Indiana, 98 Wake Forest, 99 Buffalo, 100 CUNY Queens, 101 Claremont McKenna, 102 Florida State, 103 **UCSC**, 104 **CSU** San Jose, ..., 120 Carnegie Mellon, 125 Johns Hopkins, 131 **USC**, 136 Harvey Mudd, 138 Wash. State, 144 **CSU** San Francisco, 150 **CSU** Sacramento

score: UC = 6/12 + 8/103, CSU = 16/150

# Forbes "Top Colleges"






Below are the top ten winners of this year's #MyTopCollege competition:

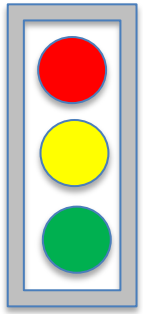
1. California State University, Fullerton
2. Widener University
3. Sweet Briar College
4. Otterbein University
5. California State University, Northridge
6. California State University, Fresno
7. Saint Francis University
8. Stony Brook University
9. California State University, Long Beach
10. California State University, Chico

# Grading – Scale



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

color coding

# Grading – Weights



| Category | Weight |
|---|---|
| Programs | **40** |
| Projects | **15** |
| CAs | **10** |
| Quiz | **5** |
| Midterm | **10** |
| Final | **20** |

8 @5 ea

5 + 10

Ch 3-6, 11

5 @2 ea

Lab + home

Programming
65

ZyBook

Testing
35

In-class

Single COMBINED GRADE

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# Reading/Subjects Calendar

DR JEFF SOFTWARE
INDIE APP DEVELOPER

2017-22

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| **Liang** Chapter | 1/2 | 2 | 2/3 | 3/5 | 4 | 7 | 6 | 8 |
| **zyBooks** Chapter | 1/2 | 2 | 2/3 | 3/4 | 3 | 5 | 5 | 6 |
| | I/O<br>Debug | data types<br>Int/float<br>methods | if-then-else<br>case, loops | | Strings<br>char<br>Quiz 1 | arrays[ ]<br>[ ][ ] | Arrays<br>class | methods<br>Midterm |

| Week | 9 | 10 | 11 | 12 | 13 | 14 | 15 | |
|---|---|---|---|---|---|---|---|---|
| **Liang** Chapter | 12B | 12A | 9 | 9 | 9 | 9/10 | 10/11 | Final |
| **zyBooks** Chapter | 7 | 8 | 10 | 11 | 11 | 11/12 | 11 | |
| | File I/O<br>Date/Time | Excepts<br>Randoms | scope<br>Mem mgt | Objects/Classes | | | | |

Thxgvg Break
- Nov 24

OOP

Final Prep

subject to change

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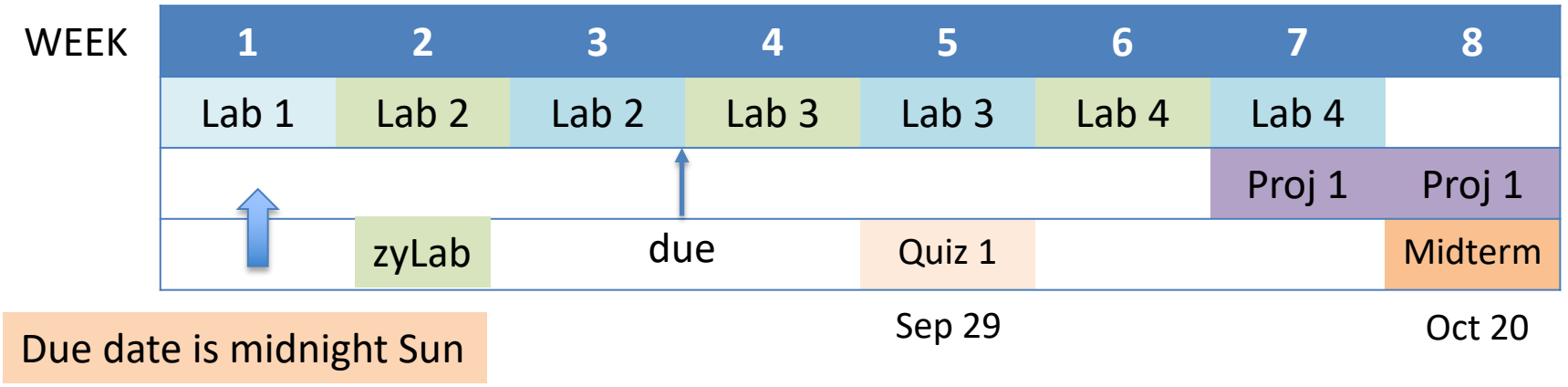
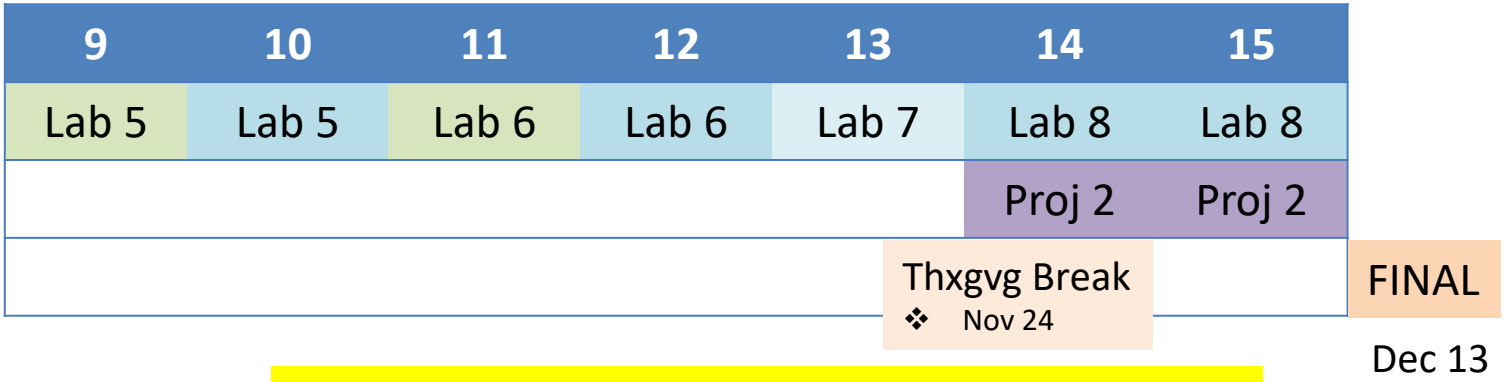
# Assignments/Exams






Due date is midnight Sun




❖ All assignments must be submitted by Dec 11

FINAL

**My Exam Schedule > Fall Semester 2022 > CSU Northridge** Personalize |

| Class | Class Title | Exam Date | Exam Time | Exam Room |
|---|---|---|---|---|
| COMP 110-03 (16511) | INTRO ALGRTH/PROG (Lecture) | 12/13/2022, Tuesday | 3:00PM - 5:00PM | Jacaranda 1104 |

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# Lab Programs



1. Hello World (I/O)
2. Temperature conversion (*numerics, formatted* output) — Project 1
3. Guess Secret Name (GUI Input, IF-THEN, loops)
4. *Palindromes/Anagrams* (strings, *methods*)
5. *Homonyms* (strings, *methods,* arrays, *files*)
6. Prime numbers (*algorithms*, loops, *methods,* arrays, *files*)
7. *Cryptography/blockchains* (*algorithms/keys*, *methods*)
8. Tic-Tac-Toe (arrays, *methods, formatted* output, *Classes*) — Project 2
9. Bowling League (arrays, *files*, *methods*, stats, *Classes*)
10. Calendar (algorithms, *formatted* output, Date/Time)
11. Games (arrays, random numbers) → Project
12. Probability (*factorials-> recursion*)

# Lab Section



## ❖Exercises (not graded)

- Textbook/PAs (5 CAs are graded)
- Java constructs (Loops, Strings, Arrays, Date/Time etc.)
- Theorem Proofs
- Internet problems (Monty Hall, etc.)

## ❖Labs (Programs – graded)

- 8 programs
  - Continuing over 2 weeks
  - ZyLabs + jGRASP → Lab Report
  - Some *Bonuses*, *Challenges* (extra credit)

## ❖Projects (Programs – graded)

1. Embedded Control: Thermostat
2. Simulation: Game playing (cards)

→ Single COMBINED GRADE

# Lab Form



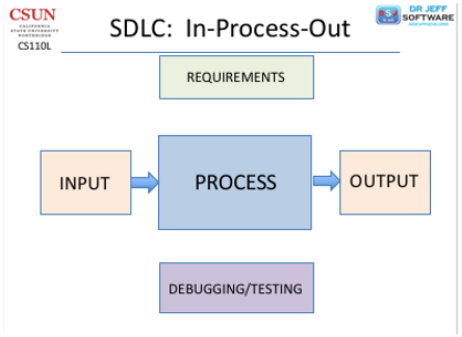
**COMP 110/110L** **Intro to Algorithms and Programming** **Fall 2022**

**Student:** 

**Instructor: Dr. Jeff Drobman**

**Lab #:** 

## LAB FORM



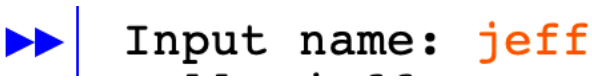

Requirements

1. Inputs:
    1.
    2.
2. Outputs:
    1.
    2.
3. Process:
    1.

**I-P-O**

Inputs

*(paste here screenshots of all inputs – not code)*



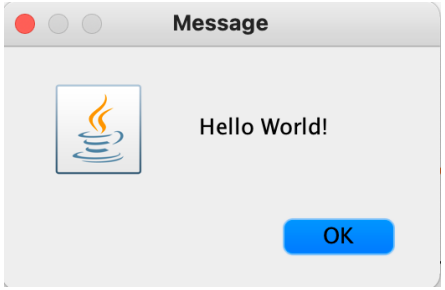
# Lab Form

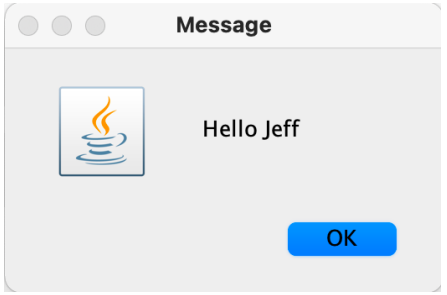


## Outputs

*(paste here screenshots of all outputs – not code)*

```
----jGRASP exec: java Lab1Hello
Hello World!
Input name: jeff
Hello jeff
```




## Process (algorithms): *source code*

*(paste original jGRASP view here; include line numbers – make legible)*

```
1  /* CSUN COMP110 header
2  student: Jeff Drobman
3  ver date: 1-16-21
4  file:  Lab1Hello122.java
5  Lab 1A:  Hello basic
6  */
7  //imports
8  import java.util.Scanner;
9  import javax.swing.*;
10 //main class
11 public class Lab1Hello {
12 //main method
13    public static void main(String[] args) {
14       /*int a=1;
15       int x= ++a + a++ + ++a;
16       System.out.print(x);
17       */
18       //code starts here (indent)
19       //OUTPUT
20       System.out.println("Hello World!");//console
21       JOptionPane.showMessageDialog(null, "Hello World!");//GUI
22       //INPUT
23       Scanner input = new Scanner(System.in);//instantiate "Scanner" class
```

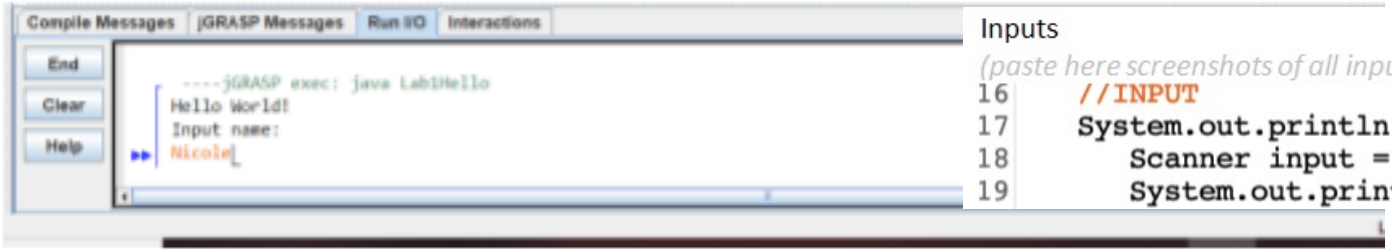
## zyBook Lab

*(paste here shot of your "Submit" grade, e.g., "40/40")*

# Lab Form



## Inputs

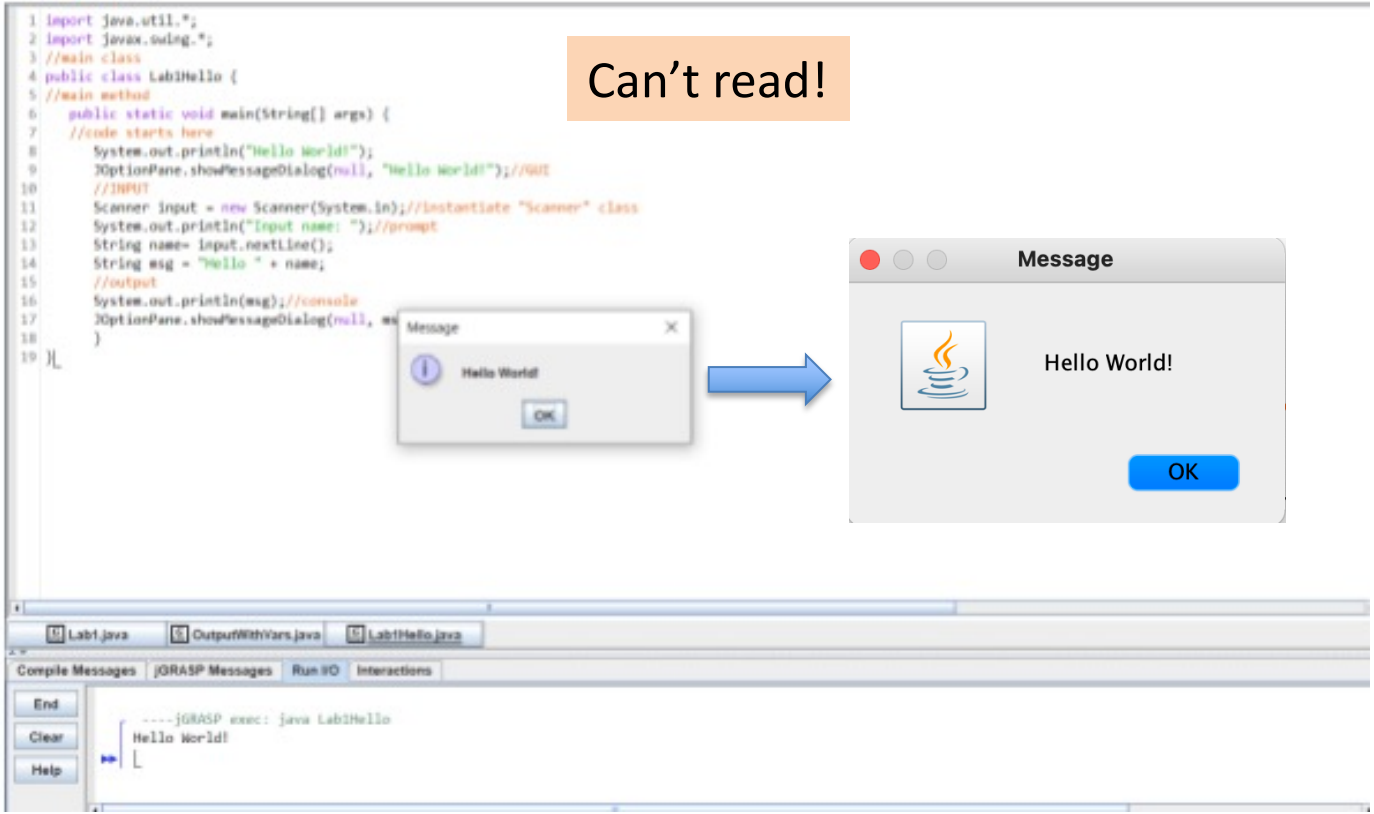



Inputs

*(paste here screenshots of all inputs)*

```
16      //INPUT
17      System.out.println("Hello World!");
18         Scanner input = new Scanner(System.in);
19         System.out.print("Input name: ");
```

## Outputs



# Lab Form



```
39        System.out.printf("\t in Fixed: %.2f\n" , dblF);
40        System.out.printf("\t in Format: %.2f, %10.2e\n", dblF,dblF);
41
42        //GUI Output
43        JOptionPane.showMessageDialog(null , String.format("Fahrenheit " + tempF + " is " + FtoC(tempF)+ " in Celsius" + "\n"
44        + "The number in Float is: " + fltC + "\n" + "The number in Fixed is: %.2f" , dblC), "Message", 3);
45        JOptionPane.showMessageDialog(null , String.format("Celsius " + tempC + " is " + CtoF(tempC)+ " in Fahrenheit" + "\n"
46        + "The number in Float is: " + fltF + "\n" + "The number in Fixed is: %.2f" , dblF), "Message", 3);
47
48       //CHALLENGE ACTIVITY
49
50        int n = 2;
51        for(int i=0;i<10;i++)
52        {
53           System.out.println(n);
54           n *= 2;
55        }
56        }
57
58
59    }//end main
60
61    //methods to convert
62    static double FtoC(double f) {//F->C
63       double c = 0.0;
64       c=(f-32.0)*(5.0/9.0);
65       return c;
66    }//end FtoC
67    static double CtoF(double c) {//C->F
68       double f = 0.0;
69       f=(9.0/5.0)*c+32.0;
70       return f;
71    }//end CtoF
72
73 }//end class
74
```

Can’t read!

# Projects



## ❖Project 1: Embedded Control

DUE AT MIDTERM

- ➢ **Thermostat** → use Temp Conversion
  - ❑ Others
    - ▪ TV remote
    - ▪ Car transmission/acceleration

➢ while (true)

❖ Required extras
❑ USER GUIDE

## ❖Project 2: Simulation

DUE AT FINAL

- ➢ **Card game** → use "Shuffling" + *deal*
  - ▪ **Blackjack** (play)
  - ▪ **Poker**
  - ▪ **War**
  - ▪ **Bridge**
  - ❑ Others to consider
    - ▪ Weather → use Temp Conversion
    - ▪ Stock Market → ref my app (SMM)
    - ▪ US Economy (GDP, CPI, etc.)

❖ Classes

➢ game playing
- ▪ random numbers
- ▪ *monte carlo*

❖ Required extras
❑ USER GUIDE
❑ **UML**

➢ Submit on PROJECT FORM

# Quizzes/Exams



- CAs (5)
  - zyBook
- Quiz
  - Only 1 (5th week)
- Midterm
  - All on Canvas
  - Multiple choice
  - Mid course (8th week) – Thurs Oct 20
- Final
  - 16th week – Tues Dec 13

- All exams ***open book*** (notes, PC, Internet)

# Assignments



Canvas

## Assignments

**Lab 1**
**Due** Sep 5 at 11:59pm | 100 pts

**Lab 2**
**Due** Sep 18 at 11:59pm | 100 pts

**Quiz**
**Not available until** Sep 29 at 3:30pm | **Due** Sep 29 at 4:15pm | 20 pts

**Lab 3**
**Due** Oct 2 at 11:59pm | 100 pts

**Lab 4**
**Due** Oct 16 at 11:59pm | 100 pts

**Project 1**
**Due** Oct 23 at 11:59pm | 100 pts

**Midterm Exam**
**Not available until** Oct 20 at 3:30pm | **Due** Oct 20 at 4:30pm | 25 pts

# Assignments



**Lab 5**
**Due** Oct 30 at 11:59pm | 100 pts

**Lab 6**
**Due** Nov 13 at 11:59pm | 100 pts

**Lab 7**
**Due** Nov 20 at 11:59pm | 100 pts

**Lab 8**
**Due** Dec 4 at 11:59pm | 100 pts

**Project 2**
**Due** Dec 11 at 11:59pm | 100 pts

**Final Exam**
**Not available until** Dec 13 at 3:00pm | **Due** Dec 13 at 5pm | 40 pts

# Section



## Course Summary

# Course Goals



1. **Requirements** statements
2. Design **Structure**
   - Map to requirements
3. Select/create **algorithms**
   - Map to requirements
4. Allocating algorithms to **methods**
5. Using I/O
   - Console (System I/O)
   - GUI ("Swing")
6. OOP concepts and practices
7. Debugging & Testing

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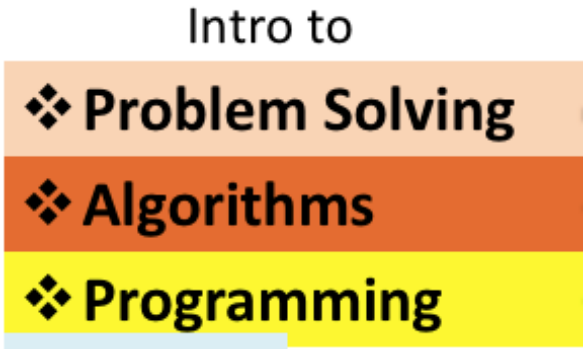
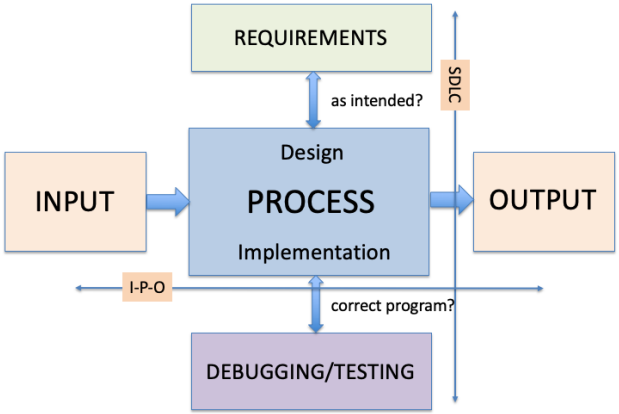
# Course Description



- **Problem Solving**
  - Express problem as set of requirements
- **Algorithms**
  - Representation, Design, Structure
  - Analysis & Optimization
- **Programming**
  - Design **Structure** (Blocks)
  - Implement (code) each structural block
- Methodology (Software Engr.)
  - **SDLC** (Software Dev Life Cycle)
  - **IPO** (Input-Process-Output)
- Assignments
  - CAs (Challenge Activities – **zyBooks**)
  - Labs (**zyBooks** + **jGRASP**)
  - Projects (**jGRASP**)



# SDLC



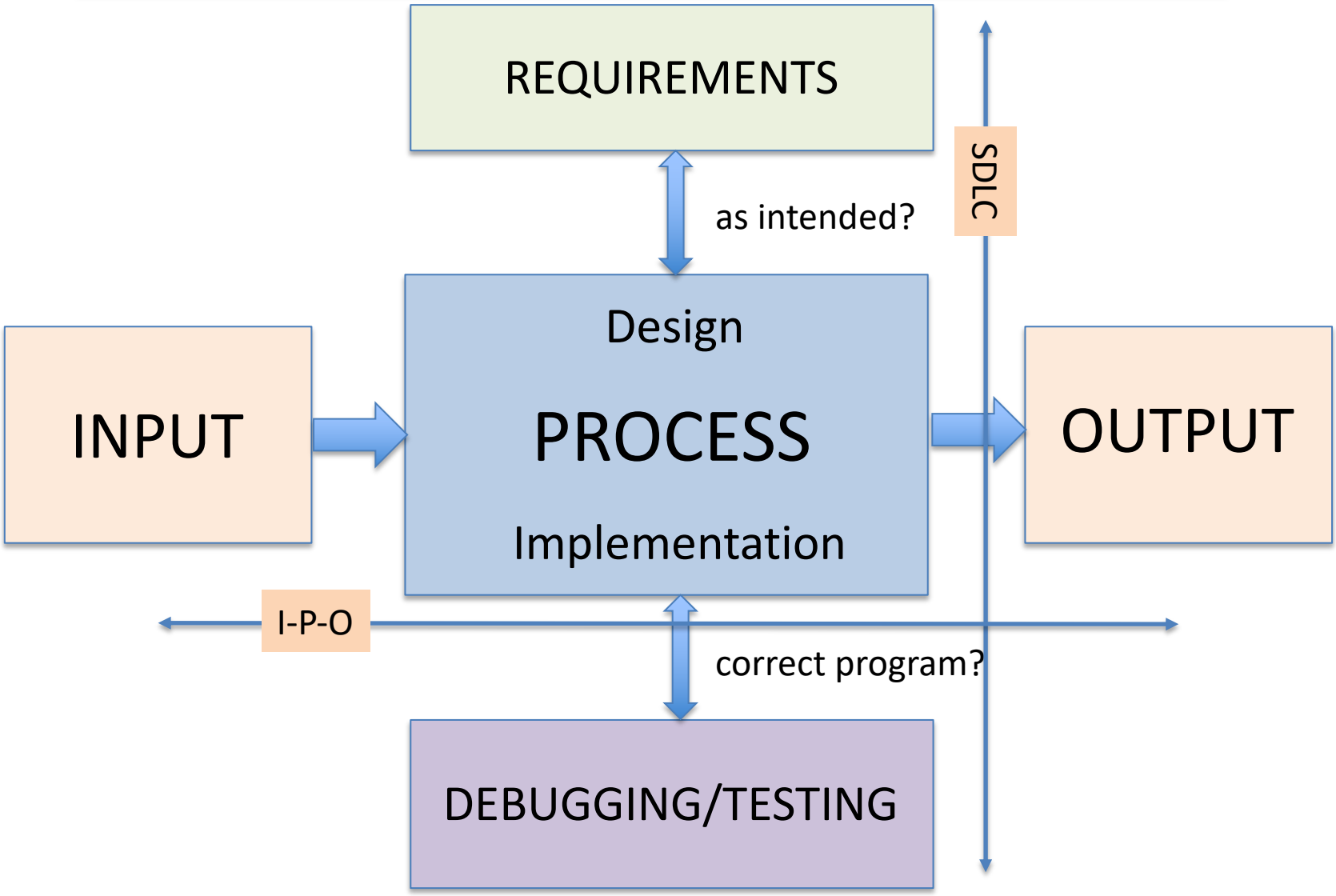
## Software Development Life Cycle

- 6 Stages (we use the 1st four)

- **Requirements**
- **Design**
- **Implementation**
- **Testing**
- Deployment
- Maintenance

# SDLC + In-Process-Out





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# Course Mapping



Intro to

- ❖ **Problem Solving**
- ❖ **Algorithms**
- ❖ **Programming**
  - ❖ **Debugging**

via

*implemented* via

- ➢ **SDLC** model
- ❖ **Requirements**
- ❖ **Design**
  - ➢ **STRUCTURE**
- ❖ **Implementation**
  - ❖ **Testing**

Other major topics

- ➢ **I-P-O** model
- ❖ *Structured* Programming
  - ➢ ***Encapsulation***
- ❖ Methods
- ❖ Classes
- ❖ **OOP** – *Object-Oriented* Programming
  - ➢ ***Encapsulation***
  - ➢ ***Inheritance***
  - ➢ ***Polymorphism***

Programming Languages

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

# Section



## Student Success

# Success



Success =

***Apt**itude*

+

***Att**itude*

- Aptitude
  - Math/Logic
  - Computing/programming
  - Problem solving
  - Algorithms
  - Pattern recognition
- Attitude
  - ***Show up***
    - Physically
    - Mentally
  - ***Effort***
    - Work hard
    - Submit ALL assignments
  - ***Prepare***
    - Exams

➢ Effort!

# Aptitude Assessment: Math



- Algebra
  - Functions
  - Formulas/ equations
- Arrays
  - Vectors (1D)
  - Matrices (2D)
- Number systems (radix)
  - Radix (base): Decimal, Binary & Hex
  - Powers and logs (e.g., $2^{10} = 1024$)
- Data types
  - Numeric: Integers, Floating-point
  - Non-numeric
    - Characters (and Strings)
    - Logic (Boolean)
- Codes
  - ASCII
  - Unicode

# Aptitude Assessment: Coding



- X = X + 1 → Understand this?
- Numbers
  - Radix: Binary <-> Decimal
  - Precision + Formatting
- Algorithms
- Subroutines & Functions
- Hierarchical models
  - Trees (root, branches, leaves)
  - Nesting ((xxx))
  - Operator Precedence
- Strings ("non-numerical")
  - Character codes (ASCII, Unicode)
  - Character strings
- Arrays
  - Vectors (1D) –> x[ ]
  - Matrices (2D) -> x[ ] [ ]

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# Aptitude Assessment



## Quiz 0

Fall 2017
Actual Grades

| GRADE | | |
|---|---|---|
| % | Grade | # |
| 99.15 | A | 7 |
| 94.42 | A | |
| 92.82 | A | |
| 91.78 | A | |
| 91.72 | A | |
| 91.72 | A | |
| 90.57 | A | |
| 90.28 | A- | 2 |
| 90.08 | A- | 9 |
| 88.5 | B+ | 2 |
| 88.2 | B+ | |
| 85.5 | B | 6 |
| 85.12 | B | |
| 84 | B | |
| 83.82 | B | |
| 82.52 | B | |
| 81.78 | B | |
| 81.32 | B- | 2 |
| 80.78 | B- | 10 |
| 79.05 | C+ | 2 |
| 78.72 | C+ | |
| 77.03 | C | 4 |
| 76.75 | C | |
| 76.28 | C | |
| 75.13 | C | |
| 69.35 | C- | 7 |
| 40.5 | F | 2 |
| 33.6 | F | |
| 30.1 | WU | 3 |
| 20.4 | WU | |
| 18.02 | WU | |

| Quiz 0 | | Predicted |
|---|---|---|
| /18 | % | GRADE |
| 14 | 78 | A |
| 13 | 72 | A |
| 13 | 72 | A |
| 13 | 72 | A |
| 12 | 67 | B+ |
| 12 | 67 | B+ |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 11 | 61 | B |
| 10 | 56 | C |
| 10 | 56 | C |
| 10 | 56 | C |
| 10 | 56 | C |
| 10 | 56 | C |
| 10 | 56 | C |
| 9 | 50 | C |
| 9 | 50 | C |
| 9 | 50 | C |
| 9 | 50 | C |
| 9 | 50 | C |
| 9 | 50 | C |
| 9 | 50 | C |
| 7 | 39 | D |
| 7 | 39 | D |

Spring 2018
Predicted Grades

| Quiz 0 | | sorted | | |
|---|---|---|---|---|
| Q# | wrong | Q# | wrong | % |
| 1 | 14 | 13 | 25 | 83 |
| 2 | 21 | 6 | 22 | 73 |
| 3 | 9 | 2 | 21 | 70 |
| 4 | 3 | 9 | 20 | 67 |
| 5 | 11 | 11 | 20 | 67 |
| 6 | 22 | 10 | 15 | 50 |
| 7 | 13 | 1 | 14 | 47 |
| 8 | 0 | 7 | 13 | 43 |
| 9 | 20 | 12 | 12 | 40 |
| 10 | 15 | 5 | 11 | 37 |
| 11 | 20 | 16 | 11 | 37 |
| 12 | 12 | 18 | 10 | 33 |
| 13 | 25 | 3 | 9 | 30 |
| 14 | 6 | 15 | 7 | 23 |
| 15 | 7 | 14 | 6 | 20 |
| 16 | 11 | 17 | 6 | 20 |
| 17 | 6 | 4 | 3 | 10 |
| 18 | 10 | 8 | 0 | 0 |
| | /30 | | /30 | |

1/2
>=50%

1/3
>=33%

# Survey



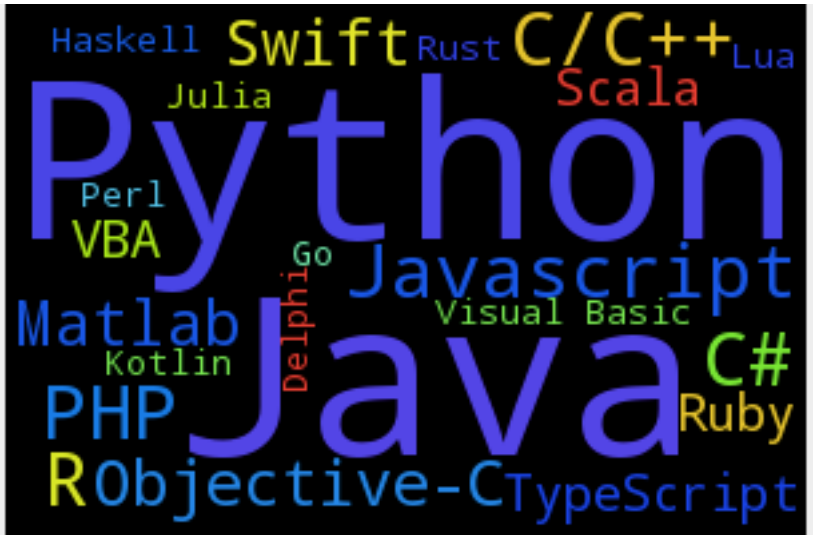
1. programming
2. (languages)
3. Rubik's cube
4. puzzles/riddles
5. chess
6. video games

| Survey | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 3 | 4 | 5 | 6 | Tot | |
| 3 | 3 | 3 | 3 | 4 | 13 | |
| 3 | 3 | 3 | 3 | 4 | 12 | |
| 2 | 3 | 3 | 3 | 4 | 12 | |
| 2 | 2 | 3 | 3 | 4 | 12 | |
| 2 | 2 | 3 | 3 | 4 | 11 | |
| 2 | 2 | 3 | 2 | 4 | 11 | |
| 2 | 2 | 3 | 2 | 4 | 11 | |
| 2 | 2 | 3 | 2 | 4 | 11 | |
| 2 | 2 | 3 | 2 | 3 | 10 | |
| 2 | 2 | 3 | 2 | 3 | 10 | |
| 2 | 2 | 3 | 2 | 3 | 9 | |
| 2 | 1 | 3 | 1 | 3 | 9 | |
| 2 | 1 | 3 | 1 | 3 | 9 | |
| 2 | 1 | 3 | 1 | 3 | 9 | |
| 1 | 1 | 3 | 1 | 3 | 9 | median |
| 1 | 1 | 2 | 1 | 3 | 9 | |
| 1 | 1 | 2 | 1 | 3 | 8 | |
| 1 | 1 | 2 | 1 | 2 | 8 | |
| 1 | 1 | 2 | 1 | 2 | 8 | |
| 1 | 0 | 2 | 1 | 2 | 7 | |
| 1 | 0 | 2 | 0 | 2 | 7 | |
| 1 | 0 | 2 | 0 | 2 | 7 | |
| 1 | 0 | 2 | 0 | 2 | 7 | |
| 1 | 0 | 2 | 0 | 1 | 7 | |
| 0 | 0 | 2 | 0 | 1 | 7 | |
| 0 | 0 | 2 | 0 | 1 | 6 | |
| 0 | 0 | 2 | 0 | 1 | 6 | |
| 0 | 0 | 2 | 0 | 1 | 6 | |
| 0 | 0 | 1 | 0 | 0 | 4 | |
| 0 | 0 | 0 | 0 | 0 | 2 | |

# Section



## Java
## Vs. Other HLLs

# Java



**1. Java**

Invented by James Gosling Jr. in 1995. Java is a general-purpose computer programming language that is concurrent, class-based, object-oriented, and specifically designed to have as few implementation dependencies as possible. The Java design philosophy is intended to let application developers "write once, run anywhere" (WORA), meaning that compiled Java code can run on all platforms that support Java without the need for recompilation.

Java is recommended as the first language for teaching or learning Object-Oriented Programming.

Java is currently the No #1 most popular programming language on the TIOBE Index.

According to the StackOverflow developer survey results for 2019, Java ranks fourth in the most popular programming languages. And according to Indeed, Java is the second most demanding programming language in the United States. Because of this popularity, you can understand that Java has

# Why Java

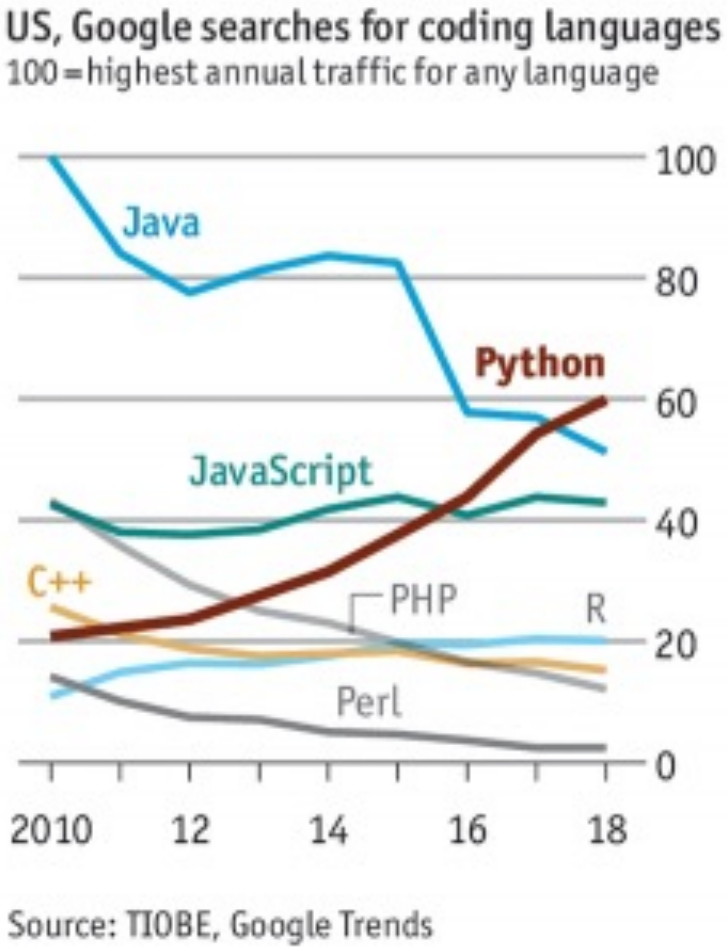


**What are strength and weakness of each programming language that you know of?**

Richard Kenneth Eng, Used Fortran, Tandem TAL, C/C++, C#, Obj-C, Java, Smalltalk, Python, Go

Answered Jul 23

1. Java – versatile and well-supported; verbose
2. Python – clean and concise; slow
3. JavaScript - ubiquitous for web programming; rotten design
4. C++ – versatile and well-supported; complex and complicated
5. C# – versatile and well-supported; mostly for Windows/.NET
6. Ruby – clean and concise; slow
7. Perl – versatile for string-handling; quirky syntax
8. PHP – easy to learn for web programming; nightmare to manage
9. C – simple and versatile; lacks capability for complex abstractions
10. Smalltalk – elegant and productive; small community
11. Go – simple, easy-to-learn, great concurrency; very conservative design
12. Rust – memory safe programming; difficult to learn
13. Objective-C – C's capabilities plus Smalltalk's objects; cumbersome syntax



# PYPL Ranks

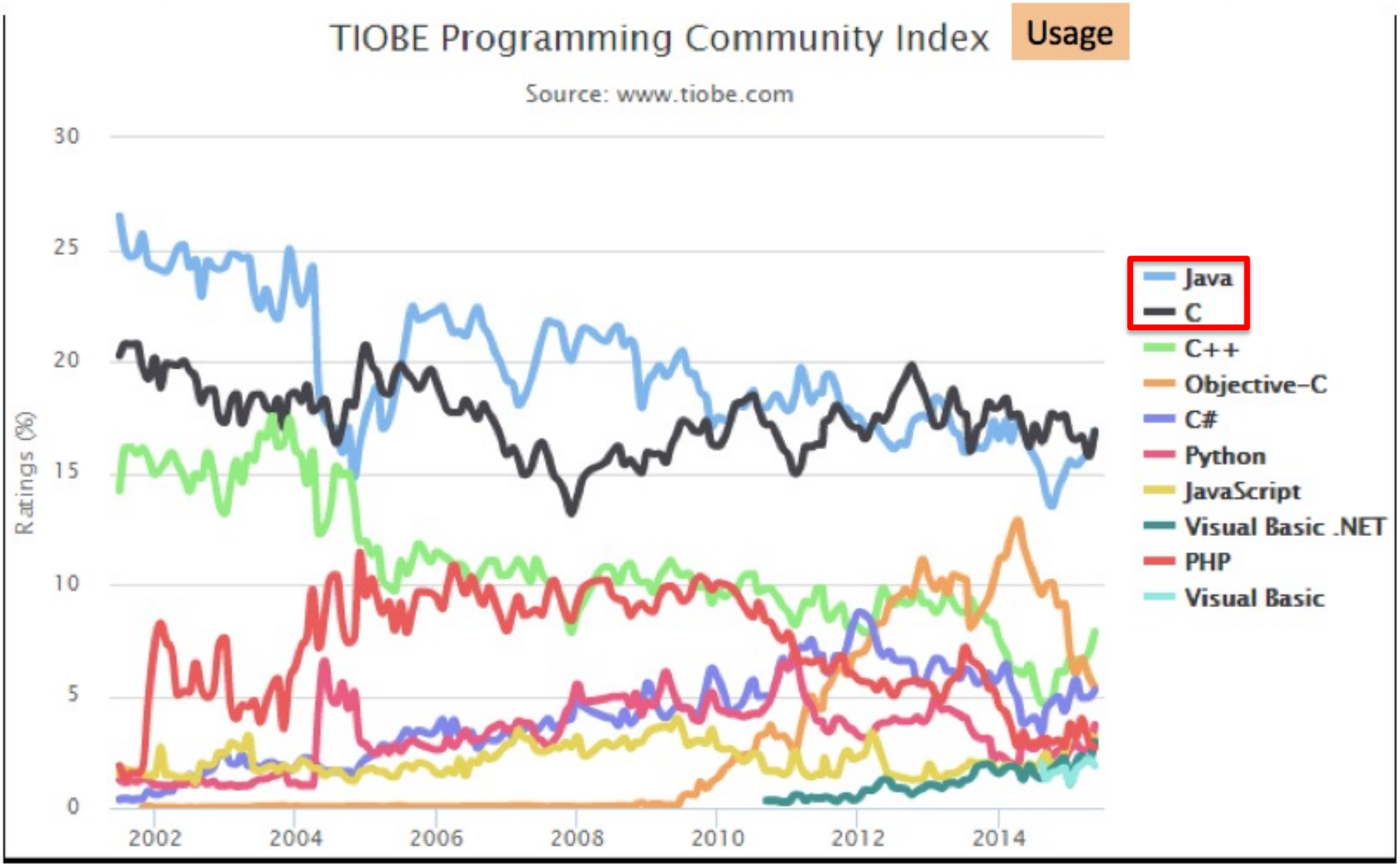


**Worldwide**, Dec 2018 compared to a year ago:

| Rank | Change | Language | Share | Trend |
|---|---|---|---|---|
| 1 | ↑ | Python | 25.36 % | +5.2 % |
| 2 | ↓ | Java | 21.56 % | -1.1 % |
| 3 | ↑ | Javascript | 8.4 % | +0.0 % |
| 4 | ↑ | C# | 7.63 % | -0.4 % |
| 5 | ↓↓ | PHP | 7.31 % | -1.3 % |
| 6 | | C/C++ | 6.4 % | -0.4 % |
| 7 | | R | 4.01 % | -0.3 % |
| 8 | | Objective-C | 3.21 % | -0.9 % |
| 9 | | Swift | 2.69 % | -0.7 % |
| 10 | | Matlab | 2.06 % | -0.3 % |
| 11 | ↑↑ | TypeScript | 1.65 % | +0.2 % |
| 12 | ↓ | Ruby | 1.57 % | -0.3 % |
| 13 | ↓ | VBA | 1.44 % | -0.1 % |
| 14 | | Scala | 1.25 % | -0.0 % |
| 15 | | Visual Basic | 1.15 % | -0.1 % |
| 16 | ↑ | Kotlin | 1.12 % | +0.3 % |

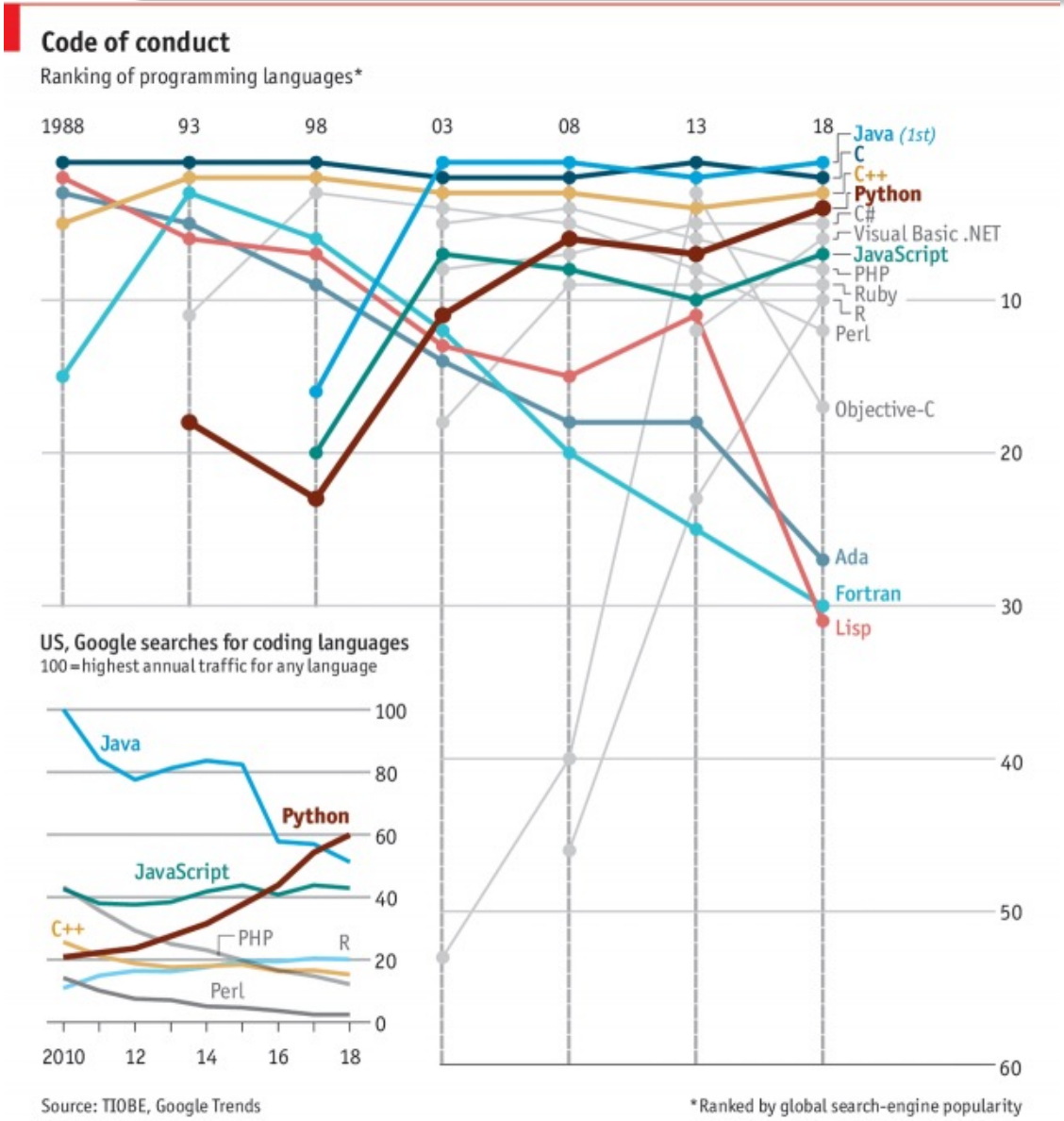
# HLL Usage





# HLL Usage by Search/Use





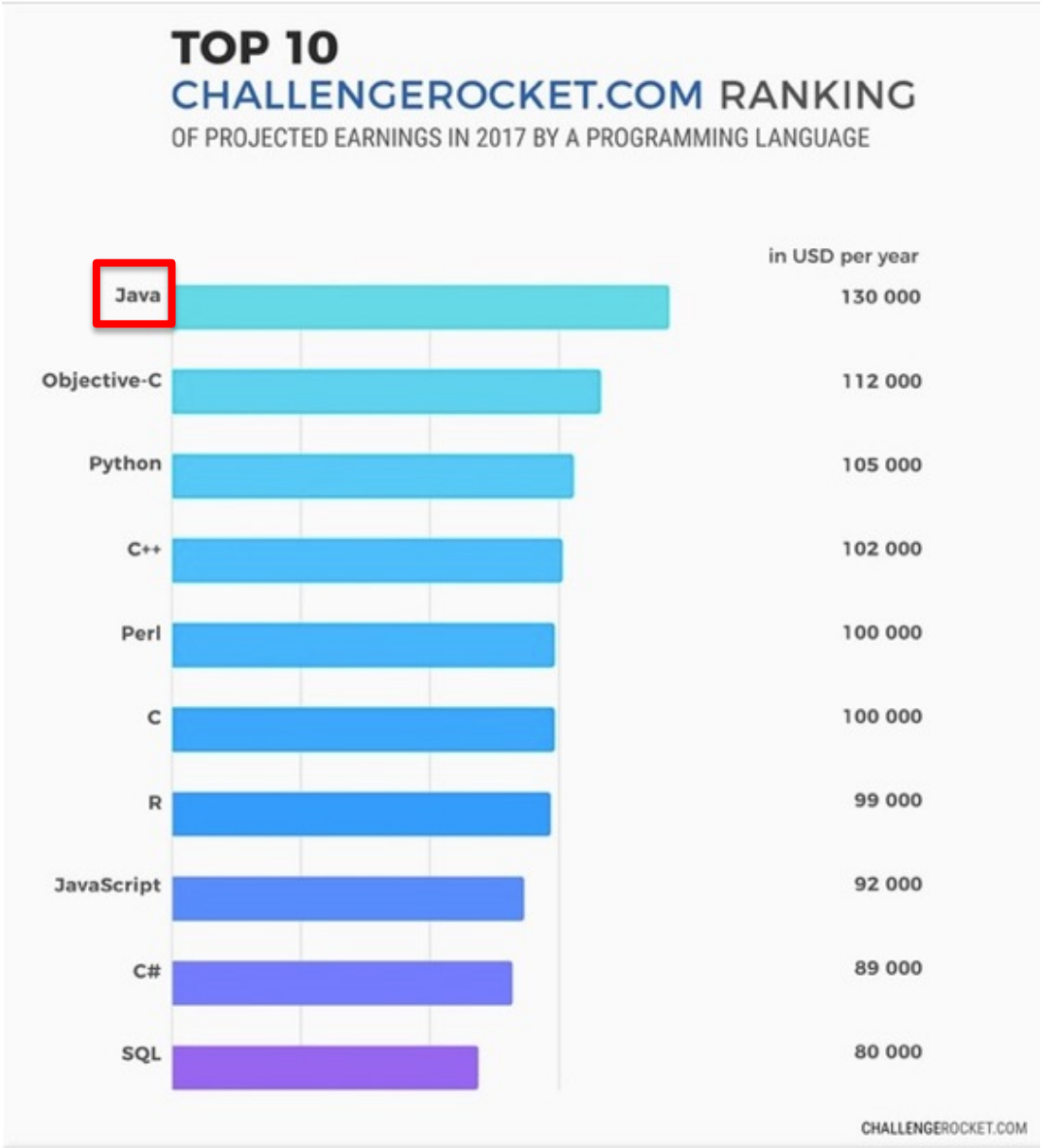

❖ Usage

| Language | Usage by percentage |
|---|---|
| Java | 21% |
| C | 17% |
| C++ | 6% |
| Python | 5% |
| C# | 4% |
| PHP | 3% |
| Visual Basic .NET | 2% |
| Javascript | 2% |
| Perl | 2.2% |
| Ruby | 2% |
| Assembly language | 1% |

(Source: http://www.tiobe.com)

# Java Usage

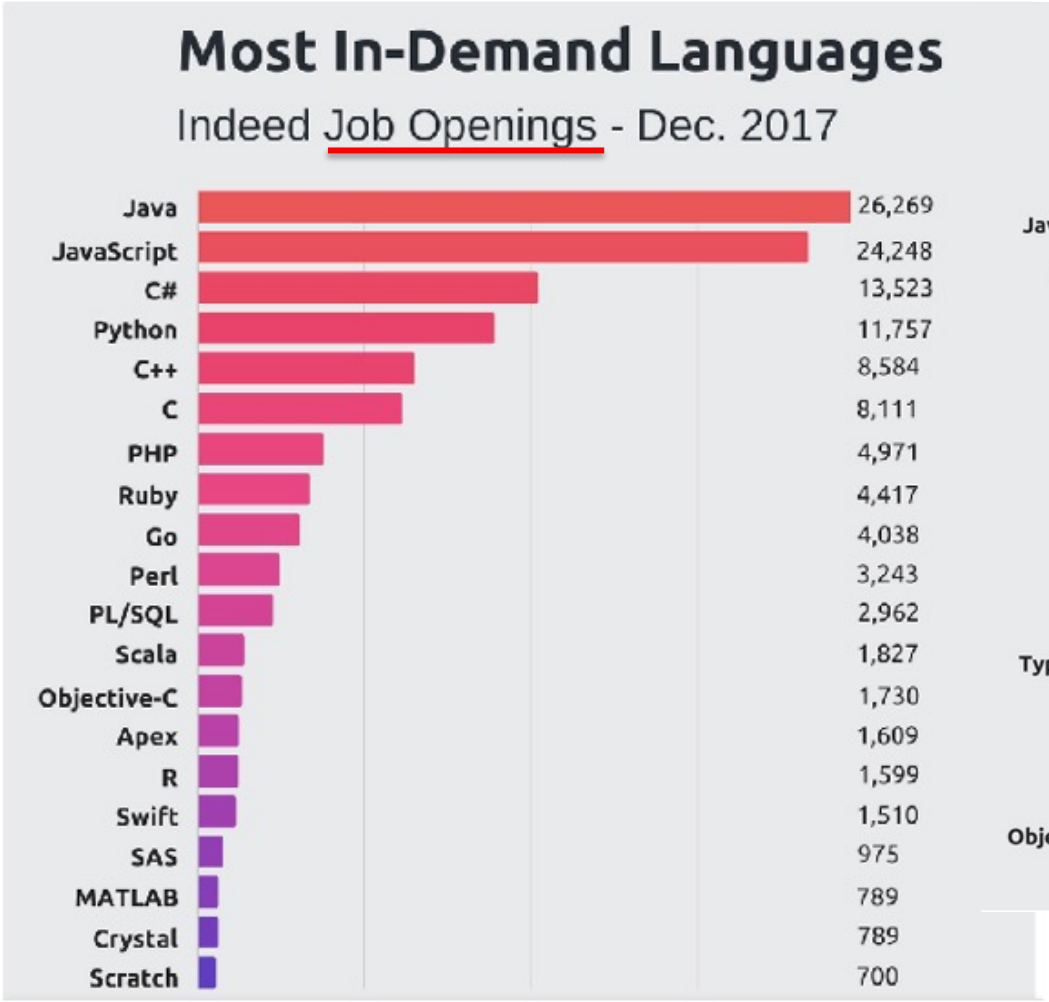


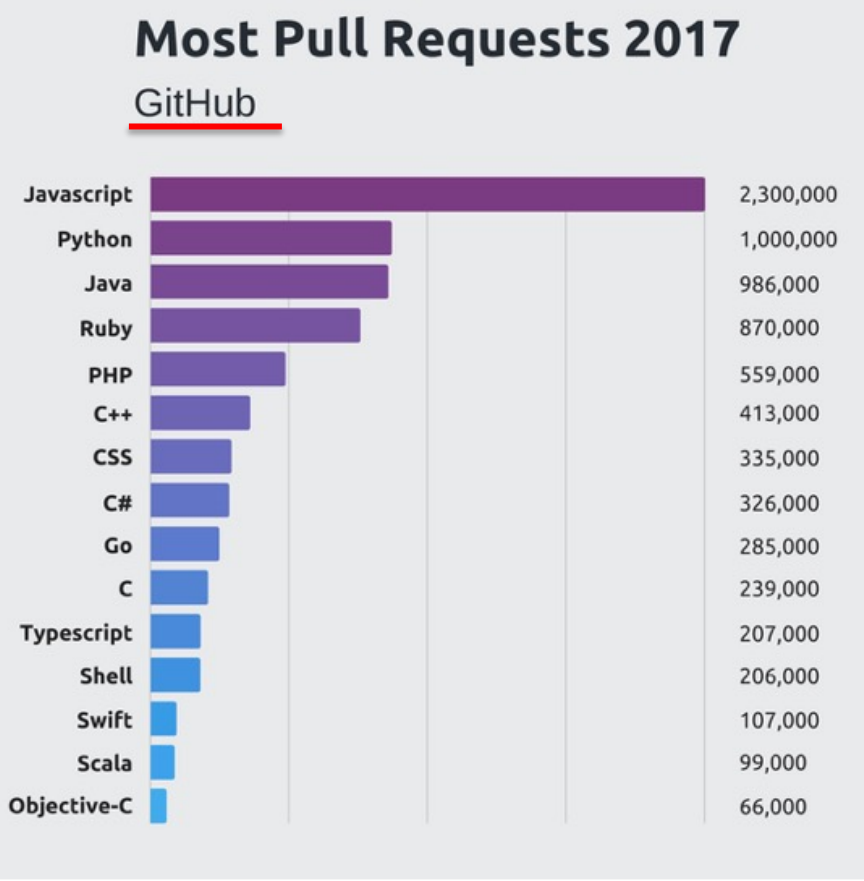


# Java Usage



**Indeed.com Top most in-demand programming languages based on job openings as at December 2017**



# IDEs for Java

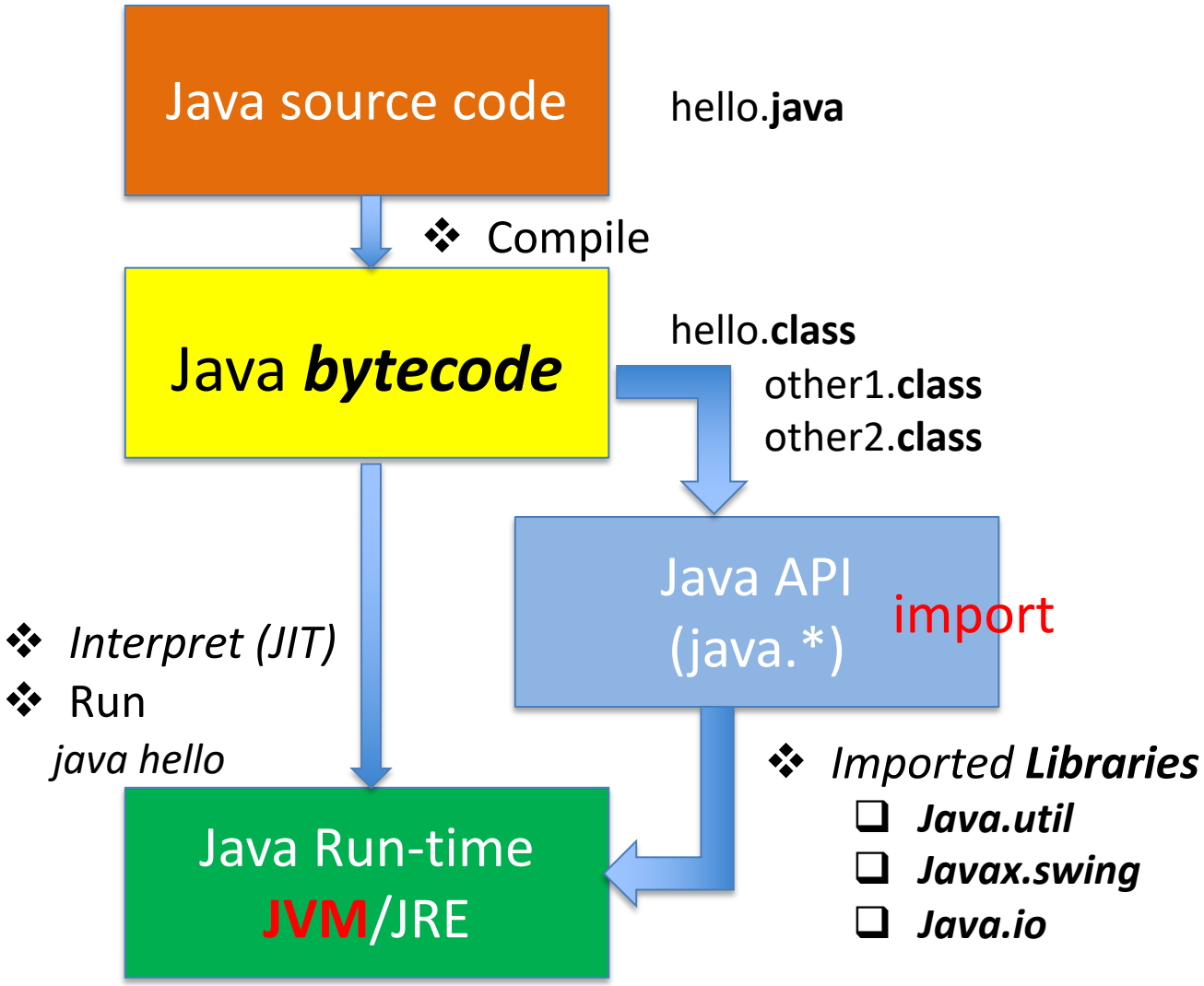


Integrated Development Environment

- Eclipse
- jGRASP ← We will use this one
- NetBeans
- IntelliJ IDEA
- MS Visual Studio

# Running Java





# Section



## Online Courses & Resources

# Java on GitHub



https://boostlog.io/@israrawan/50-top-java-projects-on-github-5b201ede44deba00540465e8

JUNE 12, 2018

## 50 Top Java Projects on GitHub

java github

Israr
israrawan

5095 views

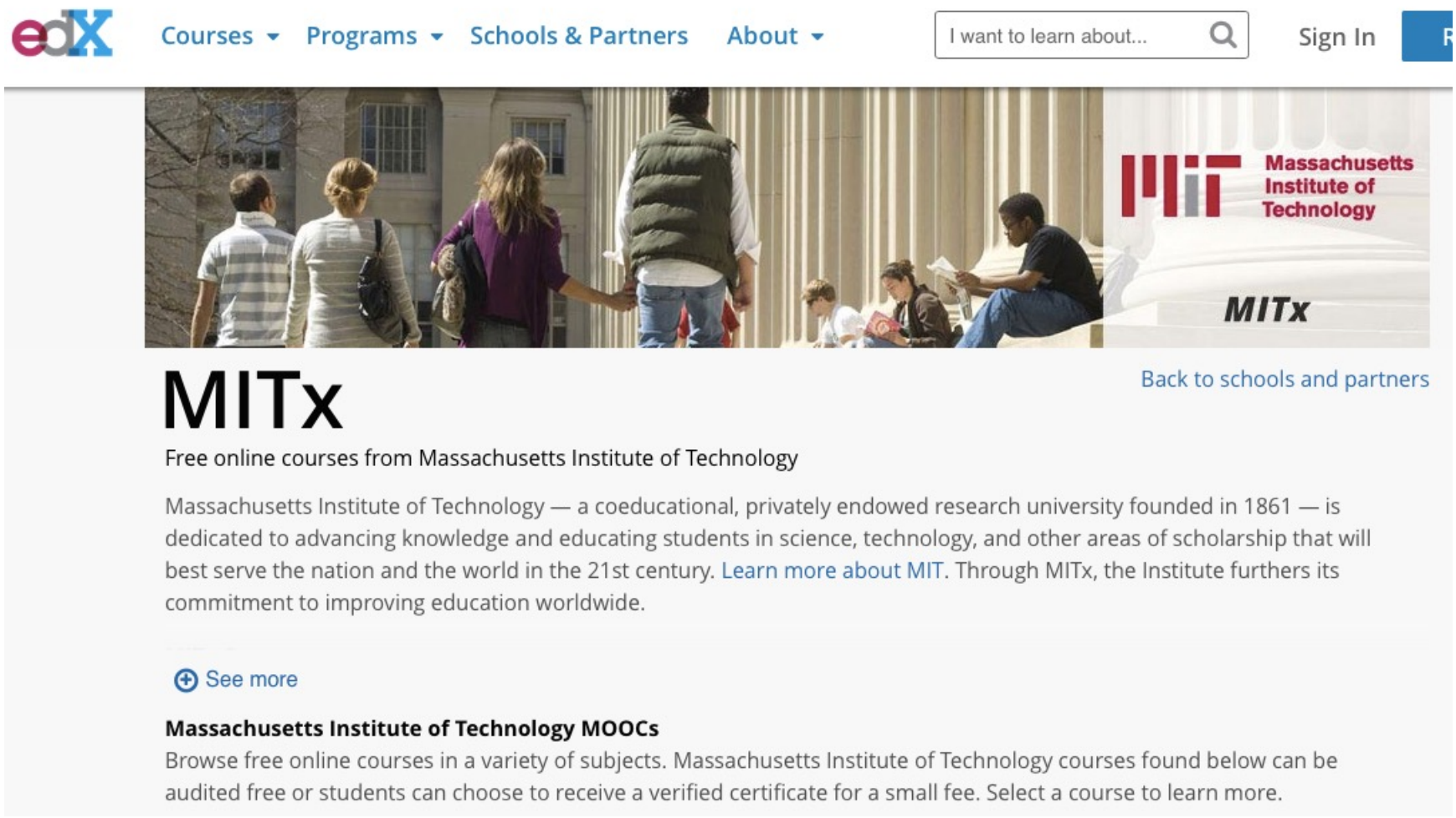
# Other Programming Courses



- Universities
  - MIT
  - Stanford
  - Harvard
- Privates
  - Online Courses
    - Code School
    - Code Academy
  - Tech "Boot Camps"
    - Udacity

# MIT





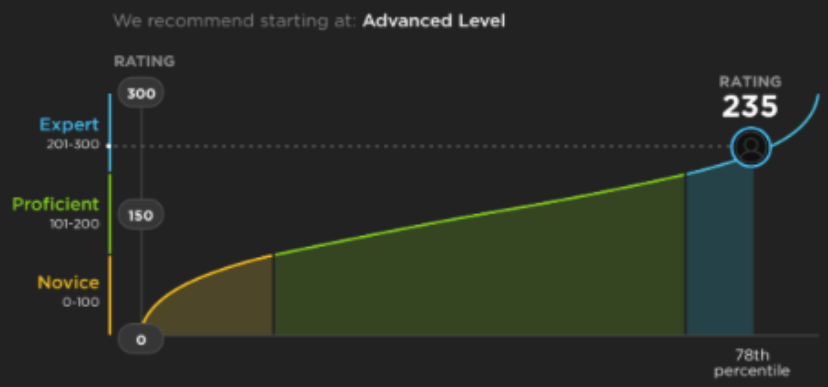
# MIT



# 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
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# Code School



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.

View Course

## What You'll Learn

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# Udacity

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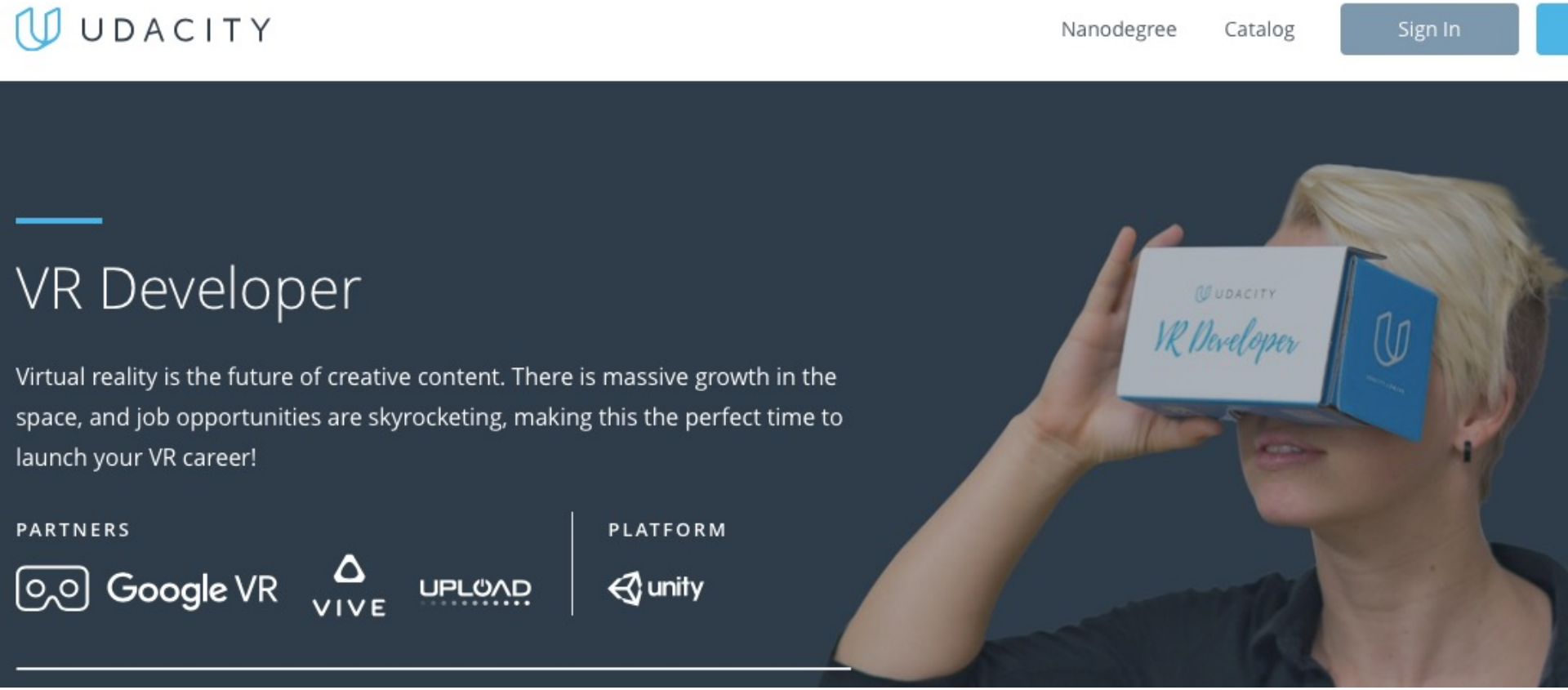
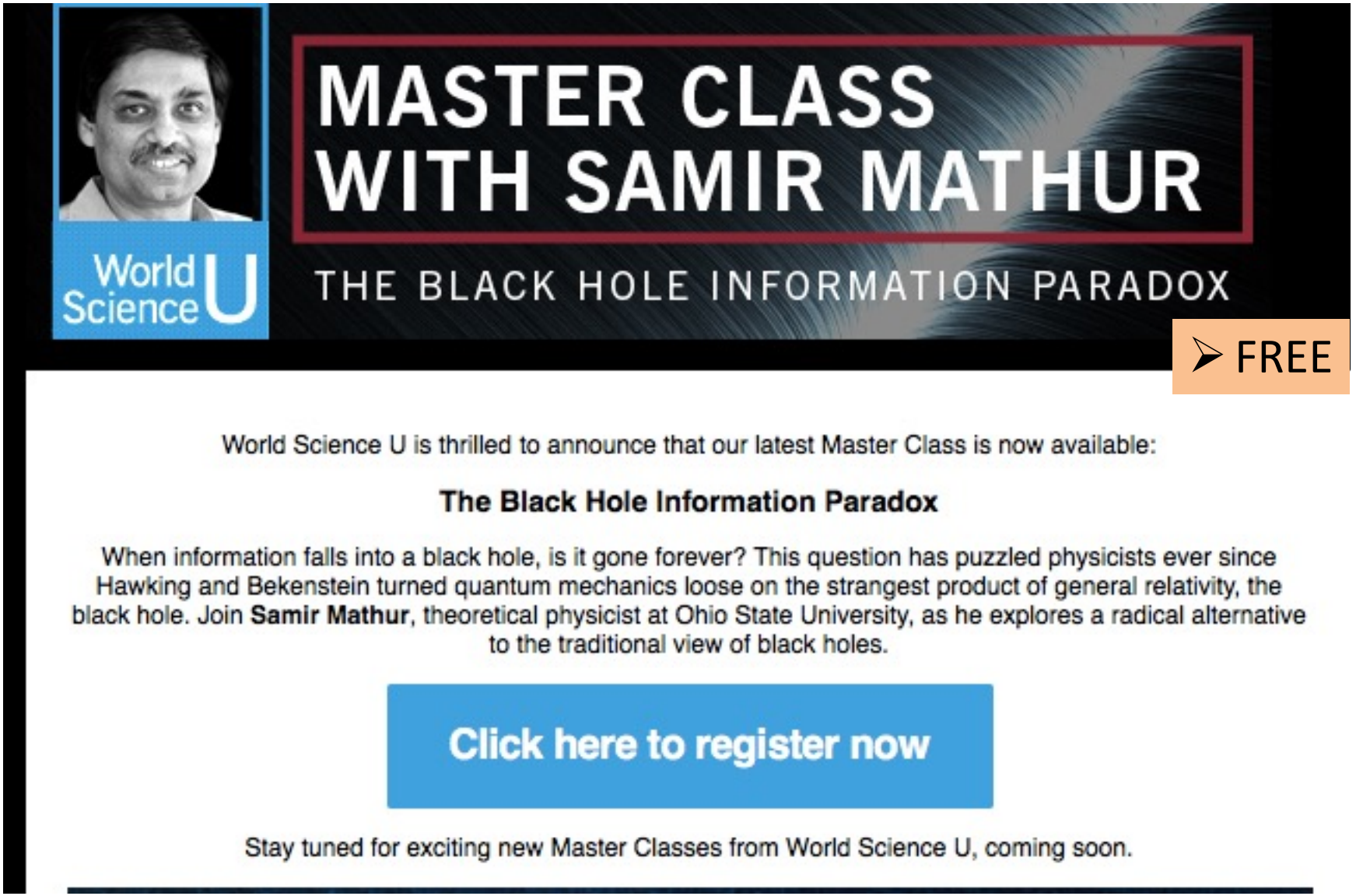


# World Science U





# Section



## AI Tools

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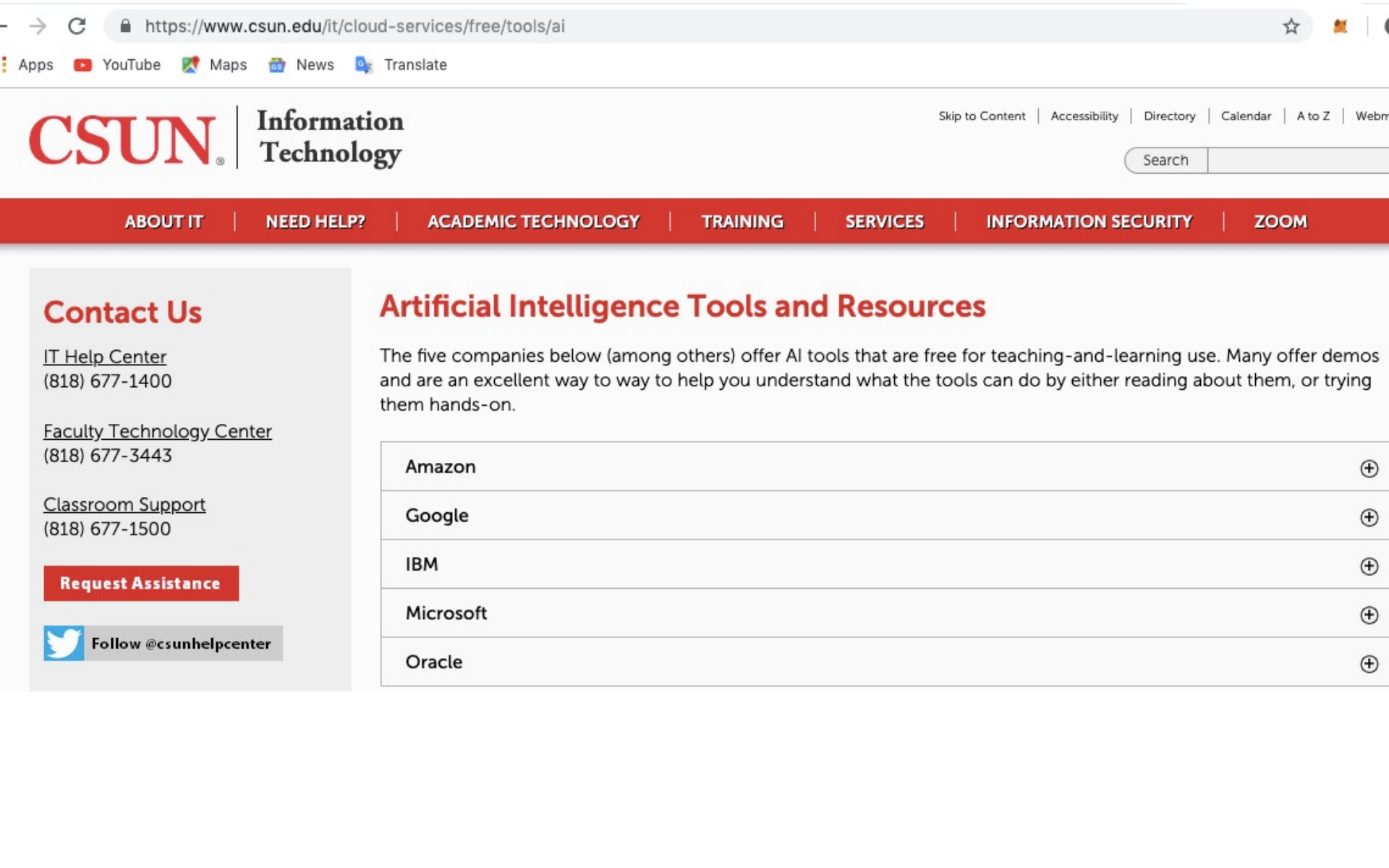
# Blockchain Tools (AI)





# CSUN IT -- AI Tools



## Artificial Intelligence Tools and Resources

The five companies below (among others) offer AI tools that are free for teaching-and-learning use. Many offer demos and are an excellent way to way to help you understand what the tools can do by either reading about them, or trying them hands-on.

### Amazon

Amazon Recognition Image - Deep learning-based image analysis

Amazon Recognition Video - Deep learning-based video analysis

Amazon Lex - Build chatbots to engage customers

Amazon Comprehend - Discover insights and relationships in text

Amazon Translate - Fluent translation of text

Amazon Transcribe - Automatic speech recognition

Amazon Polly - Natural sounding text to speech

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**Amazon** ⊕

**Google** ⊖

Train Custom Machine Learning Models - Train machine learning models through transfer learning and neural architecture search

Large Scale Machine Learning Service - Build machine learning models

Job Search and Discovery - Provide intuitive job search that anticipates what job seekers are looking for

Create conversational experiences - Build conversational interfaces for websites, mobile applications, messaging platforms, and IoT devices.

Video Analysis - Make videos searchable and discoverable; search every moment of every video file

Image Analysis - Understand the concept of an image

Speech Recognition - Convert audio to text by applying neural network models

Text Analysis - Reveal the structure and meaning of text

Dynamic Translation - Translate an arbitrary string into any language

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# CSUN IT -- AI Tools



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- Amazon ⊕
- Google ⊕
- IBM ⊖

  - Conversation - Build and deploy chatbots and virtual agents
  - Discovery - Uncover connections in data by combining automated ingestion with advanced AI functions
  - Speech to Text (STT) - Easily convert audio and voice into written text for quick understanding of content
  - Text to Speech (TTS) - Convert written text into natural-sounding audio in a variety of languages and voices
  - Language Translator - Dynamically translate news, patents or conversational documents
  - Natural Language Classifier - Interpret and classify natural language with confidence
  - Natural Language Understanding - Analyze text to extract metadata from content such as concepts, entities and sentiment
  - Visual Recognition - Tag, classify and search visual content using machine learning
  - Tone Analyzer - Analyze emotions and tones in written content
  - Personality Insights - Predict personality characteristics, needs, and values through written text

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# CSUN IT -- AI Tools

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## Microsoft

Computer Vision - Distill actionable information from images

Face Detect - Detect, identify, analyze, organize, and tag faces in photos

Content Moderator - Automated image, text, and video moderation

Emotion Recognition - Personalize user experiences with emotion recognition

Custom Vision Service - Customize your own computer vision models for your unique use case

Video Indexer - Unlock video insights

Recommendations - Predict and recommend items your customers want

Academic Knowledge Discovery - Tap into a wealth of academic content in the Microsoft Academic Graph

Knowledge Exploration Service - Enable interactive search experiences over structured data via natural language inputs

Question and Answer Maker - Distill information into conversational, easy-to-navigate answers

Entity Linking Intelligence Service - Power your app's data links with named entity recognition and disambiguation

Custom Decision Service - A cloud-based, contextual decision-making API that sharpens with experience

Language Understanding - Teach your apps to understand commands from your users

Text Analytics - Easily evaluate sentiment and topics to understand what users want

Spell Check - Detect and correct spelling mistakes in your app

Translator Text - Easily conduct machine translation with a simple REST API call

# CSUN IT -- AI Tools



Microsoft

Web Language Model - Use the power of predictive language models trained on web-scale data

Linguistic Analysis - Simplify complex language concepts and parse text with the Linguistic Analysis API

Translator Speech - Conduct real-time speech translation with a simple REST API call

Speaker Recognition - Use speech to identify and authenticate individual speakers

Speech Conversion - Convert speech to text and back again to understand user intent

Custom Speech Service - Overcome speech recognition barriers like speaking style, background noise, and vocabulary

Autosuggest - Give your app intelligent auto-suggest options for searches

Image Search - Search for images and get comprehensive results

News Search - Search for news and get comprehensive results

Video Search - Search for videos and get comprehensive results

Web Search - Get enhanced search details from billions of web documents

Custom Search - An easy-to-use, ad-free, commercial-grade search tool that lets you deliver the results you want

Entity Search - Enrich your experiences by identifying and augmenting entity information from the web

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# CSUN IT -- AI Tools

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## Artificial Intelligence Tools and Resources

The five companies below (among others) offer AI tools that are free for teaching-and-learning use. Many offer demos and are an excellent way to way to help you understand what the tools can do by either reading about them, or trying them hands-on.

- Amazon ⊕
- Google ⊕
- IBM ⊕
- Microsoft ⊕
- Oracle ⊖
  - Create chatbots - use a range of tools to create bots that can interact
  - Create a custom component - using these specialized tools