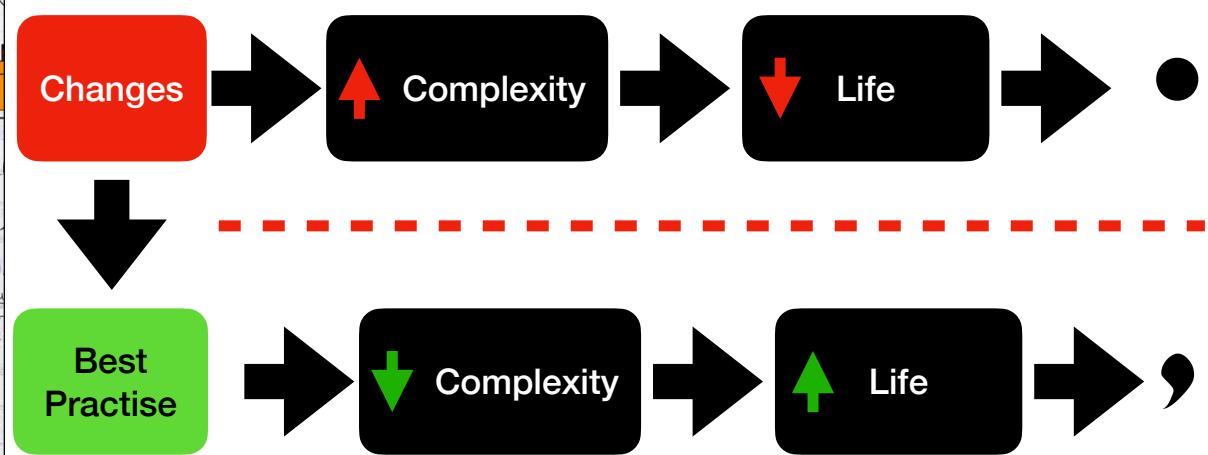


CSC1002 - 2024 - My Message & Our Goals

My Message – Working Code isn't Enough



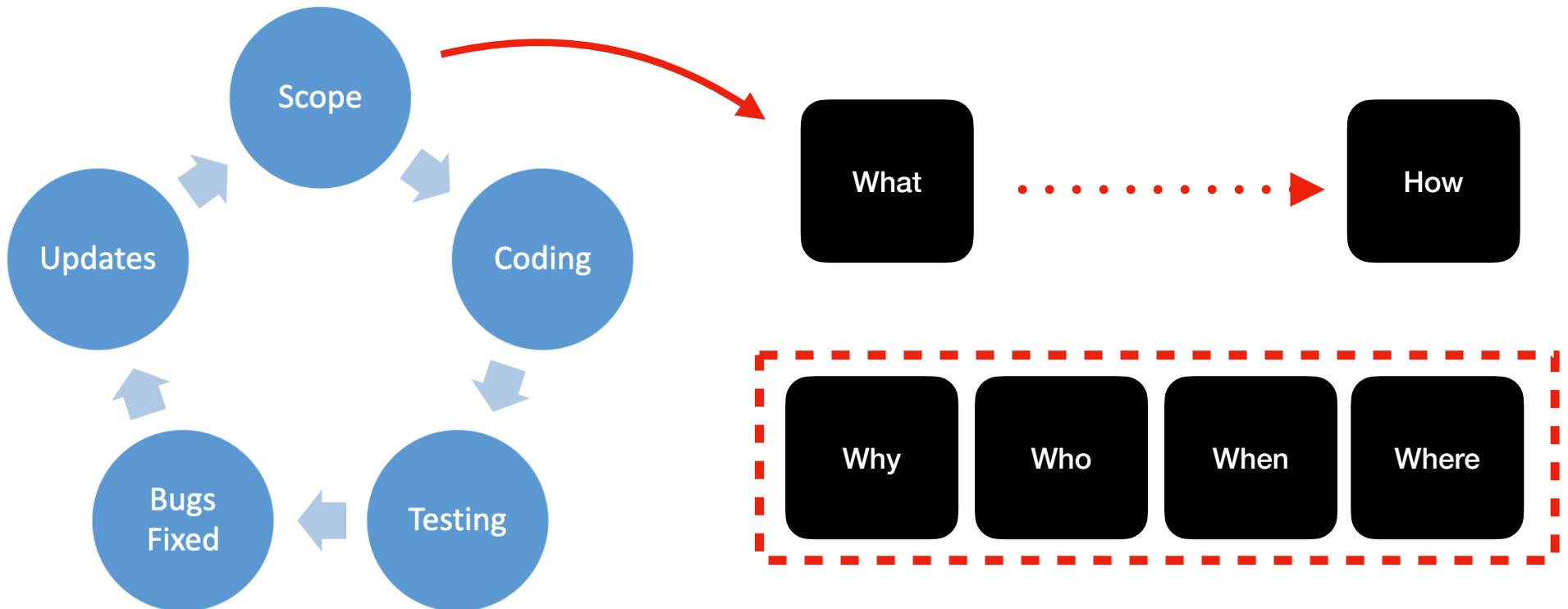
Software Development - Best Practises

- Clean Code, Good Design, Coding Styles
 - Problem Decomposition, Refactoring, Top-Down Design
- Documentation
- Testing (Unit, Integration, System, End-2-End)
- Automation
- Metrics - Static Analysis
- Measurement - Coding Productivity
- Code Review
- Knowledge Hub, Search, Dependency, ...etc

Clean Coding

- Problem Decomposition - breaking large problems into smaller sub-problems
- Top-Down Design - Starting with the original requirement and then breaking it down into smaller sub-requirements. Converting each smaller requirements into simple functions.
- Refactoring - Process of refining and streamlining logic for readability and reusability.
- Tools - Debugging, Version Control, Visual Studio Code (VSC)

Software Development Life Cycle (SDLC)

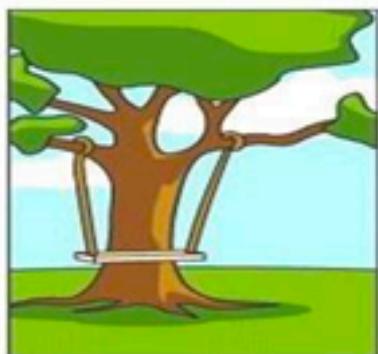


Culprits of software failures

- Unclear or unrealistic requirements, goals, and expectations
- Lack of understanding of the business' needs
- Lack of user involvement, communication, and feedback
- Poor or no planning, execution, and testing
- Inability to prioritize, focus, and manage scope
- Working in silos and not collaborating with stakeholders
- etc ...



How the customer explained it



How the project leader understood it



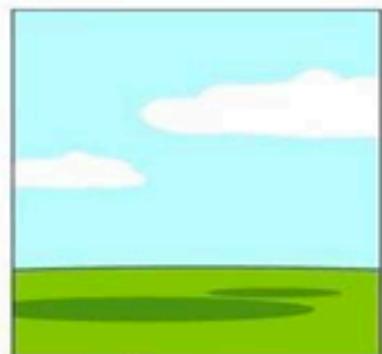
How the analyst designed it



How the programmer wrote it



How the consultant described it



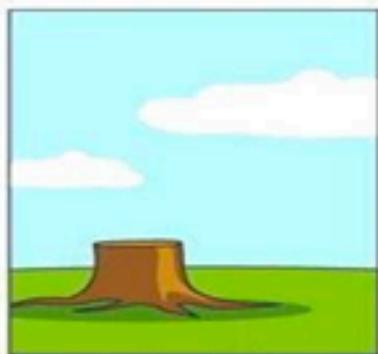
How the project was documented



What was installed by operations



How the customer was billed



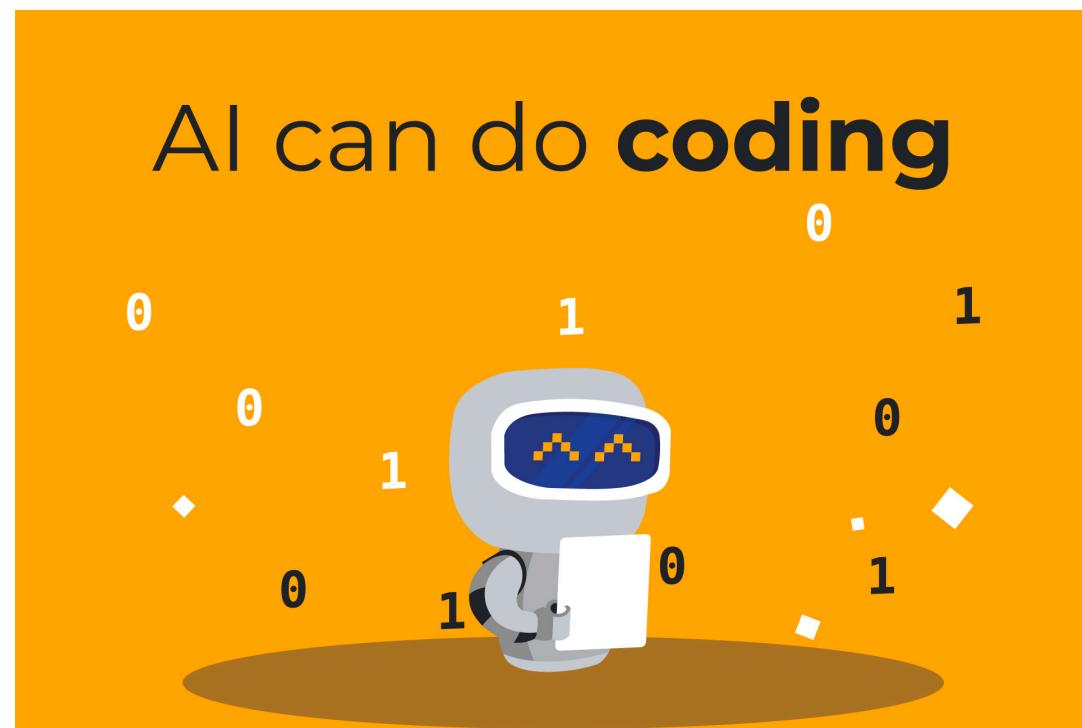
How the project was supported



What the customer really needed

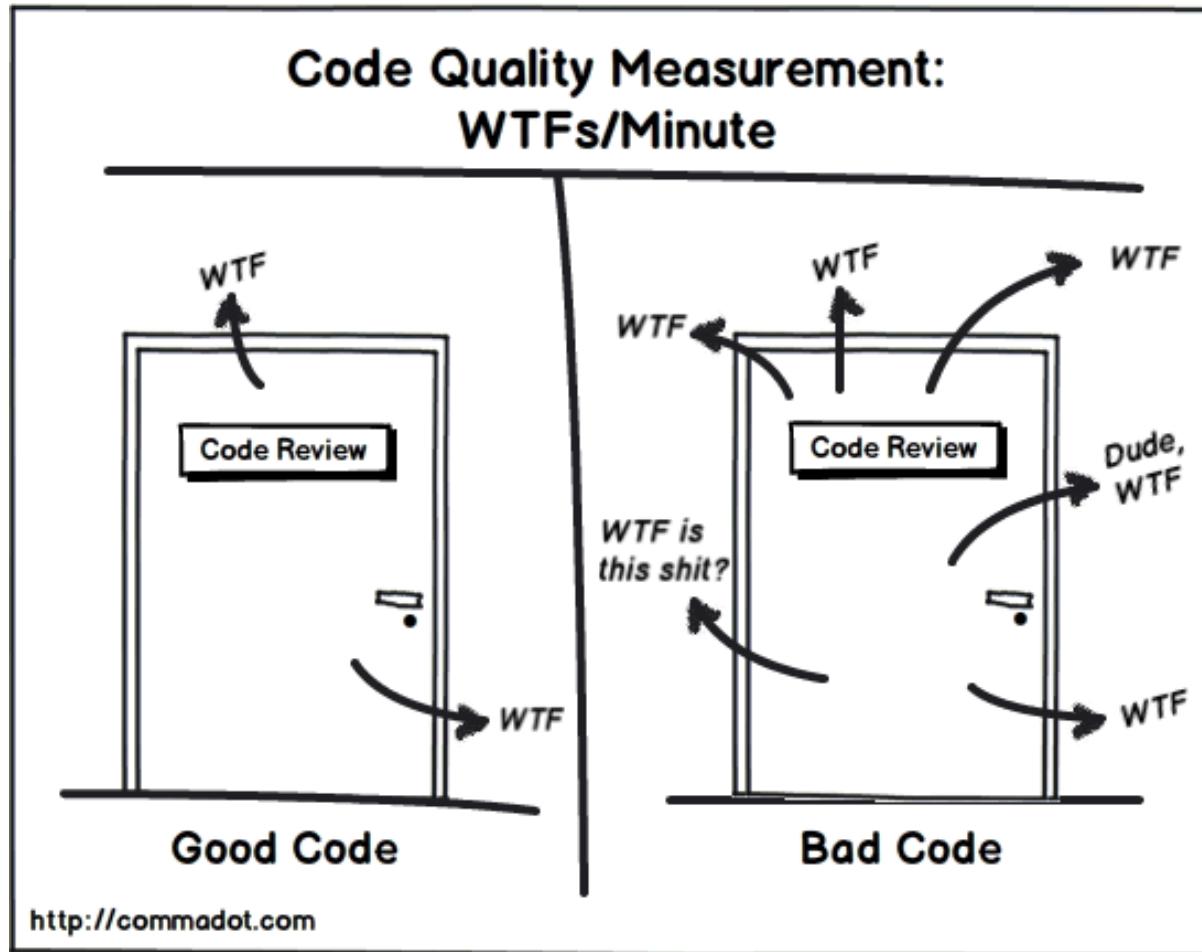
3 Goals - 2024

Goal #1 - AI Assisted Coding

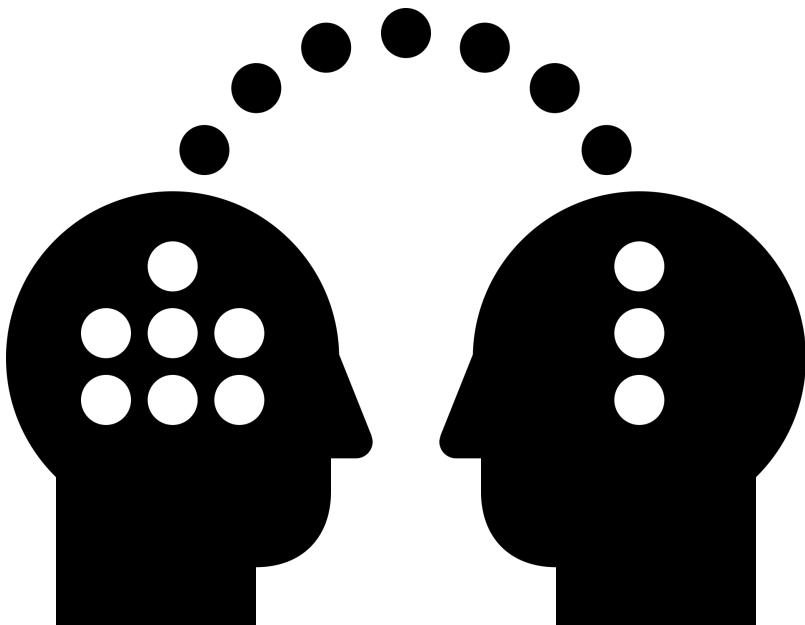


AI can do **coding**

Goal #2 - Clean Code



Goal #3 - Knowledge Transfer



Knowledge Transfer - Peer2Peer Learning

- Live Coding
 - Encourage high-interactivity,
 - encourage “What-If” approach
 - illustrate best-practise approach
 - offer other unintentional knowledges
- Repeated Examples
 - knowledge reconfirmation
 - successive and advanced knowledge
 - high adaptability to students
- Make Predictions
 - Encourage students to participate in-class problems
 - Help students to build knowledge gradually
- Authentic Tasks (Real Fun examples rather than abstract examples)
 - More engaging, more motivating, more simulating

AI Assisted - Number Guessing (2 rounds)

2675

I generated a random 4-digit string.
You have 20 guesses to guess the secret string.

```
Enter a 4-digit number with no repeated digits: 0123
Attempt-1: Correct-0, Misplaced-1
Enter a 4-digit number with no repeated digits: 4567
Attempt-2: Correct-0, Misplaced-3
Enter a 4-digit number with no repeated digits: 9045
Attempt-3: Correct-1, Misplaced-0
Enter a 4-digit number with no repeated digits: 9048
Attempt-4: Correct-0, Misplaced-0
Enter a 4-digit number with no repeated digits: 1290
Attempt-5: Correct-0, Misplaced-1
Enter a 4-digit number with no repeated digits: 6715
Attempt-6: Correct-1, Misplaced-2
Enter a 4-digit number with no repeated digits: 2675
Congratulations! You have guessed the number in 7 attempt(s)
kinleylam@Kinleys-MacBook-Air 2024-Copilot %
```

Guess	Misplaced	Correct
0123	1	0
4567	3	0
9045	0	1
9048	0	0
1290	1	0
6715	2	1
2675	0	4

1st Round
Live Coding,
Problem
Decomposition,
Design

2nd Round
Live Coding
using AI assisted tool

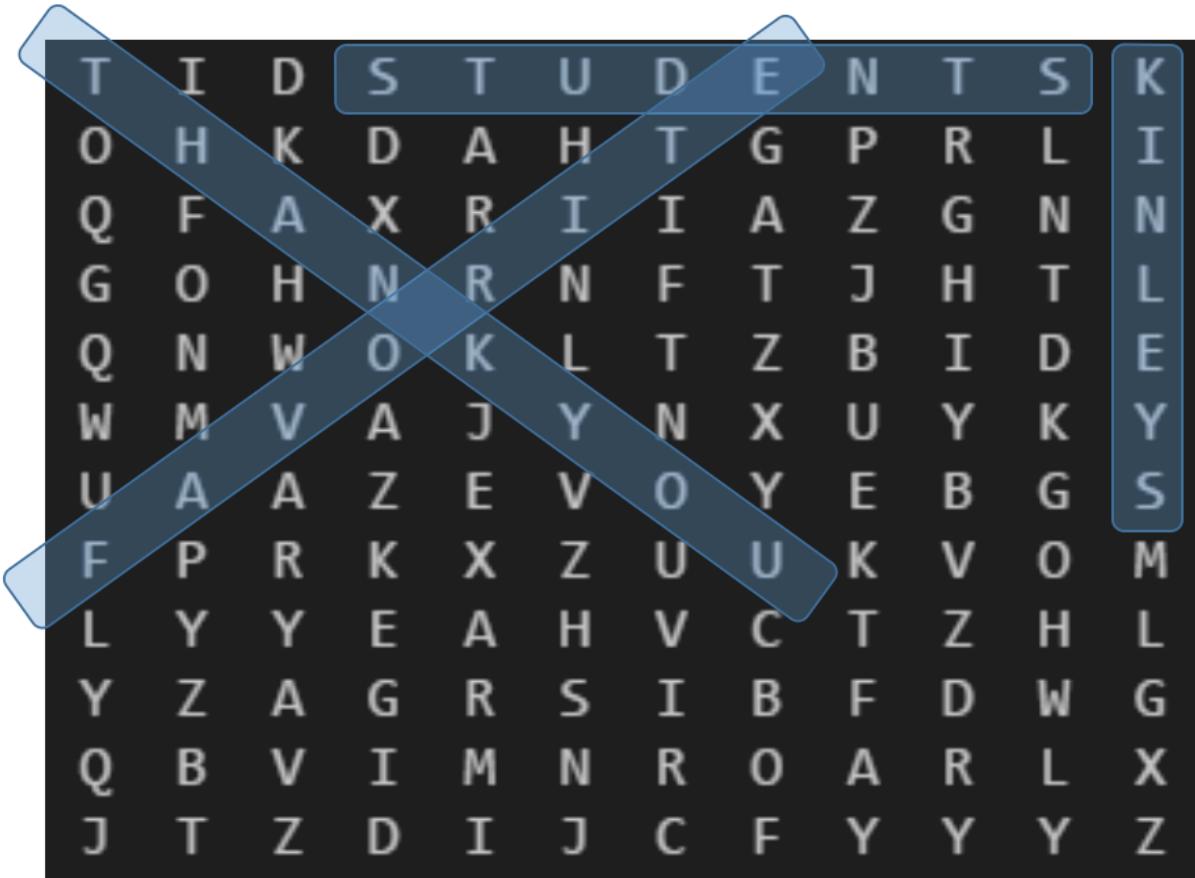
AI Assisted - Word Puzzle (2 rounds)

T	I	D	S	T	U	D	E	N	T	S	K
O	H	K	D	A	H	T	G	P	R	L	I
Q	F	A	X	R	I	I	A	Z	G	N	N
G	O	H	N	R	N	F	T	J	H	T	L
Q	N	W	O	K	L	T	Z	B	I	D	E
W	M	V	A	J	Y	N	X	U	Y	K	Y
U	A	A	Z	E	V	O	Y	E	B	G	S
F	P	R	K	X	Z	U	U	K	V	O	M
L	Y	Y	E	A	H	V	C	T	Z	H	L
Y	Z	A	G	R	S	I	B	F	D	W	G
Q	B	V	I	M	N	R	O	A	R	L	X
J	T	Z	D	I	J	C	F	Y	Y	Y	Z

1st Round
Problem
Decomposition,
Design

2nd Round
Live Coding
using AI assisted tool

Word Puzzle - Kinley's Favorite Students



Machine Learning - kMeans & kNN



Image Color Compression

Problem Decomposition, Design, Live Demo (without coding)

Hand Written Digit Recognition

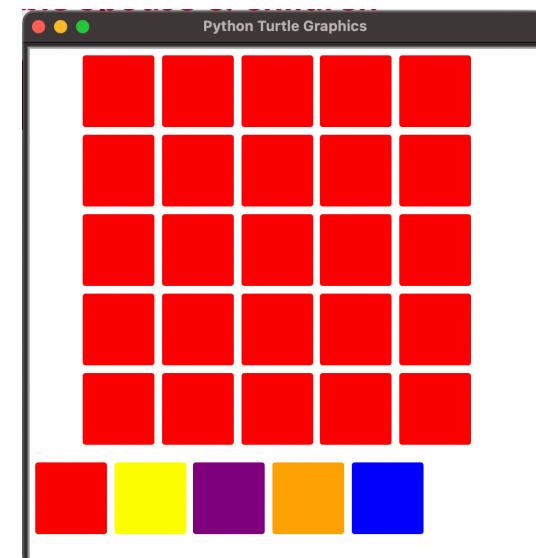
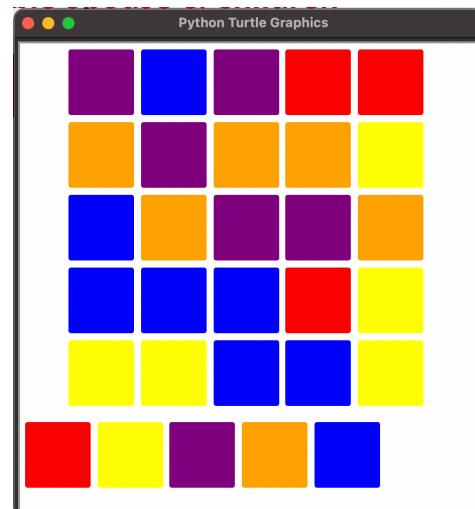
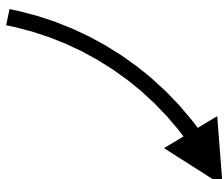
Problem Decomposition, Design, Live Coding

Flipping Color - Console vs GUI

1	2	3	3	4	1
3	2	0	1	0	4
0	0	0	1	4	3
2	3	2	2	4	1
1	2	0	3	2	3
4	3	4	4	2	3

Console Based Flipping Color
Problem Decomposition, Design, Live Coding

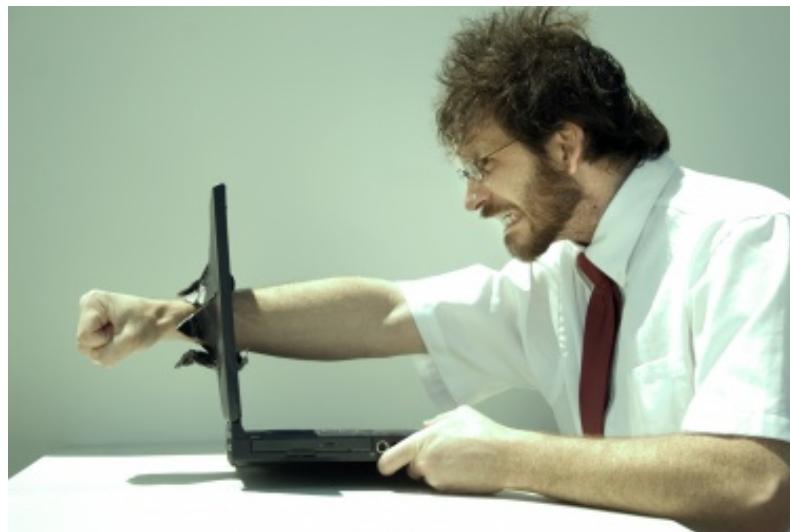
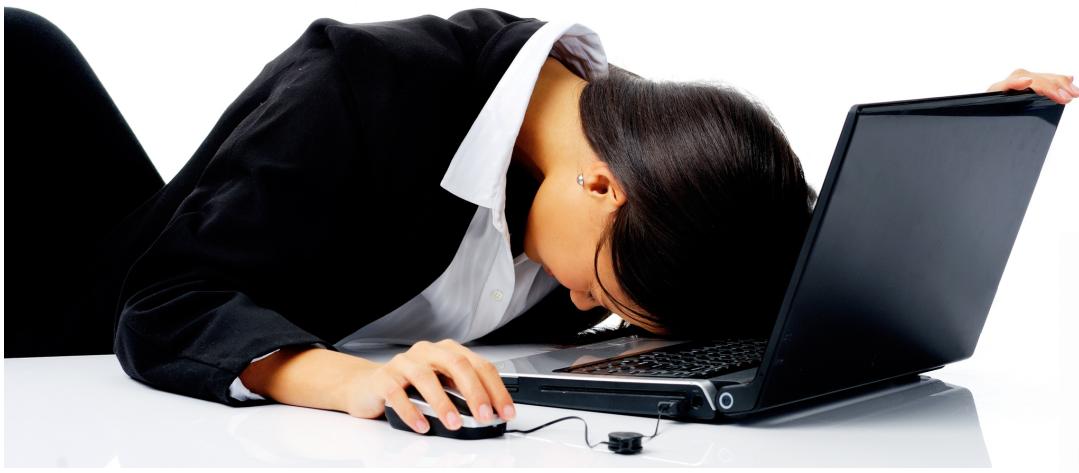
1	1	1	1	1	1
1	1	1	1	1	1
1	1	1	1	1	1
1	1	1	1	1	1
1	1	1	1	1	1



GUI Based Flipping Color

Problem Decomposition, Design, Live Coding

About Programmer's Life Style



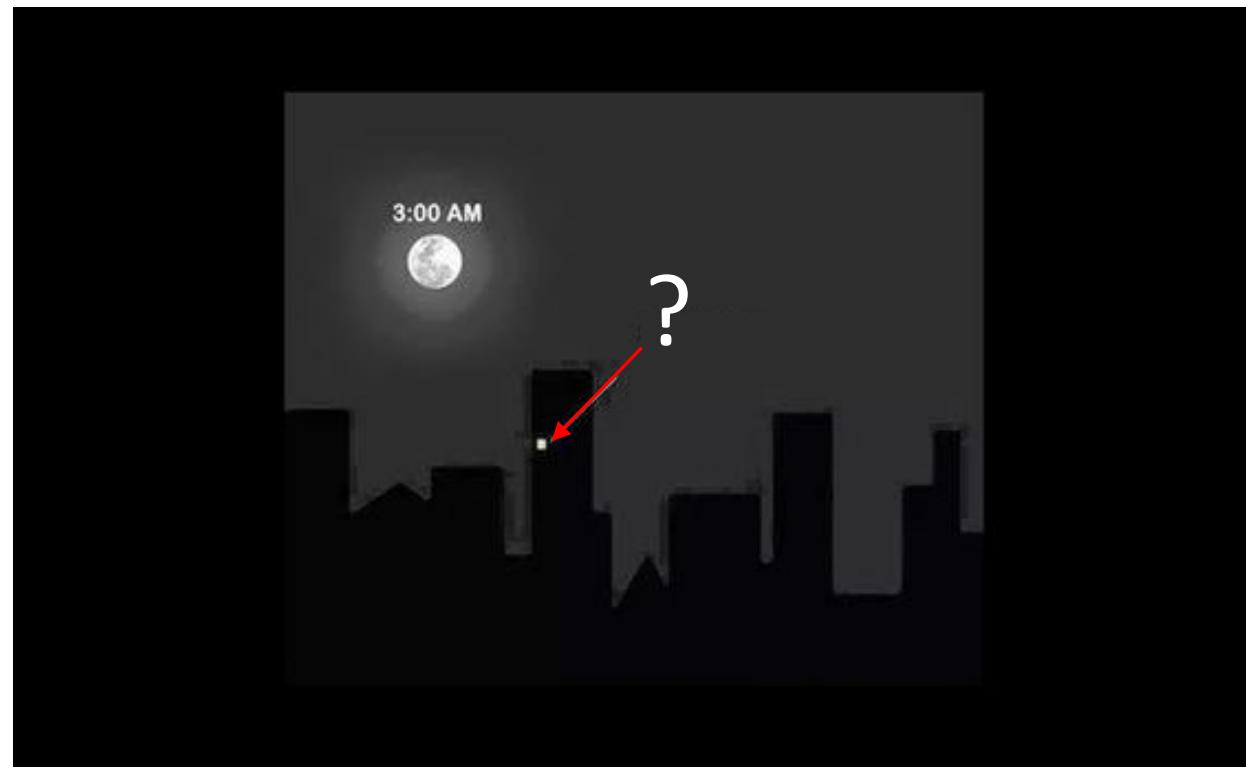
CSC1002/CUHK(SZ) by Kinley Lam



CSC1002/CUHK(SZ) by Kinley Lam

About DDL

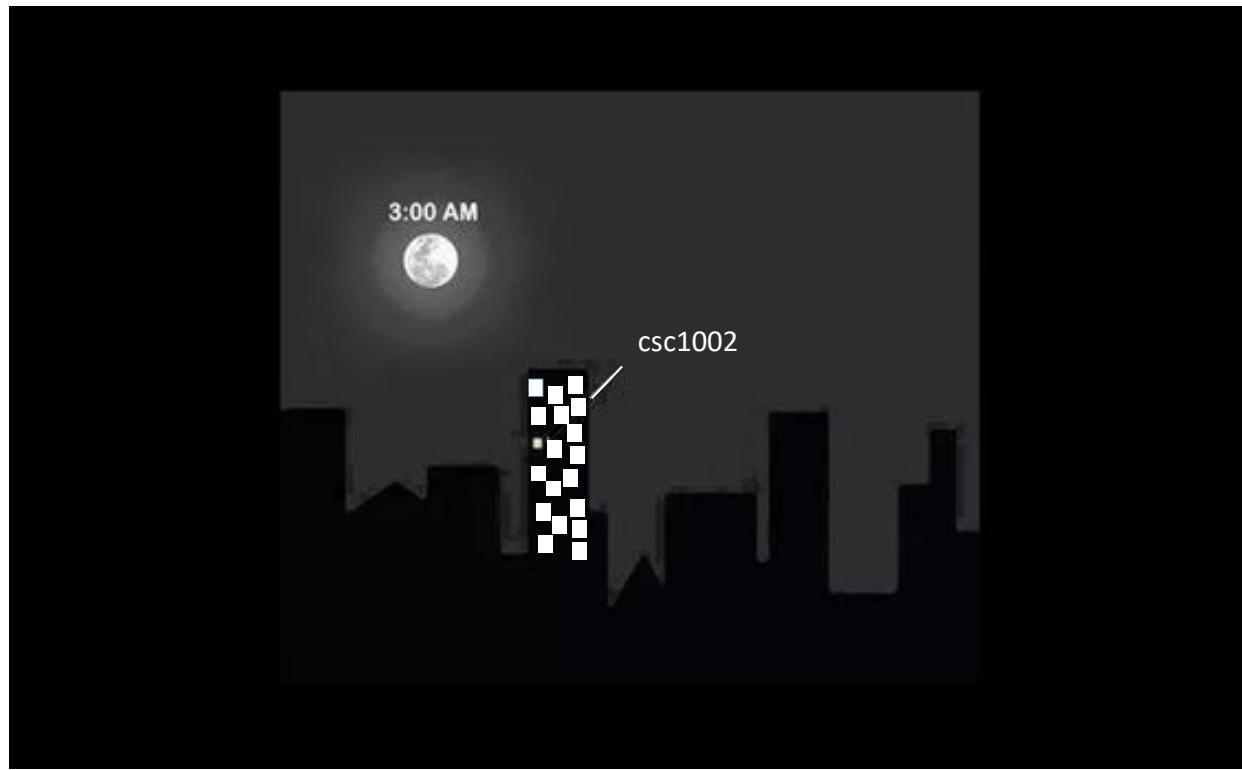
Programmer's life



Programmer's life



CSC1002's



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About Sleeping

VIA 9GAG.COM



Lawyer



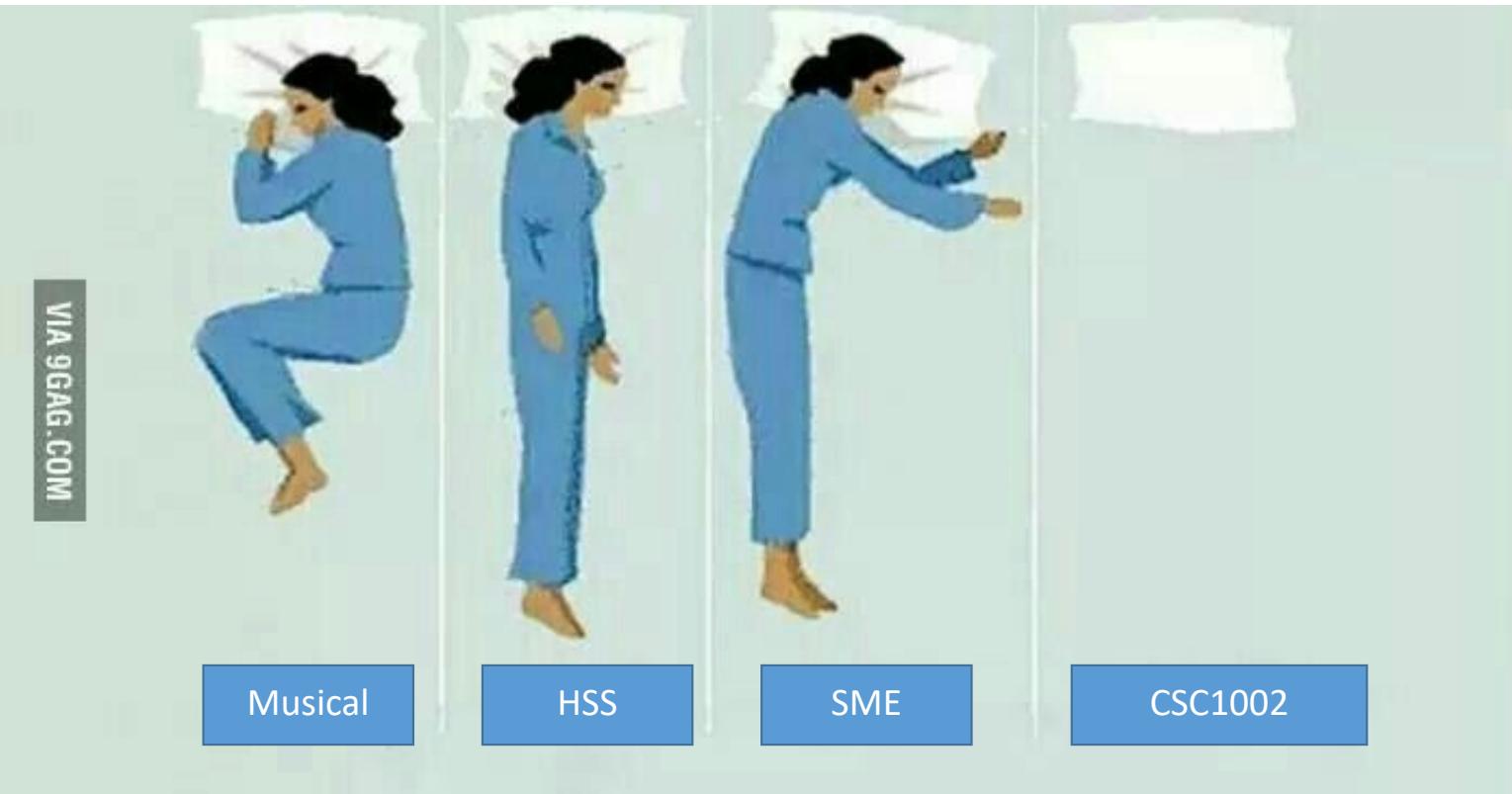
Teacher



Nurse



Programmer



Musical

HSS

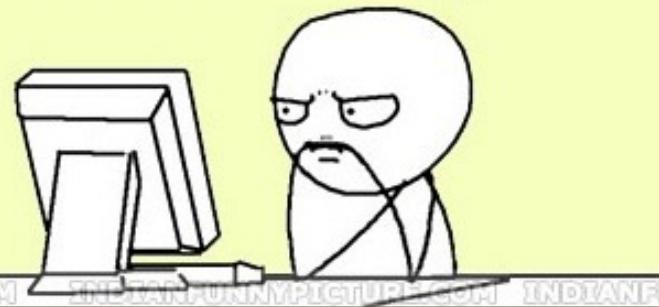
SME

CSC1002

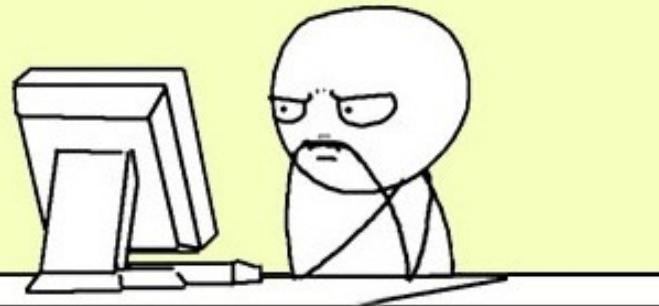
About Programming

Programmers While Coding

It Doesn't Work..... Why?



It Work..... Why?



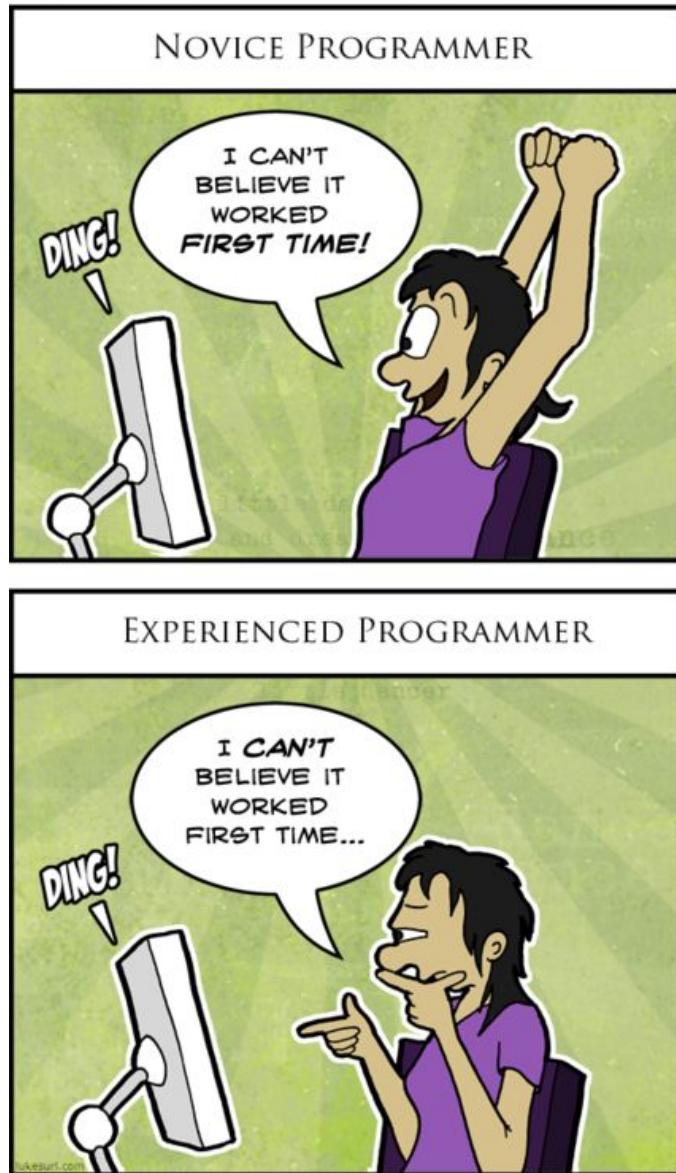
MY CODE DOESN'T WORK

**LETS CHANGE NOTHING AND RUN IT
AGAIN**

WHEN YOU HEAR THIS:

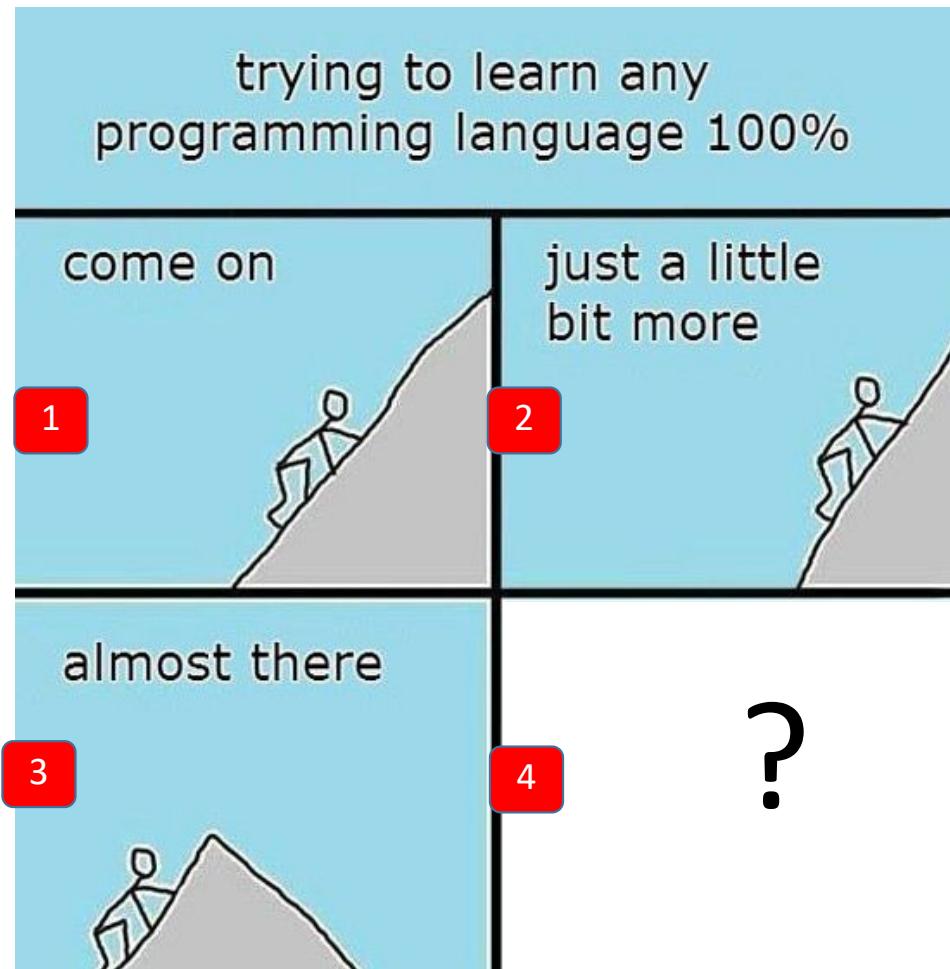


CSC1002, _____, _____, _____



About Learning

Learning programming



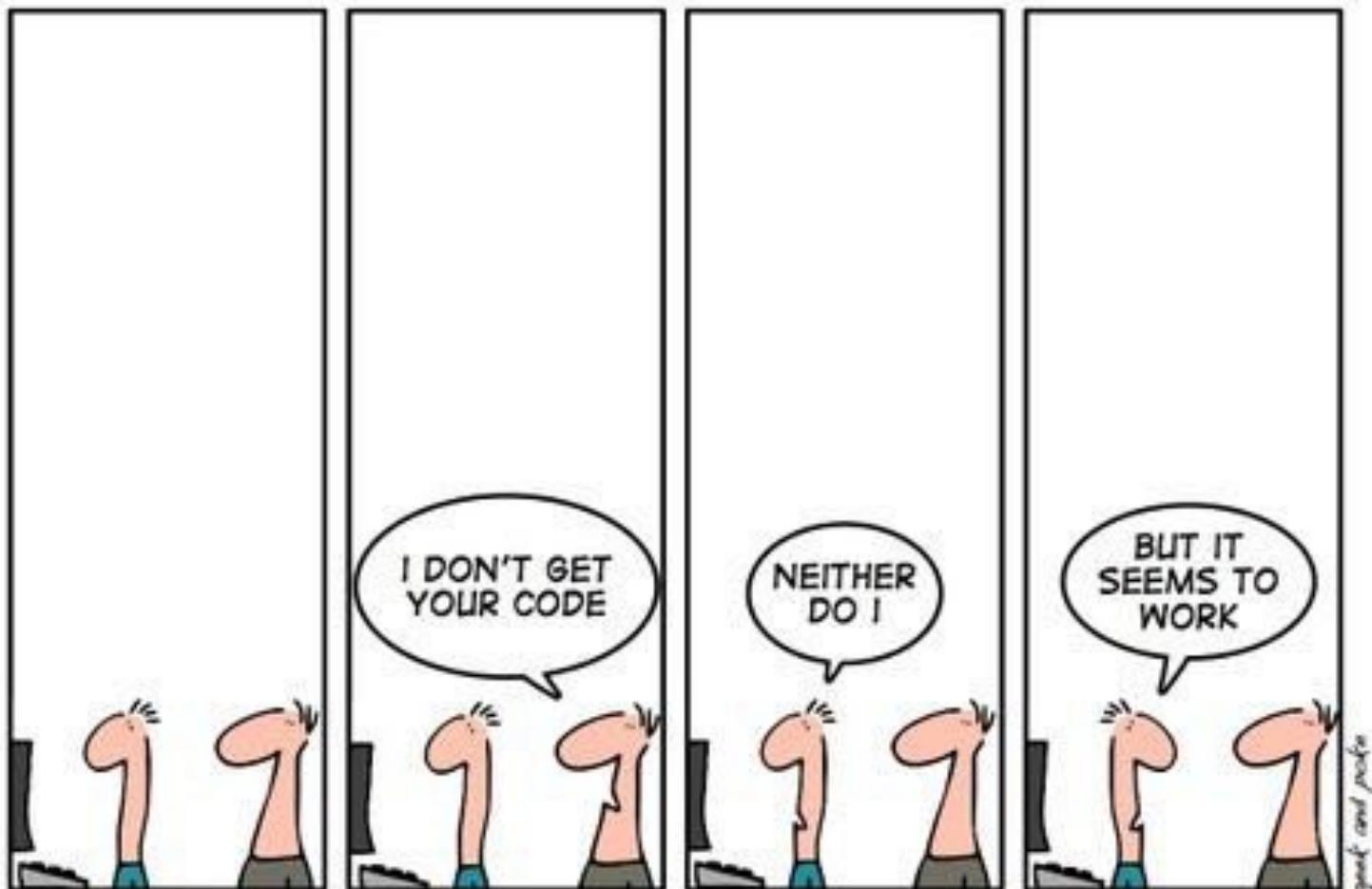
trying to learn any
programming language 100%

come on

just a little
bit more

almost there

oh crap...



THE ART OF PROGRAMMING

geoff and paula

Why Programming

AutoBooking Demo

The End