Why Does My Computer Do That? Intro to Coding with Python– Welcome!

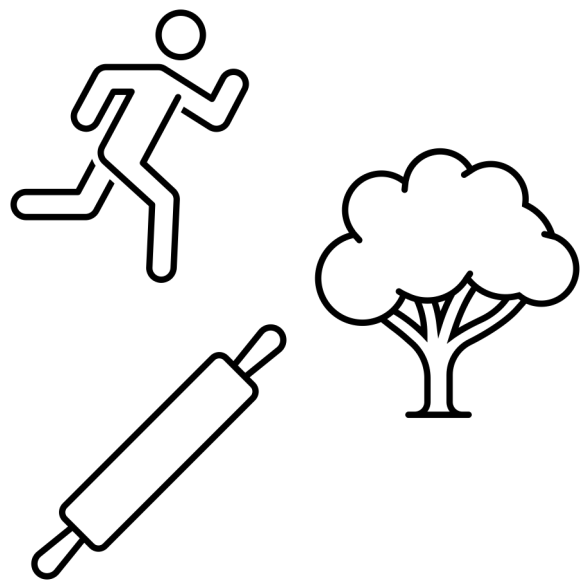
Dr. Ab Mosca (they/them)

Slides based off slides courtesy of Jordan Crouser (https://jcrouser.github.io/)

Plan for Today

- Who am I?
- Who are you?
- What will we do in this class?
- What is computer science / coding?

Who Am I?



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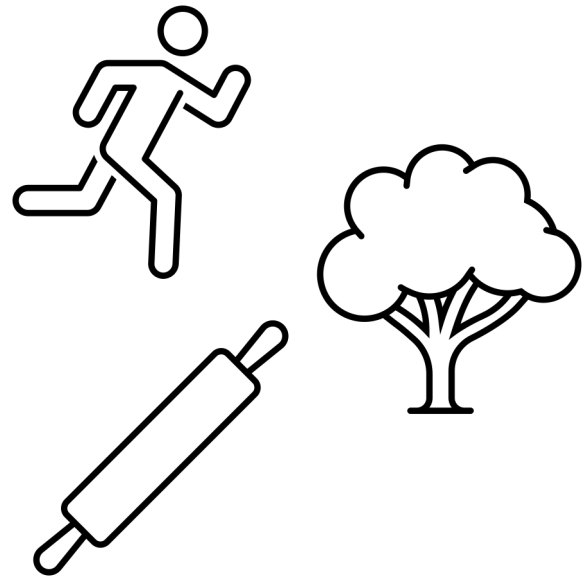

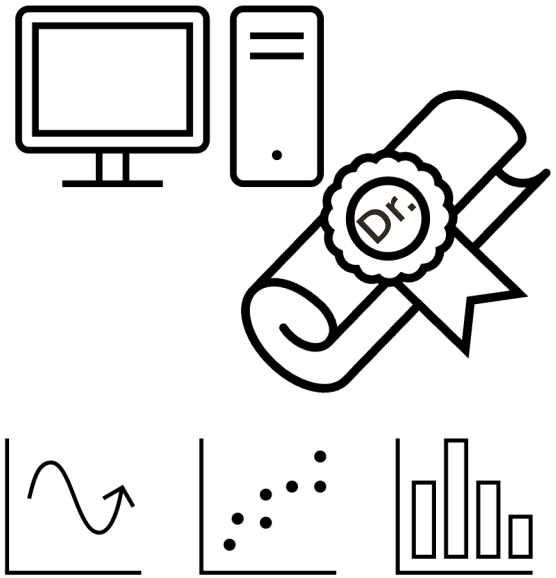

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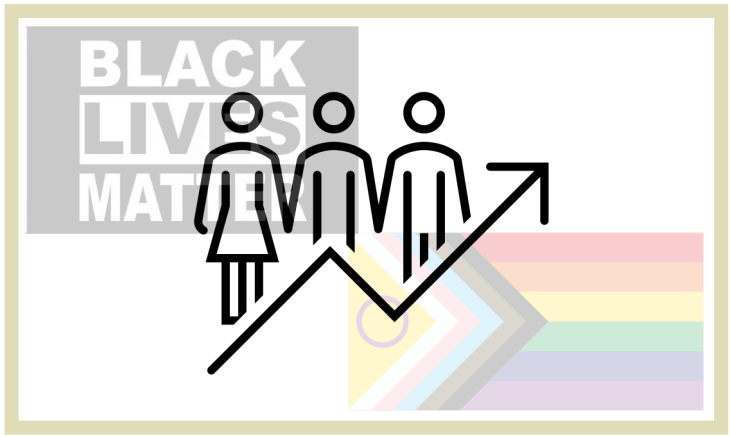
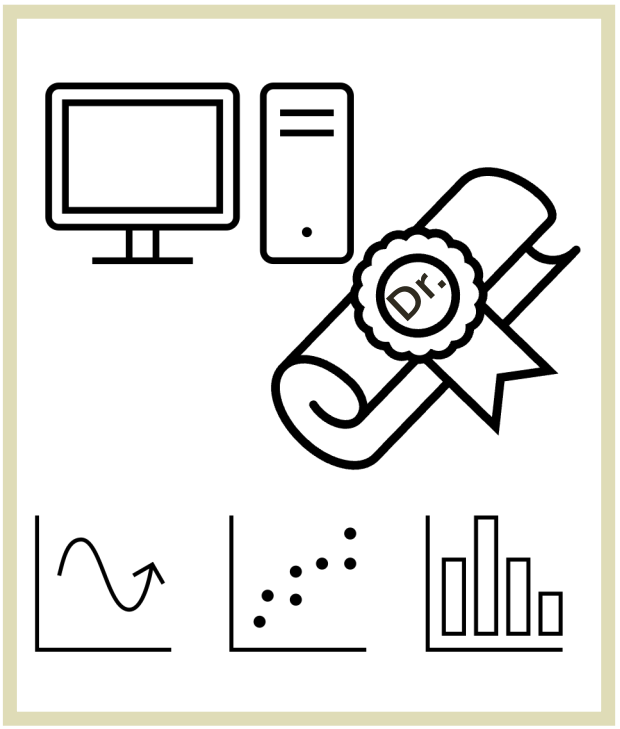




Who Are You?

- Form groups of 3
- Introduce yourselves (name, pronouns)
- Share:
  - A highlight of your summer
- Find 1 thing that your entire group has in common (favorite color? hometown? left-handed? Be creative!)
- After about 5 minutes we will go around, introduce ourselves, and share what each group has in common

Who Are You?

- Form **new groups** of 3 (move around!)
- Introduce yourselves (name, pronouns)
- Share:
  - Would you rather live in a mansion that you can never leave OR live in a camper van and move as often as you want?
- Find 1 thing that your entire group has in common (favorite color? hometown? left-handed? Be creative!)
- After about 5 minutes we will go around, introduce ourselves, and share what each group has in common

Who Are You?

- Form **new new groups** of 3 (move around!)
- Introduce yourselves (name, pronouns)
- Share:
  - Would you rather have the ability to teleport OR have instant delivery on any online order?
- Find 1 thing that your entire group has in common (favorite color? hometown? left-handed? Be creative!)
- After about 5 minutes we will go around, introduce ourselves, and share what each group has in common

What You Will Learn & Logistics

What Is This Class?

- An introduction to coding with the programming language Python assuming no prior knowledge of the subject
- You will learn…
  - How to computationally approach problem solving
  - How to use basic programming constructs
  - How to code in Python
  - How a computer works, at a high level

Important Info

- Course website (**write this down**!): https://amosca01.github.io/CAIS117-F23/
- PLATO: please use for all course related communication
- OH's: T/R 11:30 – 13:30 (stop by and say hi!) **starting NEXT week**

Important Info

- Textbook: *Programming in Python 3 with zyLabs*
  - See course website for instructions
- Assignments:
  - Turn in on PLATO
  - Homeworks – time to practice skills
  - In-class Activities – largely effort based
  - Final Project – group based, application of skills
  - ***Optional*** Midterm – can only help your grade
- Due Dates: As listed on course schedule.
  - 24hr grace period; no late submissions
  - Lowest homework dropped
  - No regrades; see syllabus for revise and resubmit instructions

Important Info

- I’m here to help you succeed
- Please come to office hours or reach out on PLATO if you need any additional support

Now the good stuff

What is a Computer?

What is a Computer?

- A “computer” performs computations

Computation (def.)

"a sequence of **well-defined operations** that lead from an initial starting point to a desired final outcome"

mathematical

logical

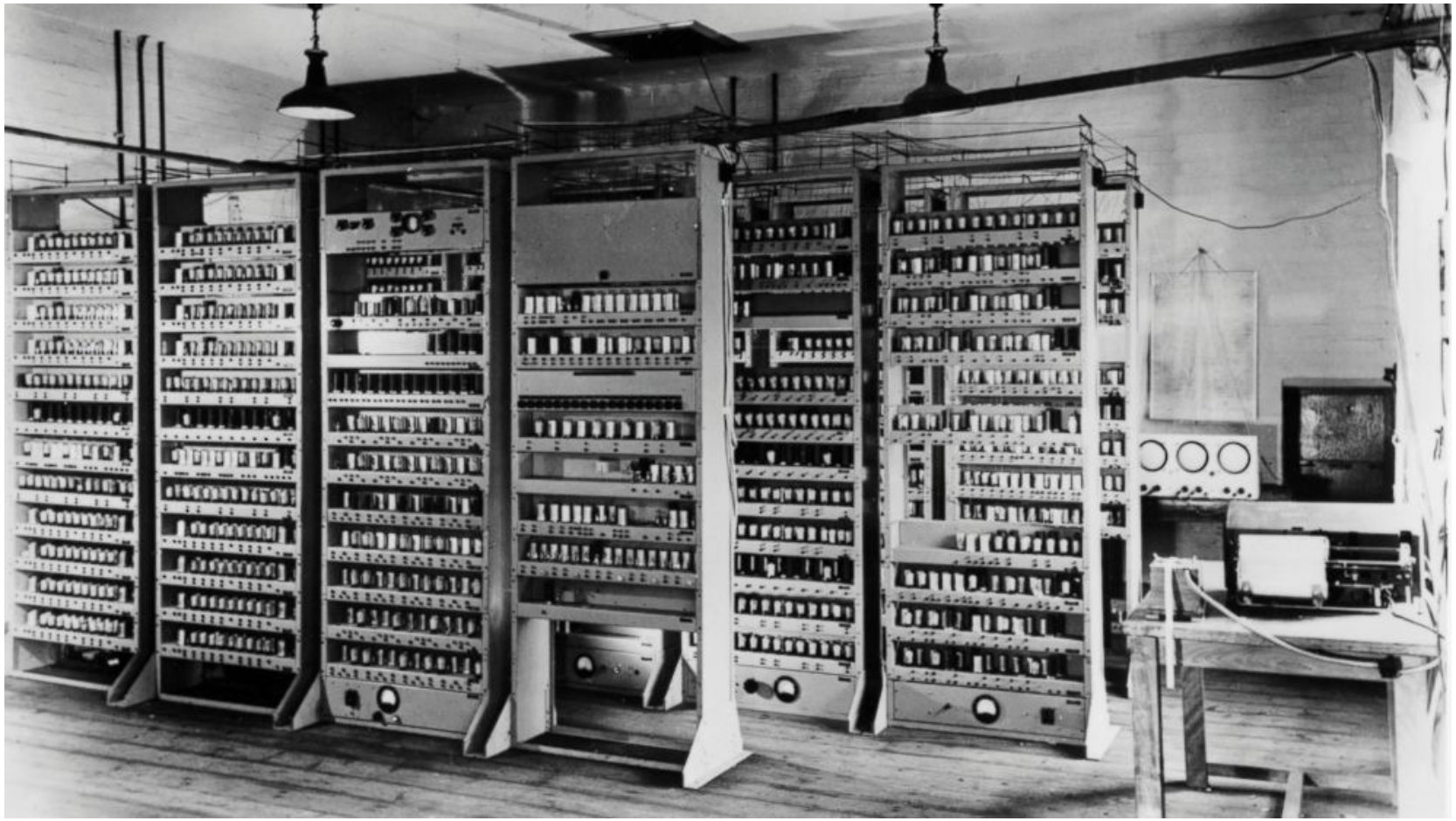
Original "Computers"

Katherine Johnson

Keypunch operators at IBM in Stockholm in the 1930s.

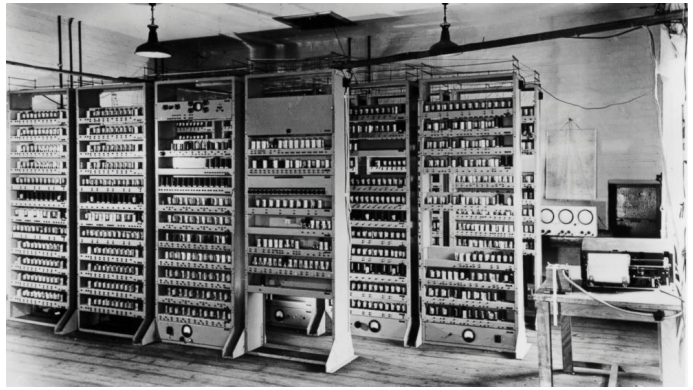
https://www.nytimes.com/2019/02/13/magazine/women-coding-computer-programming.html

First Electronic Computer



https://abcnews.go.com/Technology/blast-past-part-belonging-worlds-computers-found/story?id=28697624

First Electronic Computer



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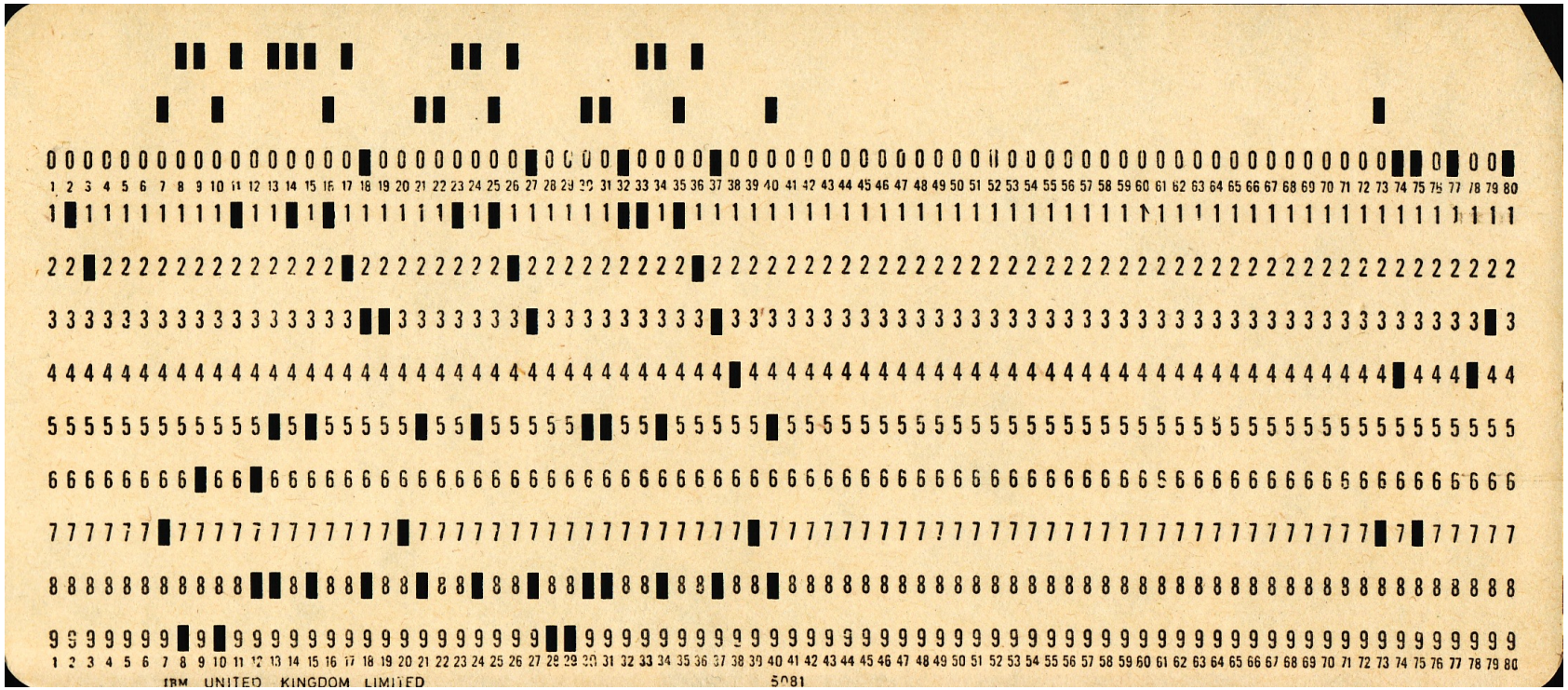
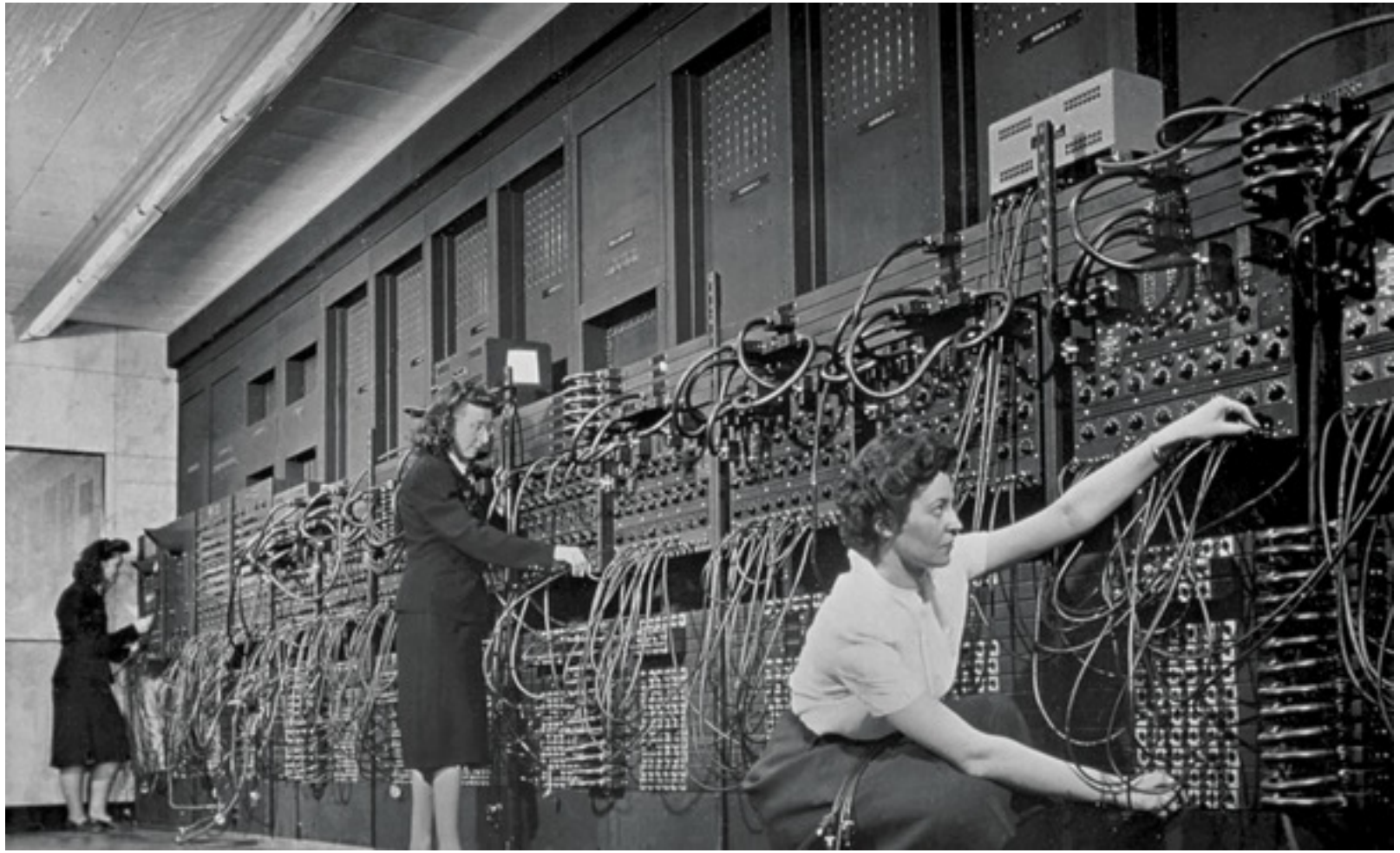


https://en.wikipedia.org/wiki/Punched_card#/media/File:Used_Punchcard_(5151286161).jpg

Original "Computers"



Computer operators with an Eniac — the world's first programmable general-purpose computer.

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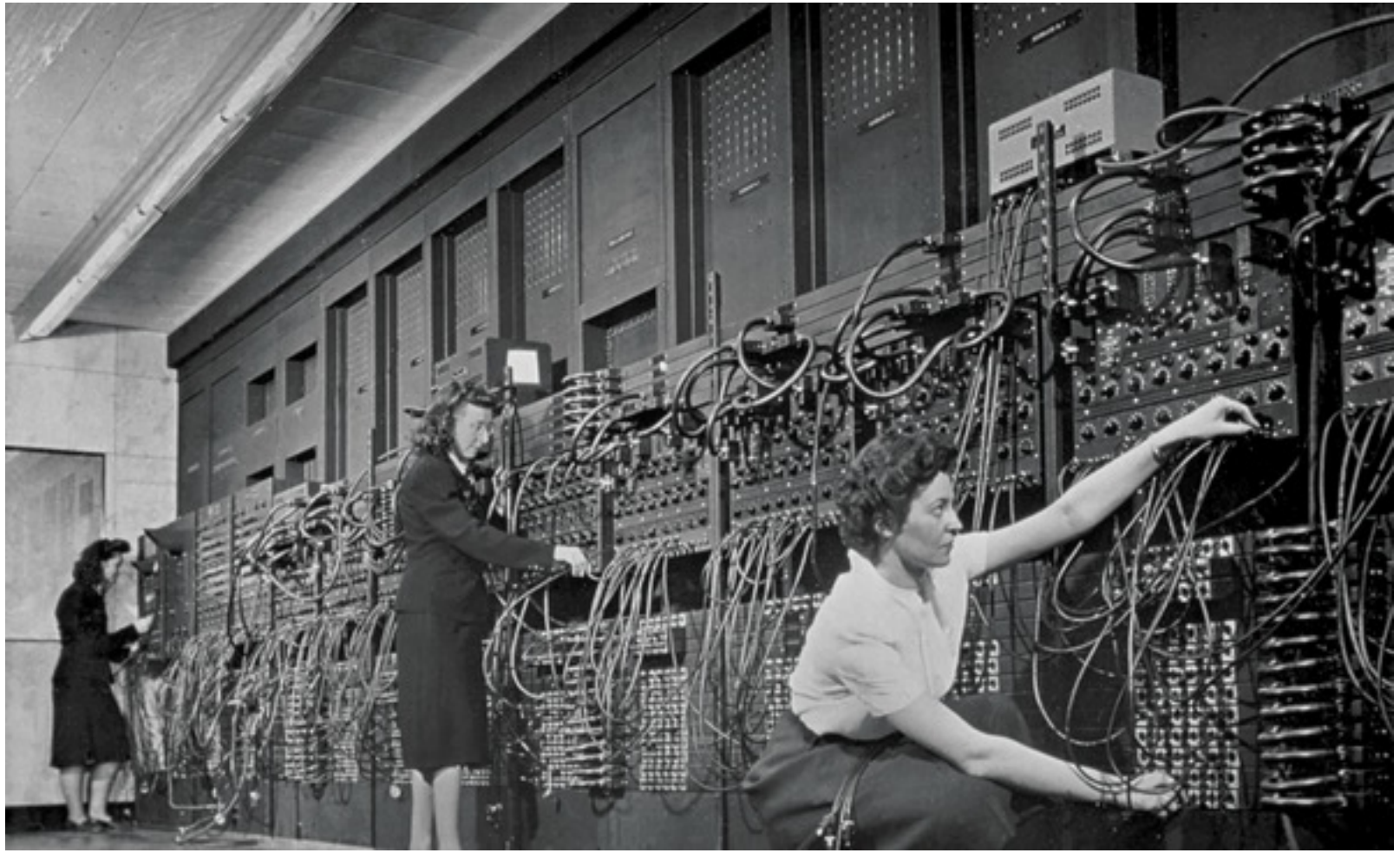
~~Original "Computers"~~ Programmers



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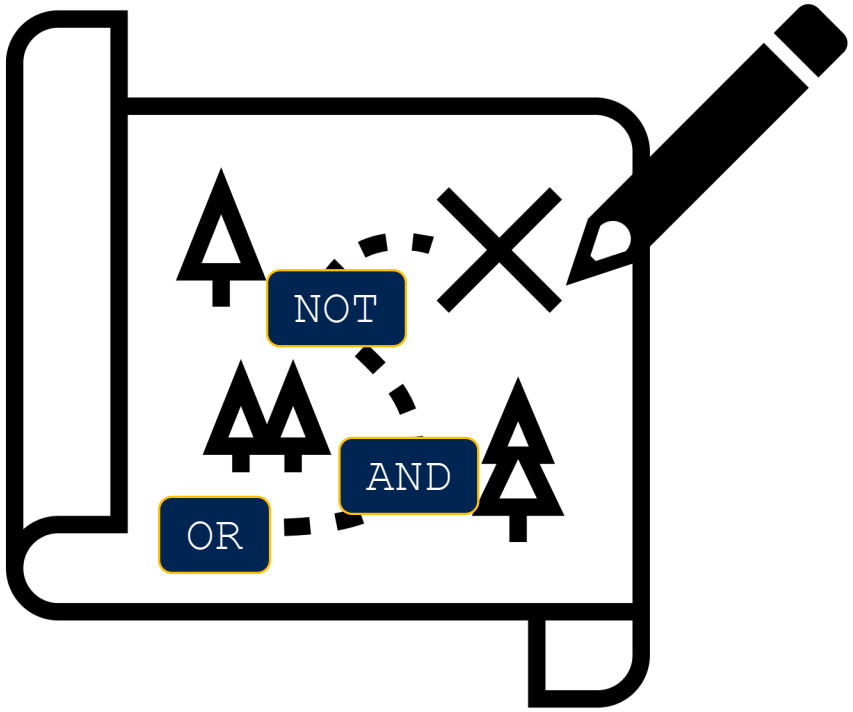
Programmers

Computation: a sequence of **well-defined operations** that lead from an initial starting point to a desired final outcome



Ada Lovelace, the first programmer

logical

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Activity: computational thinking

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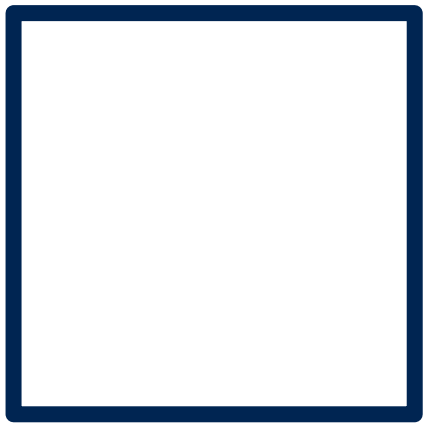
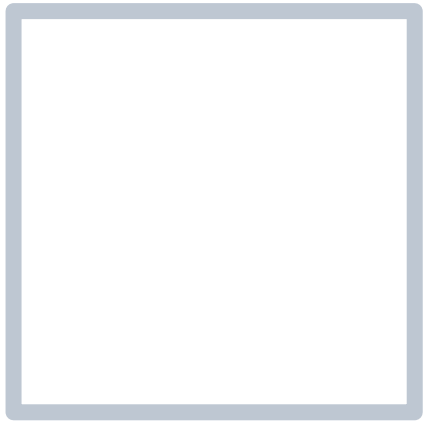


Task 1

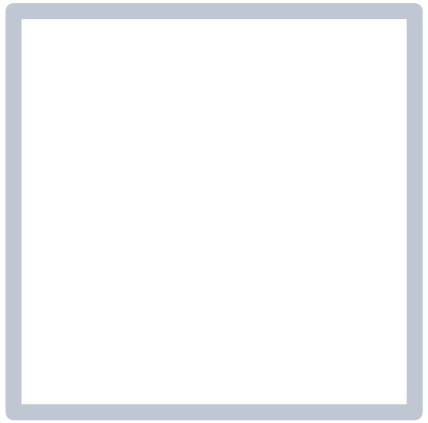
Activity: computational thinking



Task 1

Task 2

Activity: computational thinking



Task 1

Task 2

the 1st letter of your first name

Task 3

Discussion

- What do you notice?
- Were there any letters you couldn’t draw?
- Can you tell in advance which shapes are impossible?

Computer science (def.)

"the **study of computation**"

- **Problems** that can be solved computationally
- **Languages** used to describe computational processes
- **Machines** that carry out those processes
- **Theoretical limits** of computation
- **Computational solutions** to problems in math, science, medicine, business, education, journalism, …