

# CSC 100: Introduction to Programming in C++

Spring 2026 |  
Orientation and  
Foundations



# Meet Your Guide

## Dr. Marcus Birkenkrahe

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### **Philosophy**

Physicist by training

Teacher by profession

Data scientist by desire

### **Journey**

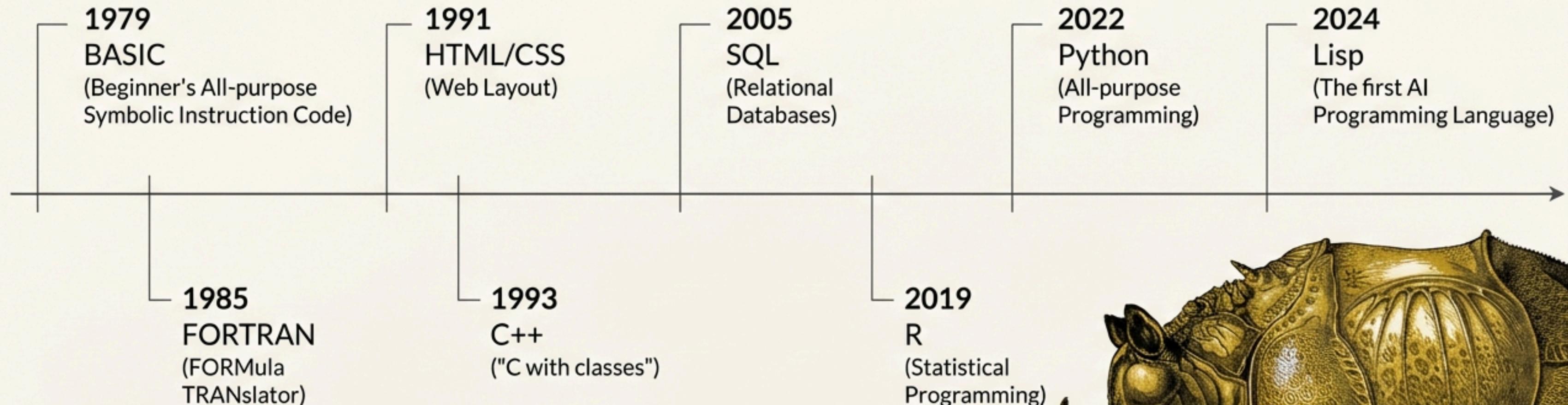
Joined Lyon College in 2021  
from Berlin, Germany.

### **A Personal Note**

Not cats OR dogs, but cats  
AND dogs.

# Why This Language? A Journey Through Code.

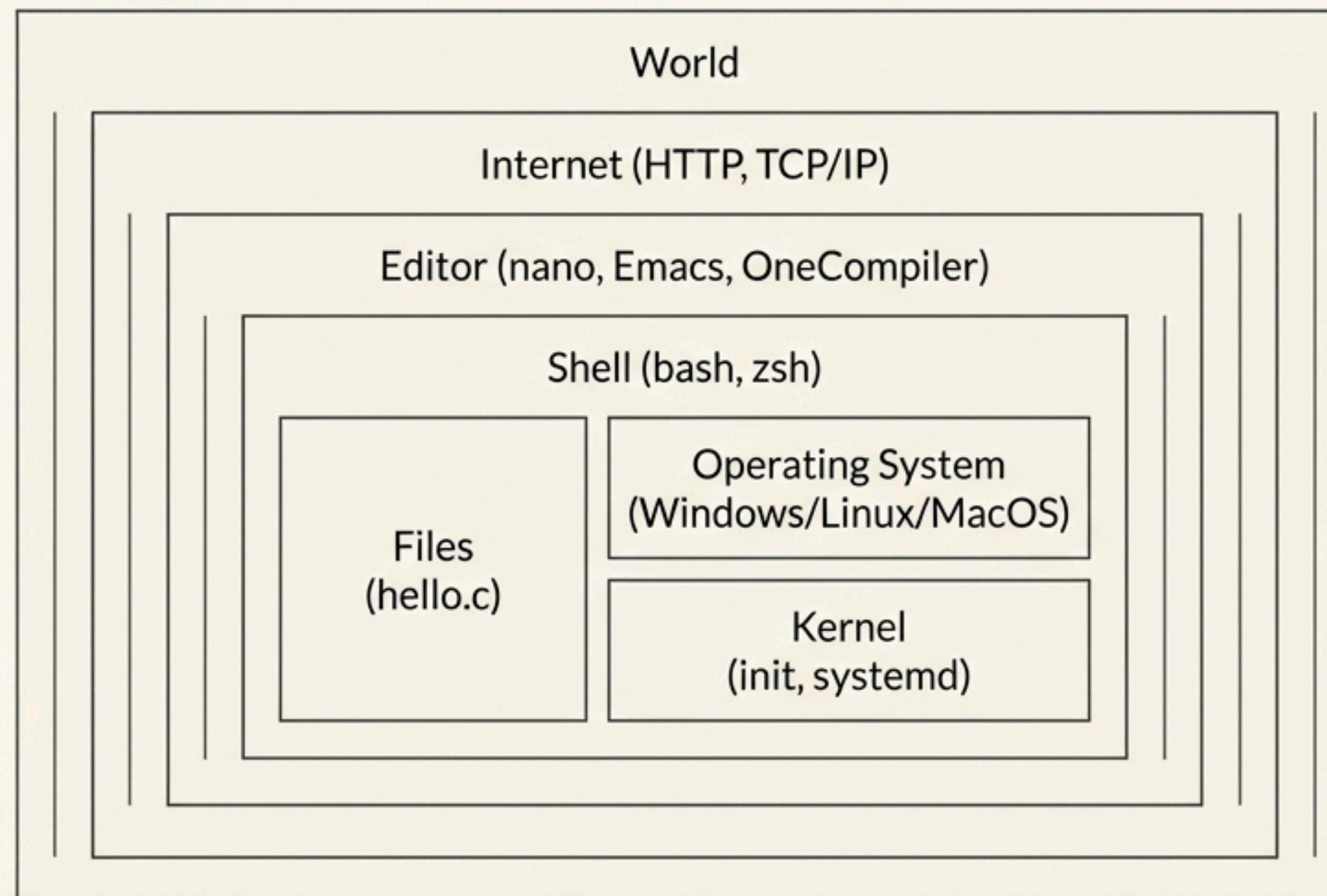
How many programming languages are there? Here is my personal timeline:



# The World Runs on an Invisible Foundation

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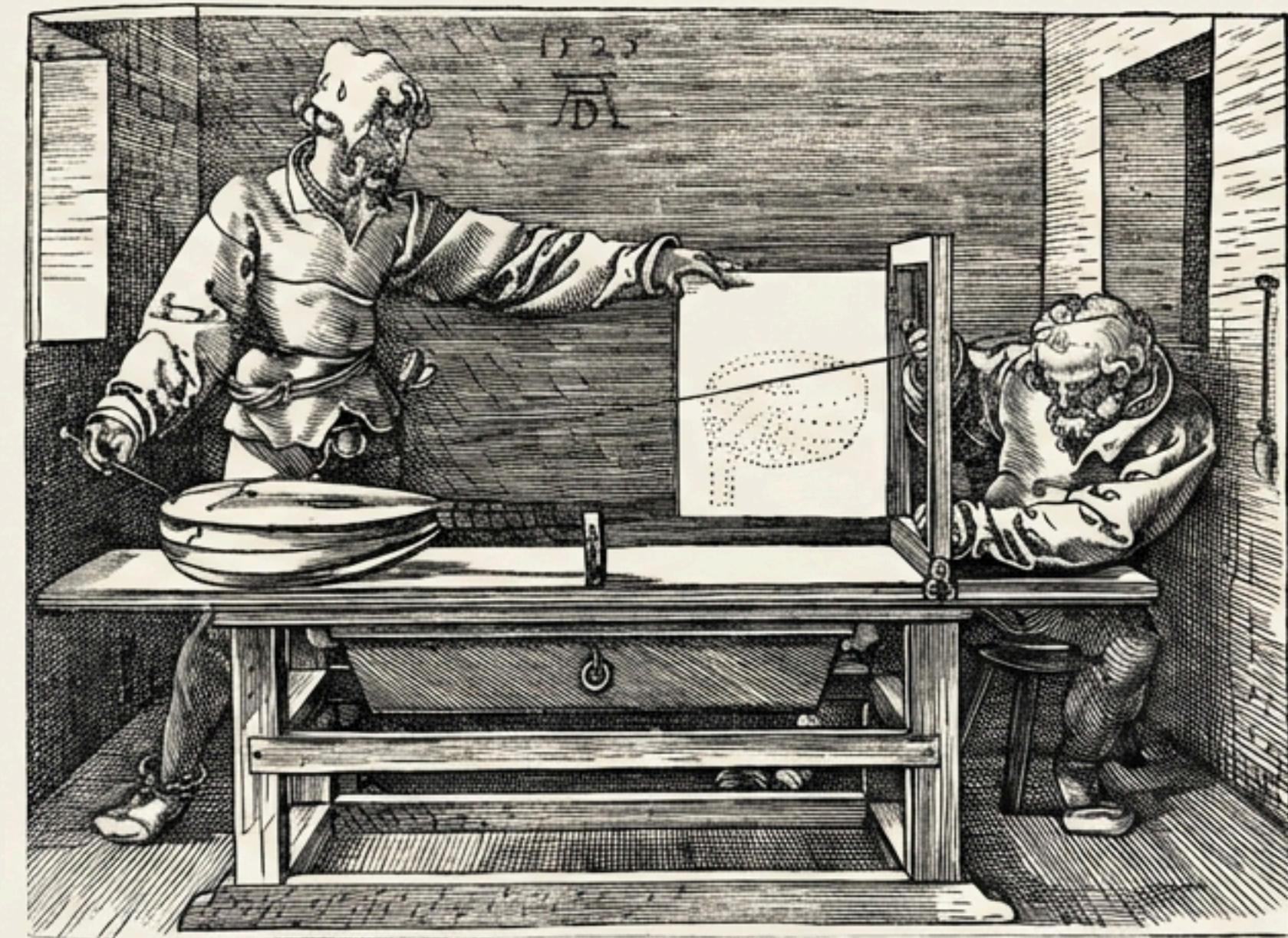
We will take a ‘holistic’, or complete view of computing. The digital world is a stack of managed layers, and most of the software enabling this is written in C.



# A New Perspective: Careers in Computer & Data Science

Where our CS and DS graduates work (2021-2024):

- **OneBrief** (military planning software): Full-stack developer
- **Bad Boy Mowers**: Computer Aided Design & Software Engineer
- **Future Fuel Chemical**: Data Analyst
- **Department of Homeland Security (DHS)**: Database Specialist
- **Enterprise Inc.**: Head of Data Analysis
- **Clayco Inc.**: Director of Data Engineering



**“None of this for you? Just learn C/C++ for the fun of it!”**

# What You Will Do: The Three R's of a Programmer

## REASON

**Description:** You will learn to think logically and structure solutions.

**Tools:** Using pseudocode (BPMN) and the C/C++ language.

## RENDER

**Description:** You will learn to translate your logic into functional code.

**Tools:** Using online editors like OneCompiler.

## RUN

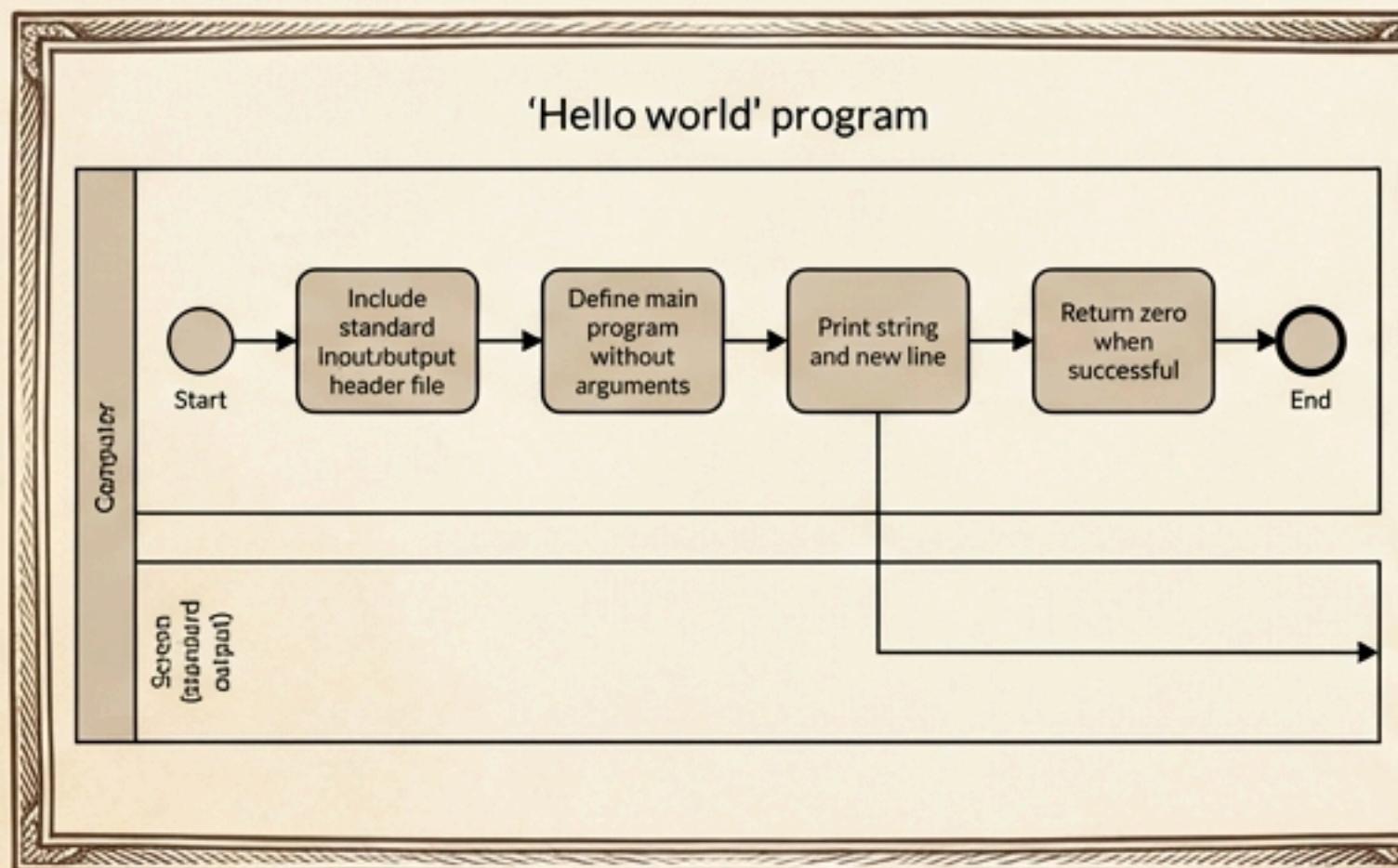
**Description:** You will learn to compile and execute your programs.

**Tools:** Using online command-line tools and shells.

# From Logic to Code: Your Workflow

## REASON with Pseudocode (BPMN)

We model processes using BPMN to plan our code before we write it.



## RENDER & RUN with OneCompiler

We use online tools to write, compile, and see the output of our code.

A screenshot of the OneCompiler interface. The top bar shows the title 'OneCompiler' with a 'RUN' button. The left sidebar has icons for file operations, search, and other tools. The main area shows a code editor with a file named 'Main.c' containing the following code:

```
C Main.c x
1 #include <stdio.h>
2 int main() {
3     printf("Hello, World!");
4 }
5
```

Below the code editor is an 'Output' panel displaying the following error message:

```
Main.c: In function 'main':
Main.c:4:28: error: expected ';' before ')' token
    4 |         printf("Hello, World!")
      |             ^
      |
    5 }
```

# Your Tech Stack for this Course



## CANVAS

- Gradebook, Tests, Zoom Recordings, Announcements.

## ONECOMPILER

- For coding along during lectures and practicing on your own.

## GITHUB ([github.com/birkenkrahe/cc-26](https://github.com/birkenkrahe/cc-26))

- Lectures, Assignments (PDFs), Code Solutions.

## GOOGLE CLOUD SHELL

- For practicing native Linux command-line tools like gcc and nano.

# How You Will Be Evaluated

**25%**

## Weekly Programming Assignments

Usually home assignments.

**25%**

## Weekly Participation & Practice

Includes in-class activities.  
Late submissions accepted  
for missed classes.

**25%**

## Weekly Multiple Choice Tests

10 total tests. Online,  
open book, taken at home.

**25%**

## Final Exam (Optional)

Only taken to improve  
your grade. Ignored if it  
lowers your average.

**The Golden Rule:** To pass the course, you need 60% of all available points.

# The Hacker's Path (Bonus Opportunity)

Book a session with me ([tinyurl.com/sp26-booking](http://tinyurl.com/sp26-booking)) for extra credit by installing professional tools.

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## Path 1: The OS

Get **WSL (Windows Subsystem for Linux)** on your Windows laptop.

**Why?:** “Linux is an environment that works for, not against, the programmer. It’s the OS for professionals everywhere.”



## Path 2: The Editor

Get **Emacs** with my configuration.

**Why?:** “Emacs is the hacker’s editor par excellence & teaches you a lot more than raw editing.”

# Your First Assignment

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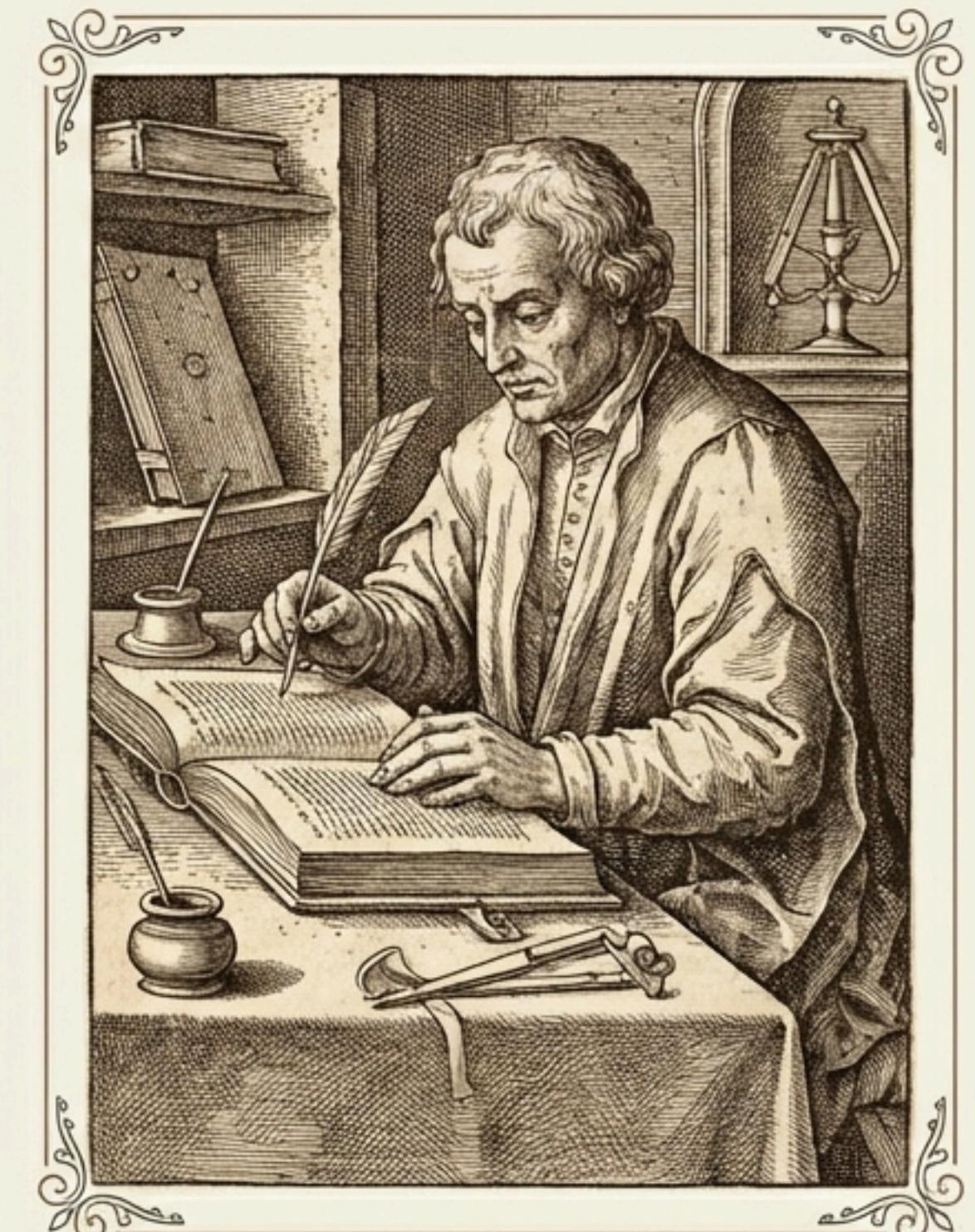
**Task:** Read Chapter 1, ‘The Way of the Program,’ in the free online textbook **Think C.**

**Link:** ‘[tinyurl.com/think-c-book](http://tinyurl.com/think-c-book)’

**Length:** Approx. 8 pages of text.  
You don’t have to do the exercises.

**Deadline:** By Monday, January 19.

**The Stakes:** This reading is not graded directly. However, the first test (30 multiple-choice questions) will be based almost entirely on this chapter.



# A Note on Assignment Stress

Don't stress yourself over any particular assignment.

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## The Big Picture

There are over **50** assignments and tests in this course.

Each is worth between 5-50 points.

This adds up to almost **1,000** total available points.

Think of it as your XP (Experience Points) for the semester.



# The Journey Ahead: Our 15-Week Outline

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**Weeks 1-5:** Orientation, Programming, Variables & Types, Constants & Names, Input & Output

**Weeks 6-10:** Operators, Control Flow, Iteration, Arrays, Functions

**Weeks 11-15:** Pointers, Structures, Dynamic Memory, Classes & Abstraction, Separate Compilation

# Your Support & Resources

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## Professor Contact

Professor: Dr. Marcus Birkenkrahe  
Office: Derby Science Building 210  
Office Hours: Mon/Wed/Fri 3-4 pm,  
Tue/Thu 4-5 pm

## Free Online Textbooks

Think C: [tinyurl.com/think-C-book](http://tinyurl.com/think-C-book)  
(Starts easy, gets harder fast)

The Rook's Guide to C++:  
[tinyurl.com/rooksguide-cpp](http://tinyurl.com/rooksguide-cpp)

Beej's Guide to C Programming:  
[beej.us/guide/bgc/](http://beej.us/guide/bgc/) (Assumes prior  
programming knowledge)

# The Way We Will Learn

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- There are many programming languages, and C++ is a powerful, foundational one.
- Lyon graduates get compelling jobs in this field.
- In this class, you will reason, render, and run code.

“ I try to say everything at least three times: first, to introduce it; second, to show it in context; and third, to show it in a different context, or to review it. ”

– Robert Chassell