

ITC313

Fundamentals of programming

Learning C++: from beginner to beyond












Dominique Ginhac

master 2 branches 0 tags

Go to file

Add file

Code

	d0m update samples with merge of lesson 2 and 3	dc7867c 5 minutes ago	67 commits
	TD/2019-2020	add 2019-2020 archive	33 minutes ago
	TP	add 2019-2020 archive	33 minutes ago
	exams	add exams 2018-2019 with code	10 months ago
	lectures	add lessons 07 and 08	10 months ago
	samples	update samples with merge of lesson 2 and 3	5 minutes ago
	utils	Move github files from TP to utils	10 months ago
	.gitignore	update .gitignore	10 months ago
	LICENSE	Create LICENSE	11 months ago
	LISEZMOI.md	update readme and lisezmoi	14 minutes ago
	README.md	update readme and lisezmoi	14 minutes ago

README.md

Esirem - Informatique / Electronique - Module ITC313

Fundamentals of Programming - Introduction to C++/C languages

La version française de ce fichier [LISEZMOI](#) est également disponible.

Introduction

The documents available in this GitHub repository are intended for students in the Computer Science - Electronics department of the [ESIREM](#) engineering school - Dijon - France. They are subject to change as the content of this module evolves. They are distributed under the terms of the GPLv3 - <https://www.gnu.org/licenses/> and can be freely used by anyone who want to learn C++/

About

Fundamentals of Programming -
Introduction to C++ language

Readme

GPL-3.0 License

Releases

No releases published
[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

Languages

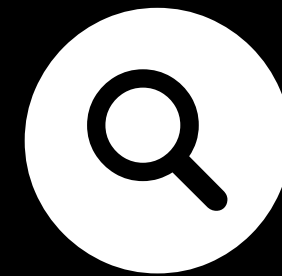
C++ 96.6% Makefile 3.4%

<https://github.com/dginhac/esirem-itc313>

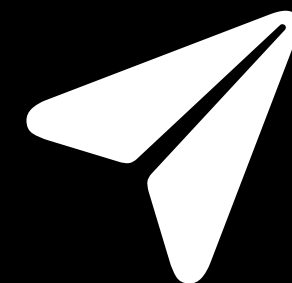
Hello I'm Pr. Dominique GINHAC



Programming Languages



Artificial Intelligence and
Computer vision on edge devices



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Microsoft TEAMS



A screenshot of the Microsoft Teams application interface. The left sidebar contains navigation icons for Activity, Chat, Teams, Meetings, Files, and Store. The main area is split into two panes. The left pane shows a list of recent chats with names and timestamps. The right pane shows a detailed view of a chat conversation titled 'Localization Project' with 6 participants. The chat history includes messages from Luis Valdez, MJ Price, Kayo Minwa, and Marie Beaudouin. A file named 'Excel 2018 - Localization - Workback Schedul...' is shared in the chat. The bottom of the interface features a 'Type a new message' input field and a toolbar with icons for attachments, emojis, and other chat functions.

Lesson 00

ITC313 Course Introduction

Give an overview of the MAIN TOPICS and let the students discover the LEARNING OBJECTIVES of the ITC313 course

WHY C++ ?

High-performance, Relevant, Popular, Career Opportunities, ...

Born in 1972

Closely tied to the dev of UNIX OS

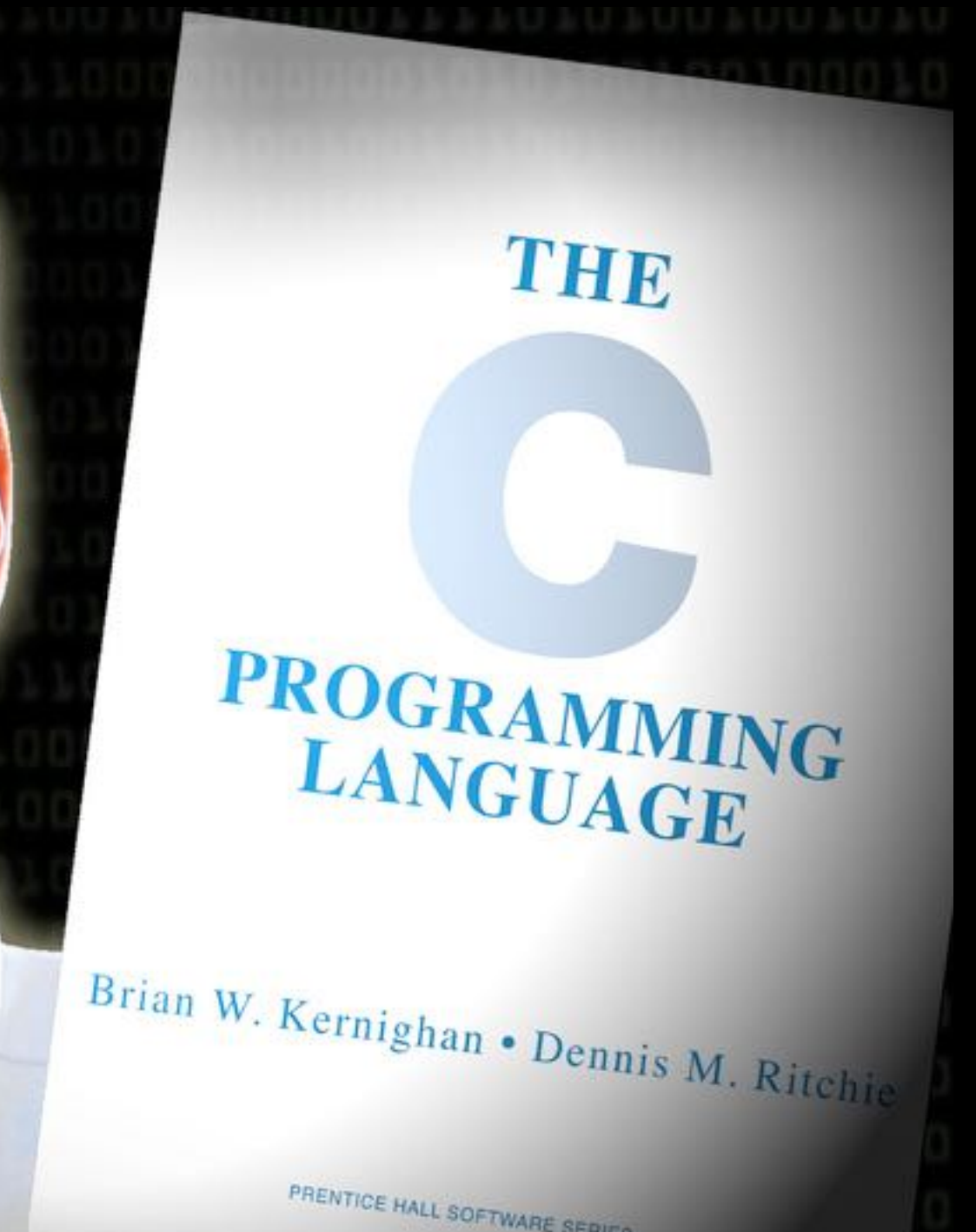
The C programming language has been developed to move the UNIX kernel code from assembly to a HIGHER LEVEL LANGUAGE while guaranteeing high performance



Dennis Ritchie
Creator of
C programming and
operating system Unix
1941 - 2011



`<brian
kernighan>`





Born in 1983

Originally defined as an EXTENSION of the C language called "C++ = C with Classes"



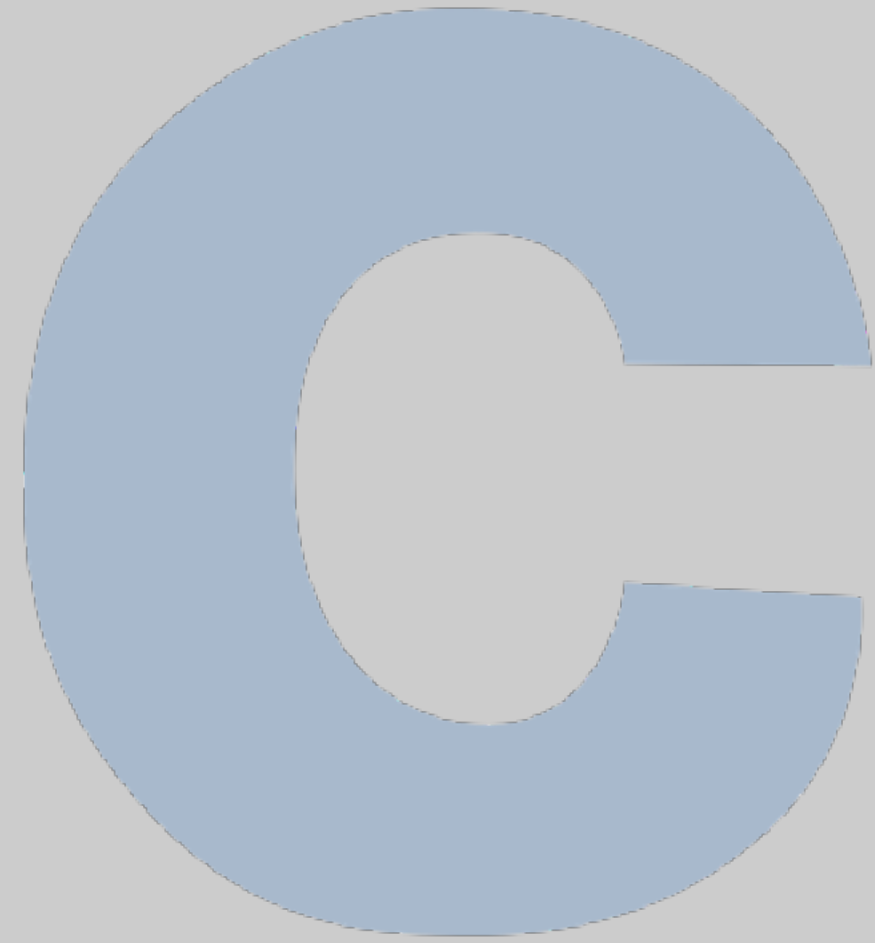
Initially ISO standardized in 1998

Updated standard every 3 years (C++17 is the current release, C++20 is finalized but not publicly available, C++23 the next one)

C++11 was a revolution: C++ before 2011 and since 2011 are different languages

Modern C++ stands for C++ that is based on C++11 and beyond

THE



PROGRAMMING
LANGUAGE

VS



"C++ is more than a superset of C
C is more than a subset of C++"

C

Procedural,
Top-down

Embedded devices
and system-level code

High &
Very-lightweight

VS



Paradigm



Target



Performance

C++

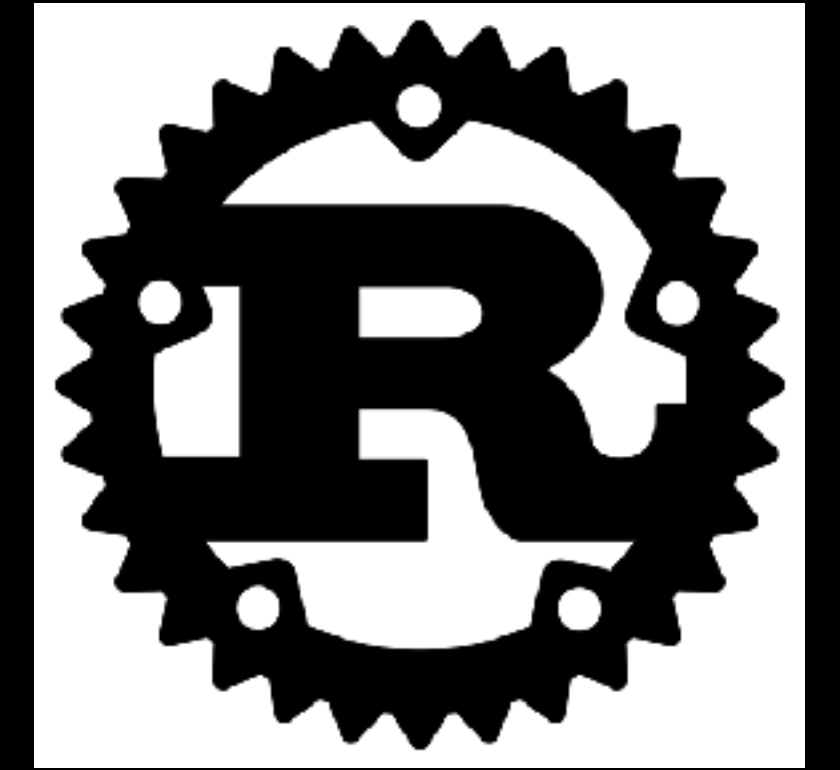
Multi-Paradigm
including OOP,
Bottom-up

Higher-level
general-purpose
applications

High & Lightweight

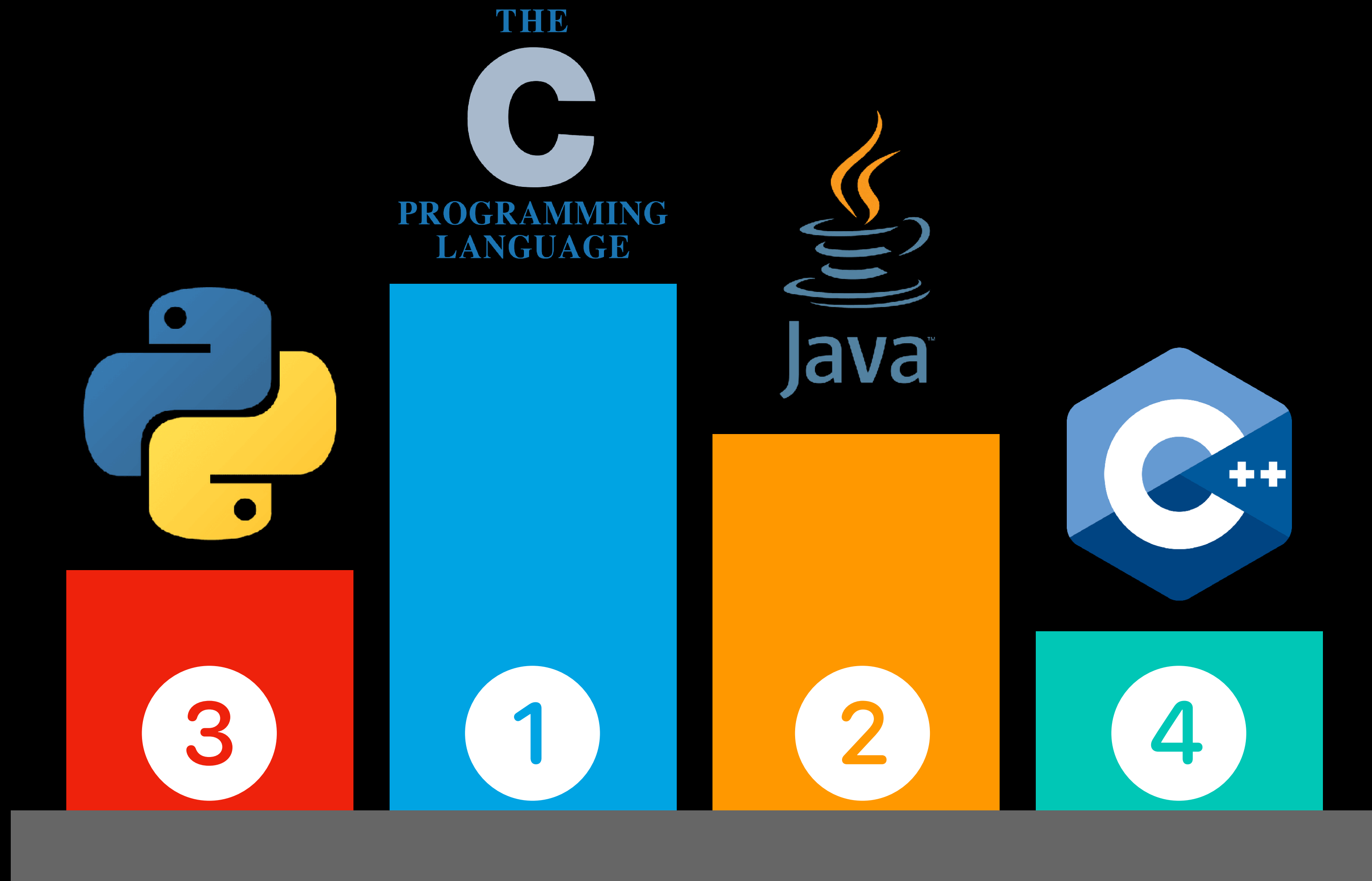


Are C/C++ still RELEVANT in 202x?



Welcome to the jungle

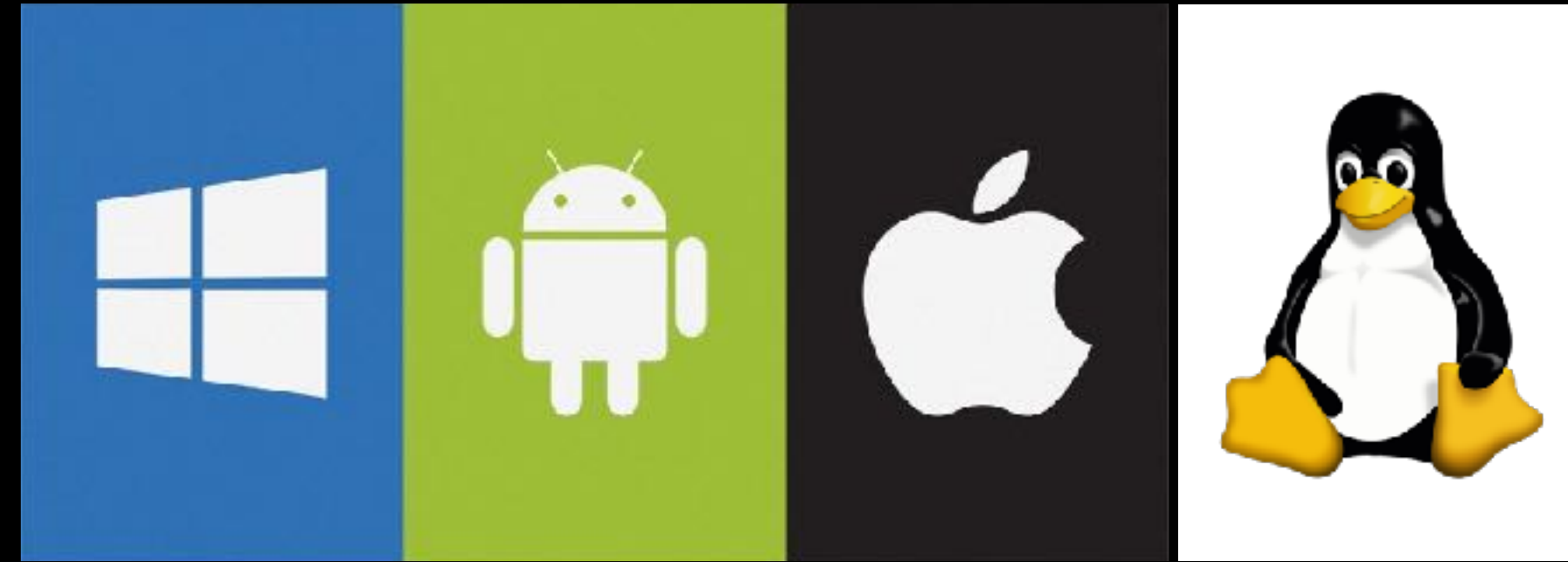




C/C++ are still among the most popular languages !

Source: <https://www.tiobe.com/tiobe-index/>






Made with ❤️ in C/C++



Three quick polls to begin

www.wooclap.com/ITC313





Each of you
is **unique** ...

... and has specific
learning needs

Your **learning objectives** are
“What you should be able to do at the end of the course that you couldn't do before”.

1

Discover the basic features to write good C++

Beginner (aka Padawan)

2

Master the fundamentals of C++ coding

Intermediate (aka Jedi knight)

3

Be comfortable with reading and writing modern C++

Expert (aka Jedi Master)





Format

#H: 13x1.75 h CM / 6x1.75h TD / 12x2 h TP



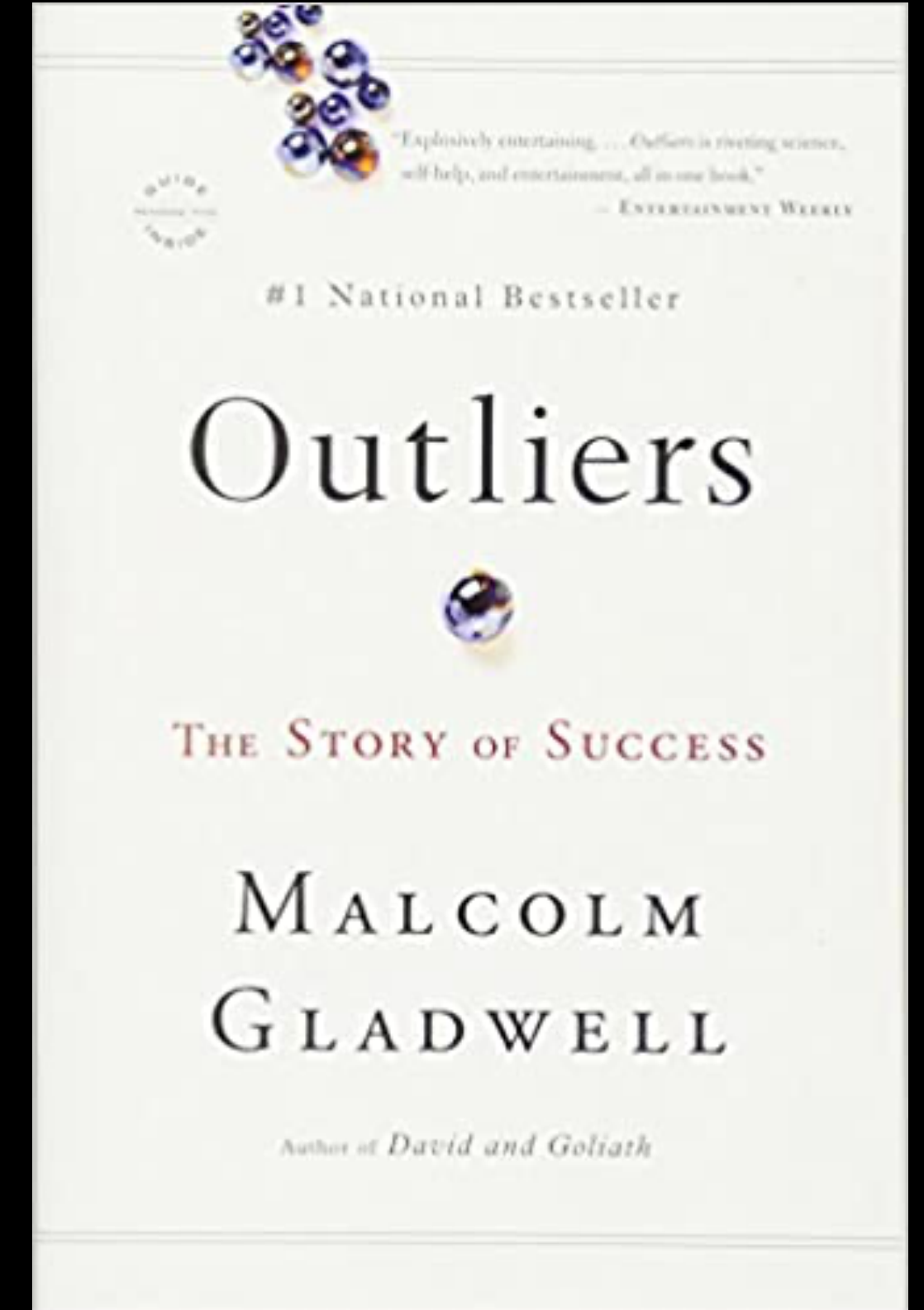
ONLY an introduction
to modern C++ with an
INCOMPLETE COVERAGE

Grading = Midterm + Final + Homework
(Your work MUST be your own!)

The 10,000 hour Rule

The key to achieving **WORLD-CLASS EXPERTISE** in any skill is a matter of practicing the correct way for a total of around 10,000 hours.

In this course, we'll only see the basics of modern C++ but there is a lot more to learn!



So, open your laptop and PRACTICE coding!

#YourJOB

Listen
carefully



Be
Proactive



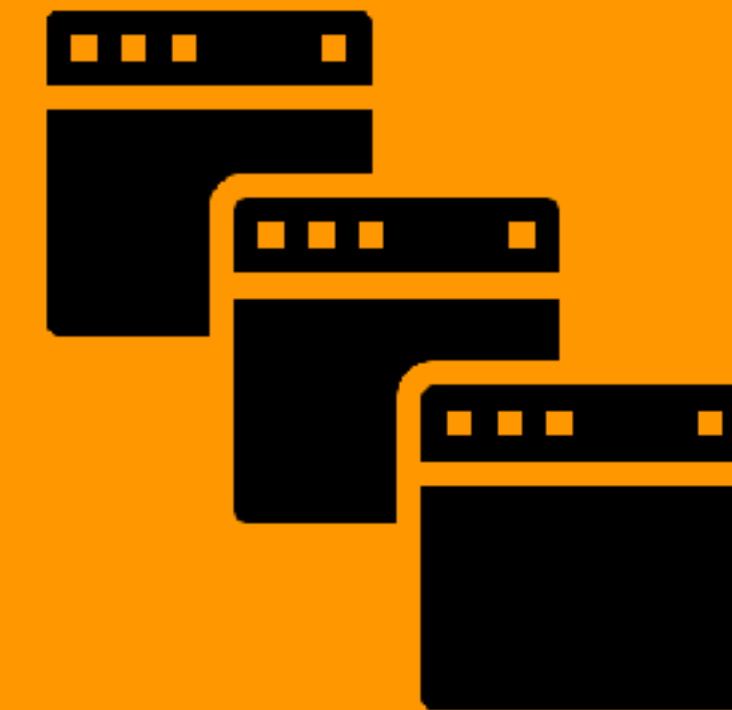
Ask when
unclear



#YourJOB

Listen carefully

Lecture slides, Code examples, Tutorials
on Makefile, git & GitHub, Lab works, ...



Everything is **AVAILABLE** on
github.com/dginhac/esirem-itc313

You are strongly encouraged to **ATTEND**
and **PARTICIPATE** actively in the lectures!



#YourJOB

Listen



Be
Proactive



Ask when
unclear



#YourJOB

Be proactive



My slides are often clean and do not contain everything I say. So you can **TAKE NOTES**.

You can take your **LAPTOP** with you and understand/update/run the C++ code examples in real time.



You can also use your **SMARTPHONE** to take screenshots of the blackboard.

#YourJOB

Listen
carefully



Be
Proactive



Ask when
unclear



#YourJOB

Ask me anything unclear



Learning / Teaching how to code
in C++ is not really **EASY!**

So, be active and **ASK ME** when
anything appears unclear!



I will spend time to **EXPLAIN**
AGAIN and **AGAIN**

#YourJOB

Listen
carefully

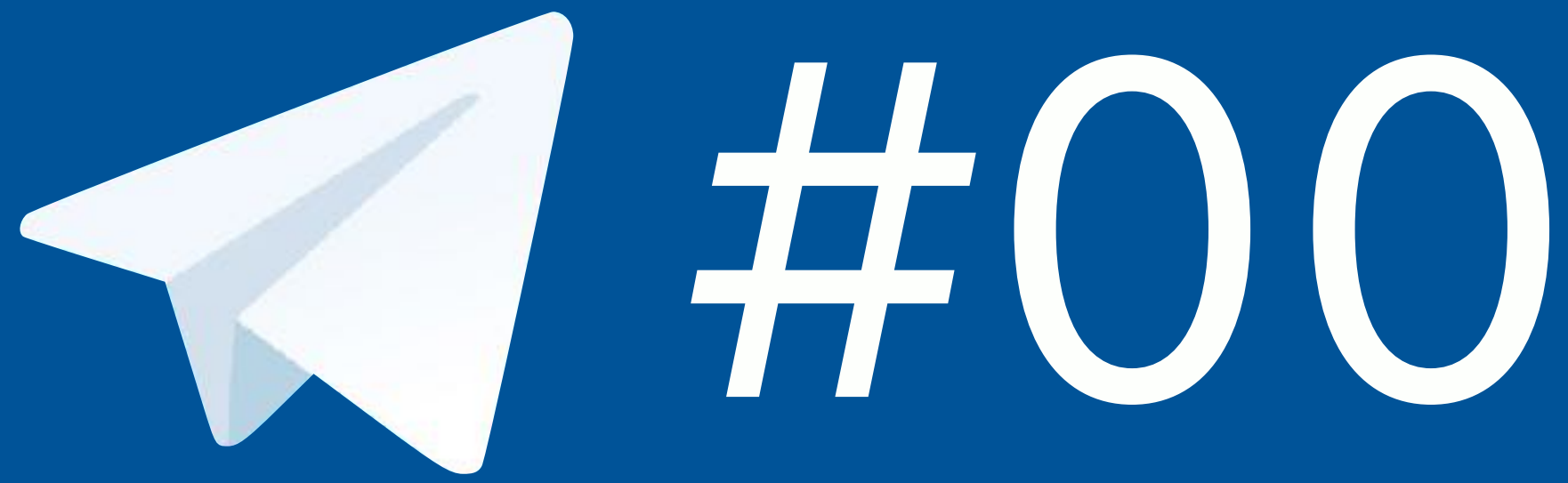


Take
notes



Ask me
anything
unclear



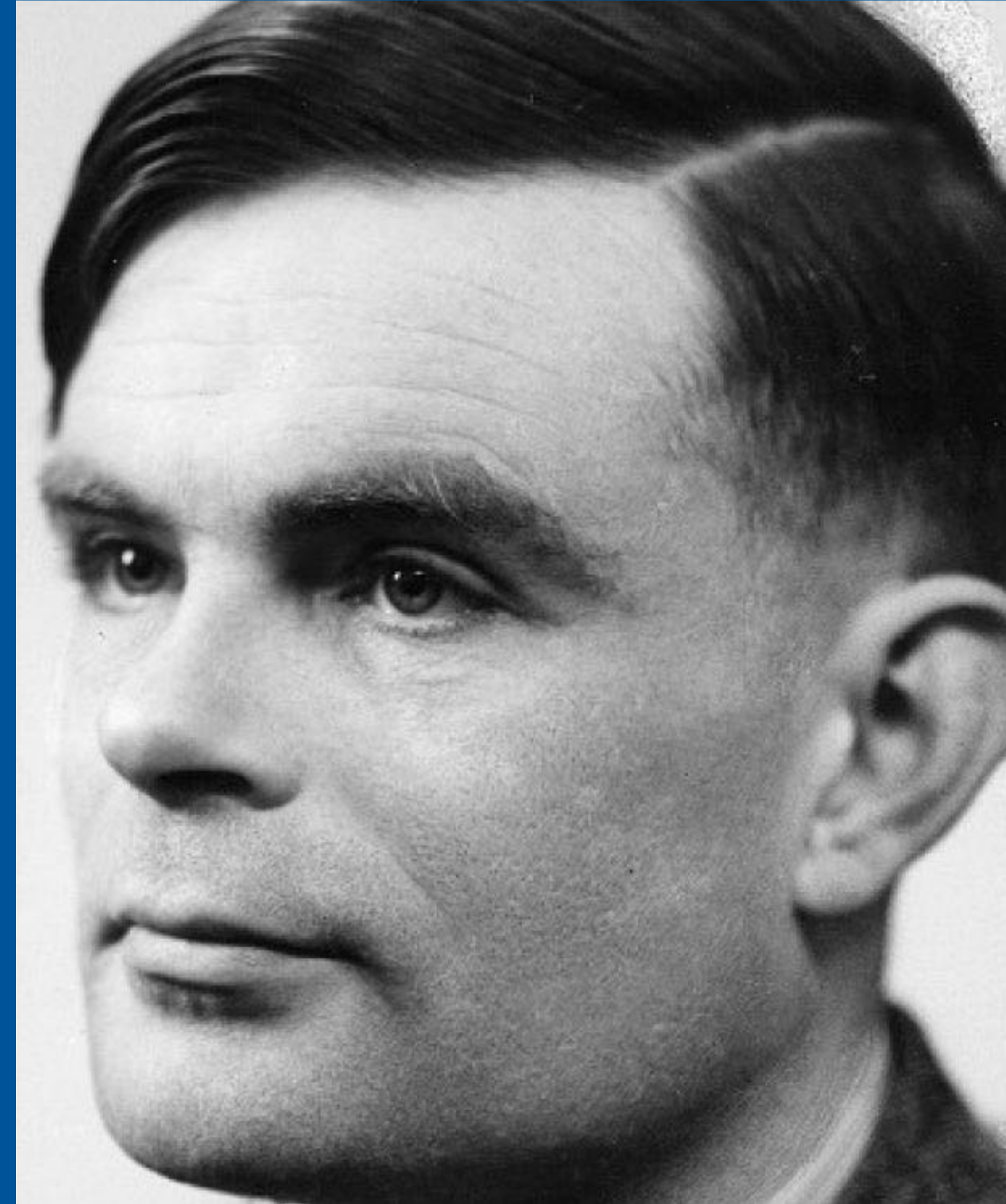


Take Home Message

Learning C++ hasn't ever been more accessible with fantastic resources easily available on Internet!

No one has become a programmer by only watching tutorials on Youtube.

"Programming is a skill best acquired by practice and example rather than from books." –Alan Turing



Next Lectures

~~Lesson 00: Introduction~~

Lesson 01: Hello, world!

Lesson 02: User-defined types

Lesson 03: Inheritance

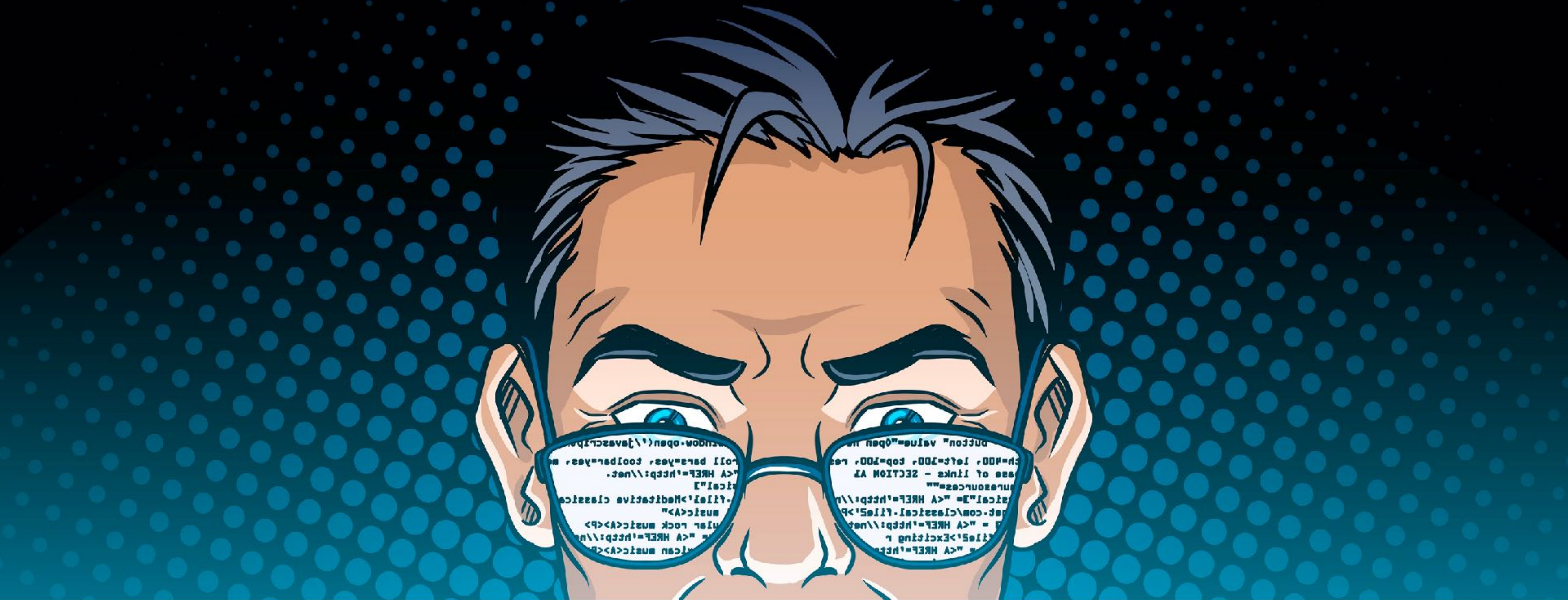
Lesson 04: Polymorphism

Lesson 05: STL Containers

Lesson 06: Indirection

Lesson 07: Templates

Lesson 08: Exceptions



So let's start coding with ❤️

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