Gebze Technical University

Department of Computer Engineering

CSE 241/501

Object Oriented Programming

Fall 2022

Syllabus

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Teaching Assistants

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Current and other useful information (homework, announcements) about this course will be kept on the Teams page.

We will **not** use Moodle!

Required Textbook

Absolute C++ 6th Edition

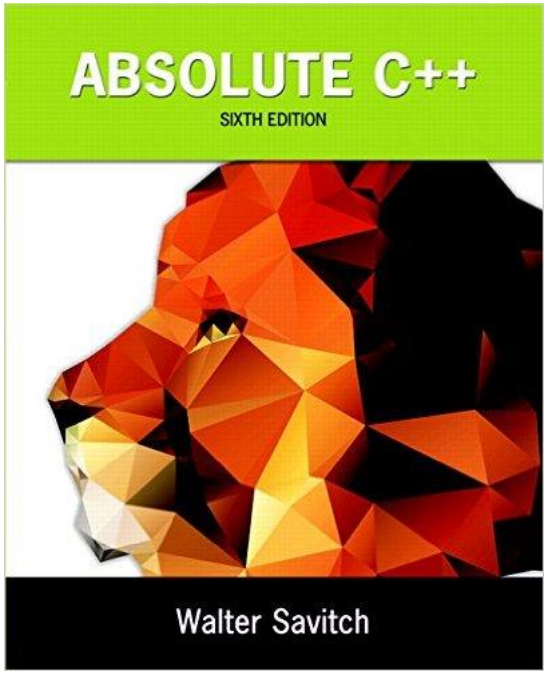
by Walter Savitch, Kenrick Mock, 0133970787

A few copies of 5th ed. are available at the GTU library

The slides and sourcecode for the book can be downloaded at http://www.pearsonhighered.com/savitch/

Absolute C++ 6th Edition
by Walter Savitch, Kenrick Mock, 0133970787
Addison-Wesley, 2015

- 6th edition now includes C++11 standards
- amazon.com.tr has this book for 500TL



Course Prerequisites

Solid C programming skills are required. A passing grade from CSE 102 is required. If you do not satisfy the conditions, please talk to the instructor.

Other good books

The C++ Programming Language (Special 3rd Edition) by Bjarne Stroustrup.

This book is by the creator of the C++ language.

The Compiler

- We will use GNU Project g++ and Java SE 6 compilers on Linux.
- All the programs should be compiled by g++ on the virtual machine before submitting.
- We will use Linux OS for this class.

Grading

The course grade will be determined approximately as follows:

- Midterm: 30%
- Final: 40%
- Homeworks: 30%

Grading and Homeworks

- If you submit less than 70% of the homeworks, then you will get a grade of NA from this class.
- Homeworks are due strictly by the due date.
- 10% of the maximum grade will be deducted for each day late.
- We will not accept homeworks submitted more than 4 days late
- If there is a situation which prohibits you from turning in your homework on time, talk to me before the due date.

Exams

Midterm exam: Tentative Nov 7th , 2022 exact time will be announced

Final exam: Second week of exam period

Attendance

- Attendance is required and attendance will be taken regularly.
- You are responsible from all the subjects covered in the class.
- You will get a grade of NA if you miss more than 30% of the classes.

Homework Submission and Announcements

- All the class related announcements will be made either in class or by the class Teams page.
- Students are required to read their gtu.edu.tr emails regularly and check the Teams page.
- The homeworks will be announced at the Teams page
- The homeworks will be submitted at he Teams page

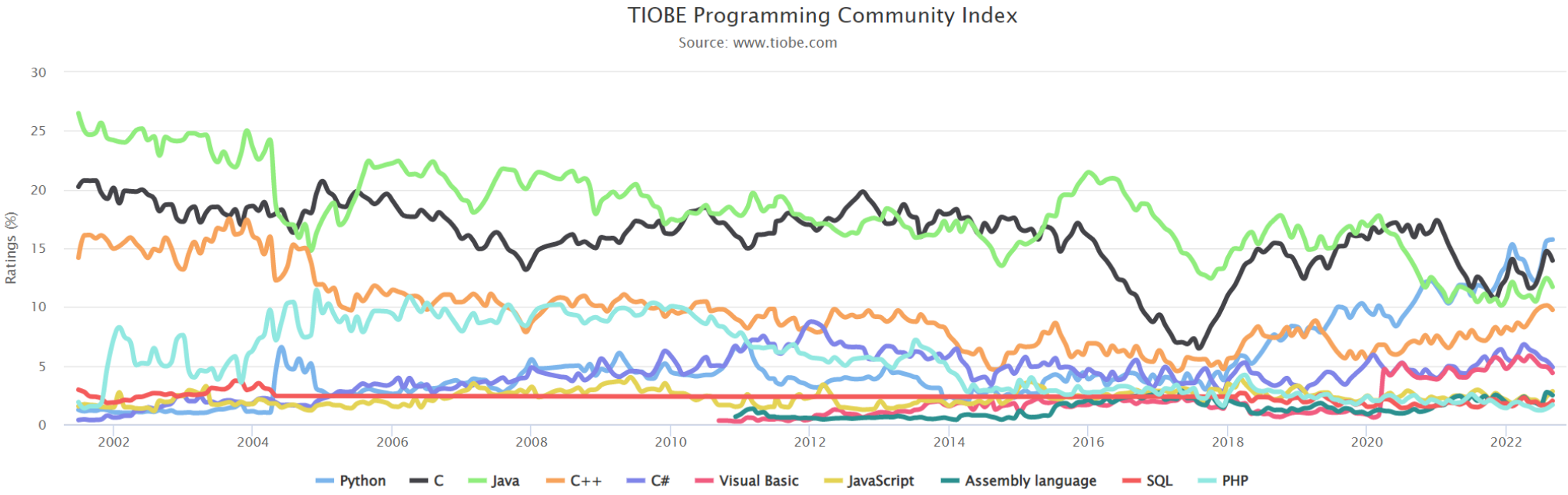
Honor Code

- You should not misrepresent someone else's work as your own.
- Do not use work from someone else, including other people or any code from any source
- All cases of confirmed cheating will be reported for disciplinary action.

Topics to Be Covered

- Introduction to C++ programming, classes and objects
- Control Structures, Functions, arrays
- Pointers and Strings
- Classes and Data Abstraction
- Operator Overloading
- Inheritance
- Virtual Functions and Polymorphism
- Templates
- Exception Handling
- Standard Template Library
- Introduction to Java and comparison with C++

Why Study C++?


TIOBE Programming Community Index
Source: www.tiobe.com
Ratings (%)
30
25
20
15
10
5
0
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Python
C
Java
C++
C#
Visual Basic
JavaScript
Assembly language
SQL
PHP

Energy Efficiency across Programming Languages

How Do Energy, Time, and Memory Relate?

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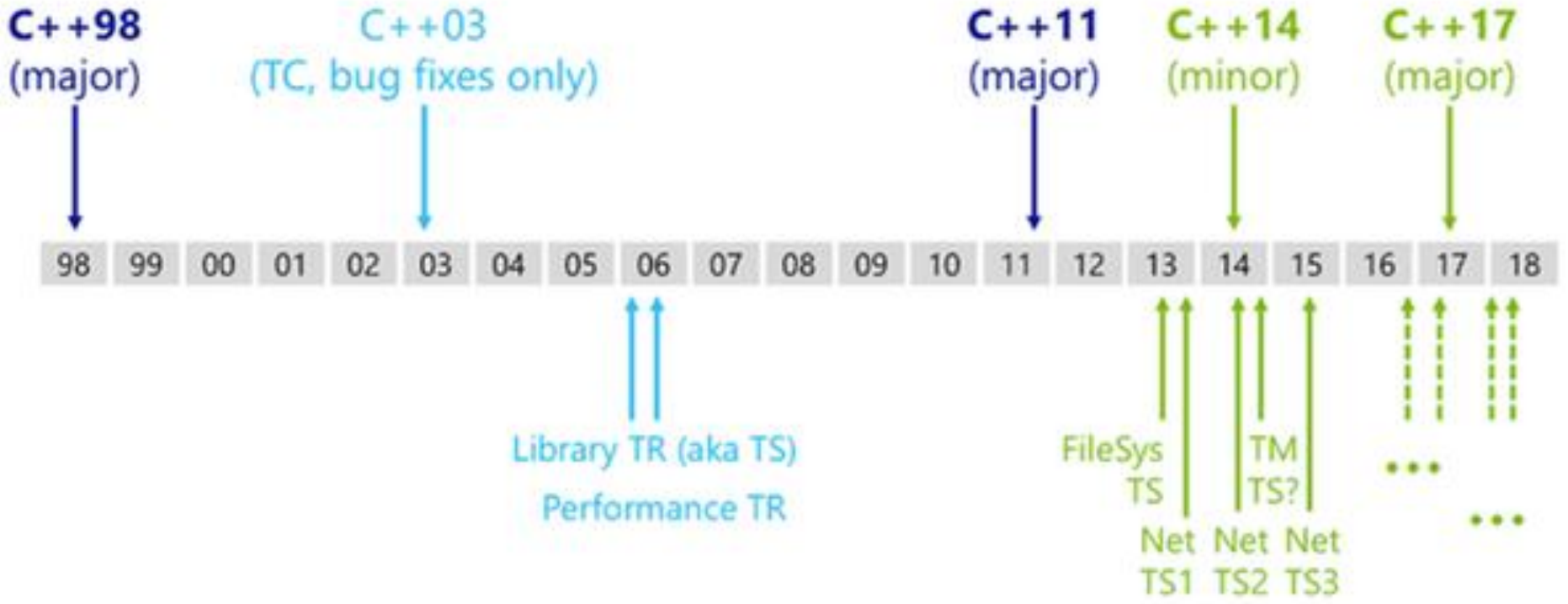
Table 4. Normalized global results for Energy, Time, and Memory

Total								
	Energy		Time		Mb			
(c) C	1.00	(c) C	1.00	(c) Pascal	1.00			
(c) Rust	1.03	(c) Rust	1.04	(c) Go	1.05			
(c) C++	1.34	(c) C++	1.56	(c) C	1.17			
(c) Ada	1.70	(c) Ada	1.85	(c) Fortran	1.24			
(v) Java	1.98	(v) Java	1.89	(c) C++	1.34			
(c) Pascal	2.14	(c) Chapel	2.14	(c) Ada	1.47			
(c) Chapel	2.18	(c) Go	2.83	(c) Rust	1.54			
(v) Lisp	2.27	(c) Pascal	3.02	(v) Lisp	1.92			
(c) Ocaml	2.40	(c) Ocaml	3.09	(c) Haskell	2.45			
(c) Fortran	2.52	(v) C#	3.14	(i) PHP	2.57			
(c) Swift	2.79	(v) Lisp	3.40	(c) Swift	2.71			
(c) Haskell	3.10	(c) Haskell	3.55	(i) Python	2.80			
(v) C#	3.14	(c) Swift	4.20	(c) Ocaml	2.82			
(c) Go	3.23	(c) Fortran	4.20	(v) C#	2.85			
(i) Dart	3.83	(v) F#	6.30	(i) Hack	3.34			
(v) F#	4.13	(i) JavaScript	6.52	(v) Racket	3.52			
(i) JavaScript	4.45	(i) Dart	6.67	(i) Ruby	3.97			
(v) Racket	7.91	(v) Racket	11.27	(c) Chapel	4.00			
(i) TypeScript	21.50	(i) Hack	26.99	(v) F#	4.25			
(i) Hack	24.02	(i) PHP	27.64	(i) JavaScript	4.59			
(i) PHP	29.30	(v) Erlang	36.71	(i) TypeScript	4.69			
(v) Erlang	42.23	(i) Jruby	43.44	(v) Java	6.01			
(i) Lua	45.98	(i) TypeScript	46.20	(i) Perl	6.62			
(i) Jruby	46.54	(i) Ruby	59.34	(i) Lua	6.72			
(i) Ruby	69.91	(i) Perl	65.79	(v) Erlang	7.20			
(i) Python	75.88	(i) Python	71.90	(i) Dart	8.64			
(i) Perl	79.58	(i) Lua	82.91	(i) Jruby	19.84			

C++ 11 ?


C++98
(major)
C++03
(TC, bug fixes only)
C++11
(major)
C++14
(minor)
C++17
(major)
98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18
Library TR (aka TS)
Performance TR
FileSys
TS
Net
TS1
Net
TS2
TM
TS?
Net
TS3