Introduction

Nick Sumner
wsumner@sfu.ca
CMPT 479/745
Software Engineering: Theory and Practice

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Introduction

Who am I?
- Nick Sumner (wsumner@sfu.ca)
- Research Faculty (Software Engineering, Compilers, Program Analysis)
Introduction

- **Who am I?**
  - Nick Sumner (wsumner@sfu.ca)
  - Research Faculty

- **Who is your TA?**
  - Nazanin Yousefian
Introduction

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• What is the course website?
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  - Research Faculty

- **Who is your TA?**
  - Nazanin Yousefian

- **What is the course website?**

- **Where can you discuss course issues?**
  - CourSys
    [https://coursys.sfu.ca/2024sp-cmpt-982-x1/forum/](https://coursys.sfu.ca/2024sp-cmpt-982-x1/forum/)
What is this class?

- **Software engineering** (informally)
  - Systematic approaches for managing risk while producing or providing software.
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  Programs are themselves data that you can construct, analyze, transform, synthesize, ...
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  - Spans techniques from novel logics to rigorous empirical assessment.
  - Rich *interaction* between theory and practice matter.
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*apply formalism to solve practical problems.*
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I will expect you to
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- reason practically.
- apply formalism to solve practical problems.
- recognize that practice may differ from formalism.
What is this class?

Software Engineering
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Software Engineering

This Class
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There is too much breadth. There is too much depth.
What is this class?

• Important things we will *not* cover (nonexhaustive)
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- Important things we will not cover (nonexhaustive)
  - Social aspects of software engineering
  - Project planning and management (Agile vs agile vs ...)
  - Requirements management
  - SLOs, SLA, and most SRE
  - Monoliths vs Services vs Microservices
  - Middleware management
  - ...

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These are worthwhile topics. Seek them elsewhere.
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- What we will (likely) cover
  - Foundations of software design
  - Performance & bottleneck analysis
  - Testing
  - Formal models of programs
  - Symbolic execution and automated test generation
  - Dynamic analysis
  - Static analysis
  - Parallelism & concurrency
  - Software security
  - Program synthesis
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There is still far too much! We will focus on breadth over depth.
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- What we will (likely) cover

This Course
What is this class?

- What we will (likely) cover

CMPT 373
CMPT 473
My Seminar

This Course
How will the class be structured?

- **Grading:**
  - Exercises (weekly): 50%
  - Exams: 25%
  - Term Project: 25%
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- **Exercises**
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  - Demonstrate understanding & application of in class material
  - Will expect you to think critically & independently
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Will make use of at least C++, Java, and Python
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- **Exams**
  - Just the final
  - Demonstrate competence & application of course material
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  - Discussing with me in advance is recommended
  - Initial proposals due by Feb 13th. Meetings w/me on ~14th - 16th.
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I want you to walk away with a project you are proud of. It may lead to a paper. It may to a business. It may lead to a tool.
Policies & Expectations

- Late Submissions
  - None accepted in general (3 late days to spend throughout semester)
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- **Cheating**
  - Any instance results in a score of 0 for the entire assignment involved.
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It is better to get 0 credit than to cheat!
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  - Per SFU policy, sharing your solution to an assignment is dishonesty. Do not post solutions for assignments to github or elsewhere.
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- **Expected Workload**
  - Strong should expect to spend 9-10 hours outside of class per week.
  - If you are missing some skills, you should expect to spend more.
  - This is not a required class.
    If you are only here for credit, it is better to leave.
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● Attendance
  – You don’t have to attend, but all in class materials are your responsibility
Let’s get started