

# **CS 425**

# **Software Engineering**

Fall 2024

**On Software Engineering, Assignment #1, and  
Capstone Projects**

August 29, 2024



# Overview

- Significance of Software Engineering
- Students' Very Brief Introduction [partial]
- Overview of Assignment #1
- More on Capstone Projects



# Significance of Software Engineering

- “Our civilization runs on software” [[Bjarne Stroustrup](#), the creator of C++]
- [SE a pretty good field currently](#)

According to the U.S. Bureau of Labor Statistics (BLS), the number of job opportunities within **software** development is projected to increase 24% from 2016 to 2026, much higher than the national average growth rate for all professions of 7%. These numbers point to the bright **future** of **software**.



# Significance of Software Engineering

- Opinions on SE's future vary, e.g.,
  - There will always be software engineering  
<https://interestingengineering.com/15-reasons-why-software-engineering-can-never-die>
  - SE will be obsolete by 2060  
<https://medium.com/@dtauerbach/software-engineers-will-be-obsolete-by-2060-2a214fdf9737>



# Grady Booch's Why Engineering?

[Grady Booch](#)

[Video: Why Engineering? by Grady Booch](#)



# Very Brief Student Introductions



# A#1 Overview

**Department of Computer Science and Engineering  
College of Engineering, University of Nevada, Reno  
CS 425 Software Engineering**

## **Individual Assignment #1 (A1)**

August 29, 2024

Due: Monday September 9, 2024, 11:59 pm

Weight in course grade: 6%



# A#1 Overview

## 1. Possible project idea [35 points]

Give an example of a **software-intensive product** that **you, as an entrepreneur and/or manager** would like to develop with a group of **3 or 4 other software engineers** (and possibly other specialists) working under your supervision.

Describe this software-intensive product and explain why it would be innovative and useful.

Indicate its expected users and outline its main functions and features/capabilities.





# A#1 Overview

## **1. Possible project idea [35 points] - continued**

Briefly indicate the roles of the team members who will be working with you.

Describe the origins of your software product idea (how the idea came to you) and compare your proposed solution with at least two (relatively) similar existing products

[500-750 words in total]



# A#1 Overview

## 2. Your target CSE-related job [35 points]

Even though you may have other career plans (like going for graduate studies or changing your areas of expertise), or even if you have already a job lined up for you, **please describe your target** (in a way “dream,” but also realistic) **computer-related job after graduation**.

Note this may not necessary be a software engineering job, but it should be **CSE-related**. Consider will be your full-time position after completing your BS in CSE degree at UNR.



# A#1 Overview

## **2. Your target CSE-related job [35 points] - continued**

Explain why you would like this job, what you expect it would entail, what skills and/or preparation you think it would require, and what related challenges you may encounter on the job.

Also, indicate the (approximate) title for this job position and the job's specific field or domain (e.g., financial, healthcare, education, military, etc.).

Finally, outline a couple of potential related specific projects or applications that you expect to be working on in this job.

[500-750 words in total]



# A#1 Overview

## 3. Software quality [30 points]

Consider a **software application or tool** that you are either familiar with or like to know more about (e.g., a mobile application, a computer game, a web-based application, a GUI builder, etc.), describe its main purposes, and give 3 examples of its main functions or features/capabilities that demonstrate good quality.

Explain why you think these are examples of **good quality software**.



# A#1 Overview

## 3. Software quality [30 points] - continued

Also, give 3 other examples of this software tool's functions or features/capabilities that could be improved or could be added (**poor quality software**).

Briefly suggest ways to improve existing functions/features/capabilities and explain why the additional functions/features/capabilities that you propose would be useful.



# A#1 Overview

## Notes on submission:

- Remember that this is an **individual assignment**, not to be done as a team.
- Number the answers to the questions.
- Include page numbers in to your PDF document.
- Assignments must be submitted through Canvas (Web Campus) in PDF format.



# More on the Capstone Projects

- Each team will consist of 3, or 4 students
- Projects start in October in CS 425 and end in May in CS 426
- In CS 425 (Fall) the goal is to create a concept, initial specification and design, and an early prototype
- In CS 426 (Spring) the concept and design will be further elaborated and expanded, and a functional software product will be developed
- Project topics may change in January, but this is quite rare
- In principle, team members could also change in January, but this is extremely rare



# More on the Capstone Projects

- Each team must have 1 to 3 **external advisors**, who know the project's topic and you must meet with them monthly (bare min)
- Project **sponsors/external advisors** could be faculty from UNR or professionals from business and industry
- **Graduate students** could also be external advisors
- Project **topics** could come from the following **sources**:
  - Faculty at UNR or other academic institutions
  - Businesses or industry organizations
  - Team members themselves
- Regardless of source, **all project topics must be approved by the CS 425 course instructors in individual project meetings with the teams held in early October**





# More on the Capstone Projects

- In **September** potential external advisors/sponsors are invited to pitch their proposed topics
- **Sponsorship cannot be given directly to the students in any form** (no money, equipment, gifts, or hiring for the students) but funding could be given to the CSE department to support senior projects
- The student teams **might or might not approach potential advisors** to work on a topic (**selecting a topic is free for teams**, not mandatory, but the topic selected must be approved by instructors)
- Similarly, potential external advisors/sponsors **may or may not select a team** that approaches them for working on a topic



# More on the Capstone Projects

- **All team members are expected to participate in all project parts**, otherwise grades can be different within a team (including possibly a grade of 0)
- **Limited or lack of participation in coding** will result in a low grade in Project Part 4 (including possibly a grade of 0). A grade below 50% in P4 will lead to **an “F” for the course**.
- Project parts in CS 425:
  - P1 Concept
  - P2 Specification
  - P3 Design
  - P4 Prototype



# More on the Capstone Projects

- Please note that due to its expected public exposure, your project must have a **user interface**
- It is OK to have **some research** involved but this capstone project is primarily about software development
- Projects **may or may not** have some specific **hardware** components

