

# CMPS 3390 Homework 4

*Spring 2026*

## Software Design

There are several open-source tools available that can help you create architecture, design systems, and model data effectively. Here are some popular options:

### 1. Diagramming and Modeling Tools

- [Draw.io \(diagrams.net\)](#)
  - **Use:** Create flowcharts, system architecture diagrams, and wireframes.
  - **Features:** Integrates with Google Drive, GitHub, and other cloud services; easy-to-use interface.
  - **Platform:** Web-based, desktop versions for Windows, macOS, and Linux.
- [Pencil Project](#)
  - **Use:** Wireframing and mockups for UI/UX design.
  - **Features:** Built-in collection of shapes for different platforms, easy export options.
  - **Platform:** Desktop versions for Windows, macOS, and Linux.
- [PlantUML](#)
  - **Use:** Create UML diagrams from plain text descriptions.
  - **Features:** Supports various diagram types like class diagrams, sequence diagrams, and state diagrams.
  - **Platform:** Web-based, integrates with many IDEs like IntelliJ, VSCode, and Eclipse.

### 2. UI/UX Design Tools

- [Figma](#)
  - **Use:** Designing user interfaces and prototyping.
  - **Features:** Collaborative design environment, easy to share designs and prototypes.
  - **Platform:** Web-based, with desktop versions for Windows and macOS (Note: Figma has a free tier but is not fully open-source).
- [Penpot](#)
  - **Use:** Collaborative design and prototyping tool similar to Figma.
  - **Features:** Open-source alternative to Figma, with a focus on team collaboration.
  - **Platform:** Web-based.
- [GIMP](#)
  - **Use:** Image manipulation and graphic design.
  - **Features:** Comprehensive suite of tools for graphic design; can be used to create UI elements.
  - **Platform:** Desktop versions for Windows, macOS, and Linux.

### 3. Database Design Tools

- [MySQL Workbench / pgAdmin](#)
  - **Use:** Database modeling and design, especially for MySQL / PostgreSQL databases.
  - **Features:** Visual database design, SQL development, and administration tools.
  - **Platform:** Desktop versions for Windows, macOS, and Linux.
- [DBDiagram.io](#)
  - **Use:** Create entity-relationship diagrams (ERDs) online.
  - **Features:** Text-based ERD generation, export options for SQL, and image formats.
  - **Platform:** Web-based.
- [pgModeler](#)
  - **Use:** Database modeling for PostgreSQL databases.
  - **Features:** Visual design of database schemas, reverse engineering of existing databases.
  - **Platform:** Desktop versions for Windows, macOS, and Linux.

### 4. System Architecture Design Tools

- [Archimate Tool](#)
  - **Use:** Modeling enterprise architectures using the ArchiMate language.
  - **Features:** Supports complex architecture modeling, collaboration features.
  - **Platform:** Desktop versions for Windows, macOS, and Linux.
- [Modelio](#)
  - **Use:** General-purpose modeling tool supporting UML, BPMN, and other standards.
  - **Features:** Code generation, reverse engineering, and extension modules.
  - **Platform:** Desktop versions for Windows, macOS, and Linux.

### 5. Design Pattern Libraries and Resources

- [Refactoring.Guru](#)
  - **Use:** Learn and apply software design patterns.
  - **Features:** In-depth explanations and examples of design patterns.
  - **Platform:** Web-based resource.
- [SourceMaking](#)
  - **Use:** Resource for design patterns, refactoring techniques, and software development best practices.
  - **Features:** Extensive library of patterns with examples.
  - **Platform:** Web-based resource.

These tools can help you with various aspects of software design, from creating initial wireframes and mockups to detailed system architecture and database design. They are widely used in the industry and offer robust features for open-source solutions.