# CS 499 Module One Assignment Template

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Complete this template by replacing the bracketed text with the relevant information.

1. **Self-Introduction:** Address all of the following questions to introduce yourself.
   1. How long have you been in the Computer Science program?

I have been in the Computer Science program for about one year.

* 1. What have you learned while in the program? List three of the most important concepts or skills you have learned.

**As a student in the Computer Science program, I have hands-on experience working to develop web applications with Python, NoSQL, and HTML. I also know how to use object-orienting design pattern to write reusable, clean code. In addition, I have also extended my knowledge in data structures, and optimized fundamental algorithms in order to make the program more efficient and faster.**

* 1. Discuss the specific skills you aim to demonstrate through your enhancements to reach each of the course outcomes.

**I aim to demonstrate skills in frontend design using React, modular application architecture, and static data handling. The app uses a JSON based backend API for the responses and internally the app is architected in a way that can easily be switched to a complete backend at later stage. The original plan was to port everything to a Django (Python) backend, but this would have required too much time and a significant refactor of the code, and too much refactoring of the code, so I left everything as is, but with MongoDB.**

* 1. How do the specific skills you will demonstrate align with your career plans related to your degree?

**These skills support my career goal of becoming a frontend or full-stack web developer. Building maintainable UI, shaping the data structure, and how to evolve the architecture are part of the recipe for real world programming.**

* 1. How does this contribute to the specialization you are targeting for your career?

**This project showcases frontend engineering, data modeling, and interface simulation—key components of full-stack and UI/UX development.**

1. **ePortfolio Set Up:**
   1. Submit a **screen capture** of your ePortfolio GitHub Pages home page that clearly shows your URL.
      1. You already have a repository in GitHub where you uploaded projects in previous courses. Your ePortfolio will reside in GitHub but can link to work at other sites, such as Bitbucket.
   2. Use the GitHub Pages link in the Resource section for directions on:
      1. How to create your GitHub website and publish code to GitHub Pages
      2. Issues, such as adding links to other sites
   3. Paste a screenshot of your GitHub Pages home page with your URL clearly showing in the space below.

https://ami-0611.github.io/A screenshot of a chat

AI-generated content may be incorrect.

1. **Enhancement Plan:** 
   1. **Category One:** Software Engineering and Design
      1. **Select an** **artifact** that is **aligned with** **the** software engineering and design **category** and explain its origin. Submit a file containing the code for the artifact you choose with your enhancement plan.

**The artifact is based on a project originally developed in CS 340 (Client/Server Development). The original version was a Python-based animal shelter dashboard using MongoDB. I am enhancing it into a reservation-style site using React, simulating a real-world shelter appointment application.**

Note: Your artifact may be work from the following courses:

* IT 145: Foundation in Application Development
* CS 250: Software Development Lifecycle
* CS 260: Data Structures and Algorithms
* IT 315: Object Oriented Analysis and Design
* CS 320: Software Testing, Automation, and Quality Assurance
* CS 330: Computational Graphics and Visualization
* CS 340: Advanced Programming Concepts
* CS 350: Emerging Systems Architectures and Technologies
* CS 360: Mobile Architecture and Programming
* IT 365: Operating Environments
* IT 380: Cybersecurity and Information Assurance
* CS 405: Secure Coding
* CS 410: Reverse Software engineering
* IT 340: Network and Telecommunication Management
* IT 380: Cybersecurity and Information Assurance
  + 1. **Describe** a practical, well-illustrated **plan** for enhancement in alignment with the category, including a pseudocode or flowchart that illustrates the planned enhancement.

The new frontend reads a static JSON file (converted from the original CSV) to display and filter reservation data. This structure mimics an API and prepares the system for future backend integration.

Pseudocode:

On /reservations route:

Fetch data from bookings.json

Display records in a table

Allow filtering by date and user

For this category of enhancement, consider improving a piece of software, transferring a project into a different language, reverse engineering a piece of software for a different operating system, or expanding a project’s complexity. These are just recommendations. Consider being creative and proposing an alternative enhancement to your instructor.

Think about what additions to include to complete the enhancement criteria in this category. Since one example option is to port to a new language, that is the kind of scale that is expected. This does not mean you need to port to a new language but instead have an equivalent scale of enhancement. Underlying expectations of any enhancement include fixing errors, debugging, and cleaning up comments, but these are not enhancements themselves.

* + 1. Explain how the planned enhancement will **demonstrate** specific **skills** and align with course outcomes.
       1. Identify and describe the specific skills you will demonstrate that align with the course outcome.
* **UI development using React**
* **Modular and maintainable code structure**
* **Client-side data handling via JSON**
* **Preparing frontend for future API integration**
  + - 1. Select one or more of the course outcomes below that your enhancement will align with.
* **Outcome 2: Produce a technically cohesive and accessible portfolio website, through the application of GitHub Pages and React.**
* **Outcome 3: Through designing and evaluating a reservation system taking care of scheduling and filtering concerns at client-side through logic.**
* **Outcome 4: Simulating full-stack application functionality and learning that functionality using modern technology and tools (React, JSON, GitHub); and preparing for the backend of the app to be integrated later.**

Course Outcomes:

1. Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision-making in the field of computer science.
2. Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts.
3. Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution while managing the trade-offs involved in design choices.
4. Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals.
5. Develop a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources.
   1. **Category Two:** Algorithms and Data Structures
6. **Select an artifact** that is **aligned with the** algorithms and data structures **category** and explain its origin. Submit a file containing the code for the artifact you choose with your enhancement plan. You may choose work from the courses listed under Category One.

**The selected artifact is a reservation system application that was initially developed in the CS-340 Client/Server Development course. The initial candidate was some intermediate (preprocessed) CSV data to filter and apply decision logic on, using Python with some Pandas sprinkled in for fun with DataFrames and friends. In this improvement, the algorithmic calculation is handled in the JavaScript code, where it checks for duplicated reservations while typing, sorts them by date, and filters them on the frontend.**

1. **Describe** a practical, well-illustrated **plan** for enhancement in alignment with the category, including a pseudocode or flowchart that illustrates the planned enhancement.

* **Load data from bookings.json**
* **Use JavaScript functions to:**
  + **Check for reservation slot availability**
  + **Sort reservations by date**
  + **Filter by user or service**

Pseudocode:

function isSlotAvailable(date, time) {

return !reservations.some(r => r.date === date && r.time === time);

}

function sortReservationsByDate() {

return reservations.sort((a, b) => new Date(a.date) - new Date(b.date));

}

For this category of enhancement, consider improving the efficiency of a project or expanding the complexity of the use of data structures and algorithms for your artifact. These are just recommendations. Consider being creative and proposing an alternative enhancement to your instructor. Note: You only need to choose one type of enhancement per category.

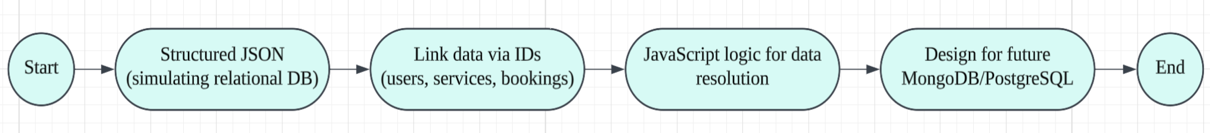
Think about what additions to include to complete the enhancement criteria in this category. Since one example option is to port to a new language, that is the kind of scale that is expected. Perhaps you might increase the efficiency and time complexity of an algorithm in an application and detail the logic of the increased time complexity. Remember, you do not need to port to a new language but instead have an equivalent scale of enhancement. Underlying expectations of any enhancement include fixing errors, debugging, and cleaning up comments, but these are not enhancements themselves.

1. Explain how the planned enhancement will **demonstrate** specific **skills** and align with course outcomes.
   1. Identify and describe the specific skills you will demonstrate to align with the course outcome.

* **Implementing filtering and sorting logic with JavaScript**
* **Client-side optimization for handling structured data**
* **Array manipulation, date comparison, and validation logic**
  1. Select one or more of the course outcomes listed under Category One that your enhancement will align with.
* **Outcome 3: Design and evaluate computing solutions using algorithmic principles**
* **Outcome 4: Apply tools and techniques in computing practices to implement real-world solutions**
  1. **Category Three: Databases**
     1. **Select an artifact** that is **aligned with the** databases **category** and explain its origin. Submit a file containing the code for the artifact you choose with your enhancement plan. You may choose work from the courses listed under Category One.

**This artifact also originated in CS-340. While the original used CSV and pandas for basic queries, this version uses a structured bookings.json file as a mock database. The JSON includes IDs for users, services, and bookings to simulate relational database behavior without a true backend.**

* + 1. **Describe** a practical, well-illustrated **plan** for enhancement in alignment with the category, including a pseudocode or flowchart that illustrates the planned enhancement.



For this category of enhancement, consider adding more advanced concepts of MySQL, incorporating data mining, creating a MongoDB interface with HTML/JavaScript, or building a full stack with a different programming language for your artifact. These are just recommendations; consider being creative and proposing an alternative enhancement to your instructor. Note: You only need to choose one type of enhancement per category.

Think about what additions to include to complete the enhancement criteria in this category. Since one example option is to port to a new language, that is the kind of scale that is expected. Perhaps you might increase the efficiency and time complexity of an algorithm in an application and detail the logic of the increased time complexity. Remember, you do not need to port to a new language but instead have an equivalent scale of enhancement. Underlying expectations of any enhancement include fixing errors, debugging, and cleaning up comments, but these are not enhancements themselves.

* + 1. Explain how the planned enhancement will **demonstrate** specific **skills** and align with course outcomes.
       1. Identify and describe the specific skills you will demonstrate that align with the course outcome.
* **Designing relational data models in JSON**
* **Simulating queries and relationships without a DBMS**
* **Structuring frontend data for future backend integration**
  + - 1. Select one or more of the course outcomes listed under Category One that your enhancement will align with.
* **Outcome 4: Using computing tools and technologies for real-world implementation**
* **Outcome 5: Designing scalable, secure, and extendable data solutions**

1. **ePortfolio Overall Skill Set**
   1. Accurately describe the **skill set** to be illustrated by the **ePortfolio** **overall**.
      1. Skills and outcomes planned to be illustrated in the code review

* **Modular frontend development with React**
* **Data-driven UI rendering using static JSON**
* **Implementation of core logic like filtering and sorting**
  + 1. Skills and outcomes planned to be illustrated in the narratives
* **Explaining architectural choices and project goals**
* **Justifying the use of JSON and future backend considerations**
* **Highlighting trade-offs and scalability awareness**
  + 1. Skills and outcomes planned to be illustrated in the professional self-assessment
* **Preparation for full-stack or frontend development roles**
* **Practical experience working with structured data and component-based design**
* **Forward-thinking architecture built for extensibility and future API integration**