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CS-499 Computer Science Capstone

09/05/25

Module 1-

# CS 499 Module One Assignment Template

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?

**2 years**

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

**Multiple coding languages, database, and software design & development**

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

**I hope to show my ability to learn different skills and use them where needed and apply them to complete a task. That I can solve problems and work hard to meet the needs of my employer to ensure that all requirements are met and maintained.**

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

**I want to move into a career field that uses software to help elevate and solve some of the problems that exist. IO think that with technology constantly hanging and evolving learning and improving my knowledge of computers and software will do nothing but help in the long term.**

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

**I think understanding statistics and using databases and numbers can greatly improve how we help people in more personalized ways but at the same time know where individual problems may occur to hope to curve issues and improve situations. I just want to improve the overall situation of as many people as possible and I think by working towards technology and using it in positive ways to gain that is what my main goal is.**

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.

**[Paste the screenshot here of your GitHub Pages home page.]**

**A screenshot of a computer

AI-generated content may be incorrect.**

**A screenshot of a computer

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.

**I am choosing a part of my final project for CS – 330 Computational Graphics and Visualizations**

**A picture frame and a vase on a table

AI-generated content may be incorrect.**

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.

**When I originally started this class, I had never attempted to design a visual representation of items using code alone and wanted to bring as many things into the scene as possible and I think I left some spots open that need some more refinement. The main spots are to ground the table itself and to fix the pencil holder so that it is not just a black hole that the pens disappear into. So, I would like to fix the code and enhance its complexity to add more details to add more realism to the design and give more of what I was imaging.**

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.

**I think this shows how if I was to present my final project to a client and receive feedback, then I would demonstrate how I would take the criticism and work on making the changes to meet the new needs. Other areas that are being worked on are problem solving, editing, and adjusting existing systems.**

* + - 1. Select one or more of the course outcomes below that your enhancement will align with.

**Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts.**

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.
   1. **I selected my application development for CS -360 Mobile Architect & Programming in February of 2025. The primary purpose of this application was to be an inventory tracking system. It allows for access to the Inventory lists which can be updated in real time but with the security of having a user logged in and tracking how the system changes. The user can add new items, modify existing, and increase or decrease current totals. It also includes alerts and messaging when items go to zero to prevent issues.**
7. **Describe** a practical, well-illustrated **plan** for enhancement in alignment with the category, including a pseudocode or flowchart that illustrates the planned enhancement.

**I want to add ease of use when adding and removing inventory items as well as making sure that areas are only allowed to certain users. After my last security class, I wanted a basic user and a more authorized user and showed how their options vary.**

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.

**Show improvement and emphasis on security as well as keeping things simple but functional within the app and making and improving something that the client requires. As well as showing skills by adding features that can be beneficial to the company are add value to what they are trying to achieve.**

* 1. Select one or more of the course outcomes listed under Category One that your enhancement will align with.

**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.**

* 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.

**For this artifact I chose CS – 340 in April 2025. I think this has been a true experience in trial and error and the dedication to trying and pushing through situations that I might not have foreseen. I worked through problems and by the end was able to chip away each piece to allow a workable program to appear. I think getting help and starting early or the two best options to try and achieve the outcomes you want.**

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

**This shows how databases work and I never got my final project to work completely. I would like to work through the issues and get it working the way they are supposed to. I want to get each part working and show how by hard work and testing and reworking that it is possible to find the errors and fix them and to have a working product.**

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.

**I think this will show resilience, hard work, problem solving, and debugging. Showing that no matter the outcome I will make the effort to work through issues and do the work to get things accomplished.**

* + - 1. Select one or more of the course outcomes listed under Category One that your enhancement will align with.

**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.**

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

**I want to show throughout all three of these codes reviews of the artifacts that secure coding is used. To me one of the biggest issues facing the new evolving world of technology is security and how we go about protecting users but at the same time limiting the amount of overreach by companies and governments for surveillance. I want to follow the best coding practices and make sure my code meets those standards and make them easy to read and work with later on.**

* + 1. Skills and outcomes planned to be illustrated in the narratives

**I think a main area that I think drives the narrative of my coding is the structure and organization of my projects. After multiple classes of coding practices being supplied I try to maintain every chance that I get, and I want to ensure that all of my projects meet those standards as a minimum. I think it is beneficial when working in teams or when showing areas that you are trying to show off or even when trying to get approval for things that may not be directly available. Overall, I think knowing the basics and making sure to meet the standards will make a great starting point to learn at any situation to have a great career wherever that may be.**

* + 1. Skills and outcomes planned to be illustrated in the professional self-assessment

**I think this will be the place that I will tell my personal but professional story of why I want to build a career in this field and why I think I could really flourish in it. I would like to show off the areas I think I can excel as well as showing that I can meet the standards that almost every job or technical area requires. I want to demonstrate my ability to work through problems and my no quit attitude as well as knowing that I am not going to know everything and I am willing to ask questions and get help where necessary in order to move things along. Overall, I think I would make a great team player, but I know when to put my head down and get work done to meet the needs of the client and company.**