# CS 499 Module One Assignment Template

Alex Mehr

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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?

**6 years**

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

**Data structure and algorithms, System design, computational graphics and visualizations, and mobile application design. I have learned the basics for software engineering from different programming languages. There are many aspects in computer science and althoug I learned many of them I feel like I will need more practice to master them all.**

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

**My goal is to be able to code in most languages and also learn Cybersecurity and use both of these skills to improve my career opportunites.**

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

**My career goals and what I do is almost similar to what I am learning and I am hoping that after the get my degree I can utilize all of these knowledge to become a better software engineer.**

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

**Understanding multiple programming languages, databases and etc, will help me with improving my career and helping my team.**

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.

* 1. 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
  2. Paste a screenshot of your GitHub Pages home page with your URL clearly showing in the space below.

A screenshot of a computer

Description automatically generated

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.

**Name: CS-360 Project3-Android testing**

This project is to create a program to test the android studio application design to ensure the application functionalioties are according the the requirements and passes the test and each page in the application completes the process and all pages are linked together properly and does not crach during interaction.

package com.example.cs360project.main;

import android.content.Intent;

import android.os.Bundle;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import com.example.cs360project.R;

import com.example.cs360project.data.DatabaseManager;

public class MainActivity extends AppCompatActivity {

private EditText txtUsername;

private EditText txtPassword;

private Button btnCreateUser;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

txtUsername = findViewById(R.id.txtUsername);

txtPassword = findViewById(R.id.txtPassword);

Button btnLogin = findViewById(R.id.btnLogin);

btnLogin.setOnClickListener(v -> handleLogin());

}

private void handleLogin() {

if (txtUsername.getText().toString().equals("user") && txtPassword.getText().toString().equals("7777")) {

Toast.makeText(this, "Login Successful", Toast.LENGTH\_SHORT).show();

} else if (txtUsername == null || txtPassword == null) {

Toast.makeText(this, "Error: Username or Password field is missing", Toast.LENGTH\_LONG).show();

return;

}

String username = txtUsername.getText().toString().trim();

String password = txtPassword.getText().toString().trim();

if (DatabaseManager.getInstance(getApplicationContext()).authenticate(username, password)) {

// Replace MainActivity.class with the next activity to navigate after login

Intent intent = new Intent(this, DatabaseManager.class);

startActivity(intent);

finish(); // Close the current activity to prevent going back

} else {

Toast.makeText(this, "Invalid credentials", Toast.LENGTH\_LONG).show();

}

}

}

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.

**My focus for the artifact is to improve the functionality and smooth transition between pages within the application.**

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.

**During the course I had some challenges with log-in page and contact page and my goal**

**To gather more details on what these pages need and how it should be displayed so**

**can develop and design the pages that meets the requirements.**

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

1. **Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer sience practices.**
2. **Demonstrate the ability to user well-founded Innovative techniques, skills and tools in computing practices for the purposes of Implementing computer solutions to deliver value and accomplish industry specific goals**.
3. **Develop a security mindset that anticipated asversarial exploits in software architecture and designs to expose potential culnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources.**

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.

**Name: MainActivity .java**

**This artifact is within the final project of CS-360, where I developed and main activity of an Andriod application. There are multiple files such as DatabaseManager.java and AndroidManifest.xml that should be developed properly to achieve the goal of the login page and ensure the provided credentials are recorded in the database and authentication passes.**

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 enhancement, I will work on cleaning up the AndroidManifest and ensure that all the requiremenets are implemented within the XML file. Since the MainActivity.java file pulls information from the XML file, the file needs to be complete and well written**.

<?xml version="1.0" encoding="utf-8"?>

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

package="com.example.cs360project">

<application

android:allowBackup="true"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:roundIcon="@mipmap/ic\_launcher\_round"

android:supportsRtl="true"

android:theme="@style/Theme.CS360Project">

<activity

android:name=".main.MainActivity">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

<category android:name="android.intent.category.LAUNCHER" />

</intent-filter>

</activity>

</application>

</manifest>

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.

**Data Structure optimization :**To display my knowledge of Data Sctructure, I will

implement optimized algorithm and this enhancement will demonstrate my skill in

selecting an appropriate data structure for every use case to improve the performance

of the application.

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

**Course outcome:**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 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.

**AnimalShelter.py(using MongoDB for data interaction). This artifact is from CS-340 Project2. The dashboard in this project is build by creating CRUD application using MongoDB to record and manage data for the animal shelter application. This system enables users to look-up animals, add new animal record, update and delete the record from the database.**

**def create(self, data):**

**if data is not None:**

**insert = self.database.animals.insert\_one(data) #data should be dictionary**

**if (insert != 0):**

**return True;**

**else:**

**return False;**

**else :**

**raise Exception("Nothing to save, because data parameter is empty")**

**def read(self, criteria=None):**

**if criteria is not None:**

**data = self.database.animals.find(criteria)**

**else:**

**data = self.database.animals.find({})**

**return data**

**def update(self, searchData, updateData):**

**if searchData is not None:**

**result = self.database.animals.update\_many(searchData,{"$set": updateData})**

**else:**

**return "{}"**

**return result.raw\_result**

**def delete(self, deleteData):**

**if deleteData is not None:**

**if deleteData:**

**result = self.database.animals.delete\_many(deleteData)**

**return result**

**else:**

**raise Exception("Nothing to delete")**

* + 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 initial system is functional but some additional enhancement to add more features and make the application more efficient and accessible. For this enhancement, I will utilize more advanced MongoDB features and data indexing to make the more frequent quries accessible quicker, role based authentication so the CRUD functionalities are only accessible by authorized roles, and to create a user friendly UI to allow users to interact with the database through the website**.

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.

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

**Course Outcome:**

**1- 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.**

**2-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. **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

**My goal is to demonstrate and improve my coding skill and get more knowledge about**

**Every aspect of programming such as writing a clean and maintainable code and mitiage**

**Errors.**

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

**My goal is to improve and illustrate my Analytical skills, problem-solving skills, Attention**

**to detail and logical reasoning.**

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

**The outcome I am looking for from my professional self-assessment are my self-assessment**

**should reflect a comprehensive and honest appraisal of my skills and their application in**

**professional settings. By focusing on these skills and outcomes, I will provide a well-**

**rounded perspective on my growth, capabilities, and future potential in my field of study**

**or career path. This approach not only demonstrates self-awareness but also positions me**

**as a proactive learner and contributor in my professional environment.**