**Advanced Computer Science II**

Performance Task

# **Create — School Store Layout**

## **Overview**

Good web design doesn't happen by accident. Now that you've gained a strong foundation in programming, this course takes a deeper look at front-end design, expanding on what is covered in Foundations. You'll learn how to design websites that look great on any device and you'll be equipped to deeply understand and create your own responsive design framework!

Students will focus on remembering the basics learned during AP CS II for website design and development. They will work as a class to design and build a responsive and complete layout for the Eagles’ Nest. Later Performance Tasks will see the students adding interactivity and a working database onto the framework they construct here.

## **Assessment**

You will be provided with 15 hours of class time to complete and submit the following:

* A video of your program running
* Written responses about your program and development process
* Program Code

Your teacher will share submission guidelines that include suggestions for creating video and PDF files.

## **General Requirements**

This performance task requires you to develop a program based on user feedback from a client. It is strongly recommended that a portion of the program involve some form of collaboration with another student in your class. Your program development process must involve a significant portion of work completed independently that requires a significant level of planning, designing, and program development.

You are required to:

* Iteratively design, implement, and test your program.
* Independently create at least one significant part of your program.
* Create a video that displays the running of your program and demonstrates its functionality.
* Write responses to questions about your program.
* Include your entire program code.

## **Program Requirements**

Your program must demonstrate a variety of capabilities and implement several different language features that, when combined, produce a result that cannot easily be accomplished without computing tools and techniques.

Your final draft must demonstrate:

* Explain how to test software for bugs and find solutions to problems they can anticipate.
* Use debugging strategies to correct errors in code.
* Document their own or their team’s computational processes when creating a program in a way that allows others to follow and understand.
* Collaborate with others to collect feedback on a digital project they or their team made, identify areas for improvement, and implement changes.
* Apply the principles of UI (user interface) design to create a digital project that balances aesthetic design with practical application.
* Define layout and design theories (Design Principles, Color Theory, Elements of Design, and Typography)
* Create a user-friendly project that meets provincial and/or other known accessibility standards and accounts for a wide range of human diversity.

## **Submission Requirements**

### 1. **Video**

Submit one video in .mp4, .wmv, .avi, or .mov format that demonstrates the running of at least one significant feature of your program. Your video must not exceed 1 minute in length and must not exceed 30MB in size.

### 2**. Written Responses**

Submit one PDF document in which you respond directly to each prompt. Clearly label your responses 2a – 2e in order. Your response to all prompts combined must not exceed 750 words, exclusive of the Program Code.

## **Program Purpose and Development**

1. Provide a written response or audio narration in your video that:

Identifies the programming language.

* Identifies the purpose of your program.
* Explains what the video illustrates.

(Approximately 150 words)

1. Define layout and design theories, and describe how you utilized these theories in your program. Describe the user friendly design you attempted and how accessible your website is for consumers (How does your site handle diverse humans?). Describe the difficulties and/or opportunities you encountered and how they were resolved or incorporated. (Approximately 200 words)
2. What is the design process? Define the stages of the process and identify what was accomplished in each stage. Capture and paste the program code segment that implements a part of your code that was difficult with comments explaining its purpose and how you fix or implement it into your code(marked with an oval in 2e below), that is easy to read and understand. Describe the choices they or their team made when developing a digital project. What constraints influenced their decision, what needs did they consider, etc. (Approximately 200 words)
3. How did you collaborate with others to collect feedback on this digital project that you or your team made? How did you identify areas for improvement, and implement those changes in your code; Capture and paste the program code segment (marked with a rectangle in 2e below). Evaluate an interactive website or program and identify how it incorporates principles of good UI (user interface) design (i.e., user control, navigability, accessibility, chunking).(Approximately 200 words)
4. Capture and paste your entire program code into the PDF.

* Include comments or citations for program code that has been written by someone else.

## Tasks

### [**Activity 1 - Basic HTML Page Structure**](https://docs.google.com/presentation/d/18sLsW7f8qORwGUmOUr6OOgprm60d5wZTgFdpSMyboAA/edit?usp=sharing)

**Description**

In this Activity, we'll cover the whole range of HTML so you'll be completely comfortable with putting the right elements in the right places on a page. You will review the basics and complete a challenge which has you embedding images and videos. You will also explore E-commerce websites to evaluate what makes a good design for our class project.

Time To Complete: 2 - 3 Hours

### [**Activity 2 - Displaying and Inputting Data**](https://docs.google.com/presentation/d/1NUv8AgWOLgnhpfKMxZqO1dlzY30ozZ9w356na_mVRcs/edit?usp=sharing)

**Description**

Displaying and inputting data are two of your chief duties as a web developer. We'll cover the tools at your disposal, including tables and lists for display and forms for input.

Students will look up CSS frameworks for possible solutions or additions to the project’s layout.

Time To Complete: 2 - 3 Hours

### [**Activity 3 - CSS**](https://docs.google.com/presentation/d/1emiK0n5NBNr7uYBrP8iXr0NZkmgB1f-IyTUj1j60EEE/edit?usp=sharing)

**Description**

Here we'll cover each of the foundational CSS concepts in greater depth than you probably have before. Students will come together and storyboard a couple design concepts for the project.

Time To Complete: 4 - 5 Hours

### [**Activity 4 - Accessibility**](https://docs.google.com/presentation/d/1FbC2Q7Mlp4UrZYKLWQnQ1y49gwyKKDOKqwx2s_Qnjr0/edit?usp=sharing)

**Description**

The websites you create will be viewed by a wide range of users, including those who rely on various accessibility features due to any number of disabilities or limitations. As important as it is to make your site look good, it's just as important to make it usable by as many different users as possible.

Students will evaluate each of the project designs and determine the layout/design moving forward.

Time To Complete: 4 - 5 Hours

### [**Activity 5 - Design and UX**](https://docs.google.com/presentation/d/1Ot3Caj0MEqgLJVoAJ6TbM7Jugr_ylnrkPpXQeF8085U/edit?usp=sharing)

**Description**

If you want to make your websites stop looking like they came from the 1990's, you'll need to gain an understanding for at least the best practices of design and User Experience (UX). Not knowing this stuff is like charging over the next hill without any idea of why you're doing it. Students will Design the user interface for the project.

Time To Complete: 3-5 Hours

### [**Activity 6 - Responsive Design and CSS Frameworks**](https://docs.google.com/presentation/d/1m9VHRHKPI9AWAtMPjNicK8-eAouZE1e_waXP7Ln3MFU/edit?usp=sharing)

**Description**

These days you need to make sure your pages display easily on multiple viewport sizes by using fluid layouts and media queries. Luckily there are CSS frameworks like Twitter Bootstrap that can save you a ton of time developing standard pages and which come with responsive functionality for free.

Students will evaluate the current design of the project and then get feedback from the client and create a responsive website using established frameworks.

Time To Complete: 3-5 Hours

### [**Activity 7 - Advanced CSS**](https://docs.google.com/presentation/d/11CdM7obudQ10MpXIc9BynODQv-u2wmJHaR19VSnSqVE/edit?usp=sharing)

**Description**

We'll take you beyond the basics of CSS and into a variety of additional topics from how to add some stylistic flair to your elements to using tools like preprocessors to save time and reduce repetition in your code.

What is the result of your design process? Present your final product and process, including information about each stage of the design process.

Time To Complete: 3-4 Hours

### [**Activity 8 - Reflect**](https://docs.google.com/document/d/13IGEpJ3XB7wdEsv2Iax7jkrRy36ew0Qa_NwdZVDsqOg/edit?usp=sharing)

Description

What did you learn through the design process that could be helpful to others? Reflect on your design process and work. After the presentation of the project, reflect on the process from beginning to end as well as yourself as a learner.

Time To Complete: 1 Hour