***APCSP Final Project***

Students will choose ONE of the following project options:

Guided projects – Learn how to build a digital program, then design and build your own. All lessons and projects are on CODE.ORG.

* Web site
  + You’ll learn how to create and share the content on your own web pages. After deciding what content you want to share with the world, you’ll learn how to structure and style your pages using HTML and CSS. You’ll also practice valuable programming skills such as debugging, using resources, and teamwork.
  + Recommended for students who want to build a web presence, such as a portfolio, shared experience, or personal passion.
* Game
  + You’ll build on your coding experience as you program animations, interactive art, and games in Game Lab. The unit starts off with simple shapes and builds up to more sophisticated sprite-based games, using the same programming concepts and the design process computer scientists use daily. In the final project, you’ll develop a personalized, interactive program.
  + Recommended for students who love gaming.
* Machine Learning
  + A hands-on introduction to developing a machine learning model with tabular data. Students explore how computers learn from data to make decisions, then develop machine learning projects around real-world data. The unit culminates in designing a machine learning app to solve a personally relevant problem.
  + Recommended for students who want to build concrete programming skills.

Open-Source Project – Design your own digital project and publish it for others to build on

* Develop a project plan from design to production.
  + Could be any digital product including…
    - Web or mobile app
    - Command line program
    - Library
    - Plugin for existing software
  + Write a program in the language of your choice – Python, Java, JavaScript, etc.
  + Publish your project code on Github as a public open-source repository.

Webpage for a Purpose - Project Rubric

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| --- | --- | --- | --- | --- |
| Key Concept | Extensive Evidence | Convincing Evidence | Limited Evidence | No Evidence |
| Website purpose | The website has a clear purpose and each page supports that purpose in its own way. | The website has a purpose, and most pages support that purpose. | It is difficult to understand the purpose of the website, or pages are not clearly related. | The website does not appear to have a purpose, or there is only one page on the site. |
| Errors in CSS and HTML pages | Website uses both CSS and HTML. There are very few syntax errors and the page displays correctly. | Website uses both HTML and CSS.  The page renders correctly, but there are some syntax errors. | Website uses both HTML and CSS.  Most of the page renders correctly, but there are significant syntax errors. | The website does not use both HTML and CSS.  Syntax errors prevent the page from being rendered correctly. |
| Stylesheet | All of the pages use the same stylesheet to give them the same type of look and feel. | Multiple pages share the same style sheet and pages generally have the same look and feel. | Pages use stylesheets and share some of the same look and feel. | The pages do not have the same look and feel or do not link to a stylesheet. |
| Use of classes | The site uses classes to create different rules for groups of elements, so elements with the same tag can have different styles according to the class rules. | The site uses classes to create different rules, but some of the classes might be unnecessary or might have small errors that keep them from working correctly. | The site uses classes, but there are major errors that keep them from working correctly. | The site does not use classes. |
| Code formatting and readability | Code is well formatted using whitespace, and pages and images all have names that make sense. | Code is generally well formatted using whitespace, though there may be some parts that are difficult to read.  Pages and images tend to have names that make sense. | Code is sometimes formatted to be readable, but does not consistently use white space to organize tags.  Some pages and images have names that make sense. | Code is not formatted in a readable way, makes little use of white space.  Page and image names are hard to read, break the links, or are unrelated to their content. |
| Citations of media | All content from outside sources is cited with information about the author, title, license, and source. | Most content from outside sources is cited with information about the author, title, license, and source. | Some content from outside sources is cited with information about the author, title, license, and source. | Content is generally uncited, or the website uses content it does not have a license to use. |

Design a Game Project Rubric

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| --- | --- | --- | --- | --- |
| **Key Concept** | **Extensive Evidence** | **Convincing Evidence** | **Limited Evidence** | **No Evidence** |
| Program Development | Your project guide is complete and reflects the project as submitted. | Your project guide is mostly complete and is generally reflective of the submitted project. | Your project guide is filled out, but is not complete or does not reflect the submitted project. | Your project guide is incomplete or missing. |
| Program Readability | Your program code effectively uses whitespace, good naming conventions, indentation and comments to make the code easily readable. | Your program code makes use of whitespace, indentation, and comments. | Your program code has few comments and does not consistently use formatting such as whitespace and indentation. | Your program code does not contain comments and is difficult to read. |
| Use of Functions | At least three functions are used to organize your code into logical segments.  At least one of these functions is called multiple times in your program. | At least two functions are used in your program to organize your code into logical segments. | At least one function is used in your program. | There are no functions in your program. |
| Backgrounds and Variables | Your game has at least three backgrounds that are displayed during run time, and at least one change is triggered automatically through a variable (e.g. score). | Your game has multiple backgrounds that are displayed during run time (e.g. main background and “end game” screen) | Your game has multiple backgrounds. | Your game does not have multiple backgrounds. |
| Interactions and Controls | Your game includes multiple different interactions between sprites, and it responds to multiple types of user input (e.g. different arrow keys). | Your game includes at least one type of sprite interaction and it responds to user input. | Your game responds to user input through a conditional. | Your game includes no conditionals. |
| Position and Movement | Complex movement such as acceleration, moving in a curve, or jumping is included in multiple places in your program. | Your program includes some complex movement, such as jumping, acceleration, or moving in a curve. | Your program includes simple independent movement, such as a straight line or rotation. | There is no movement in your program, other than direct user control. |
| Variables | Your game includes multiple variables that are updated during the game and affect how the game is played. | Your game includes at least one variable that is updated during the game and affects the way the game is played | There is at least one variable used in your program. | There are no variables, or they are not updated. |

**Design an AI App - Project Rubric**

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| --- | --- | --- | --- | --- |
| **Key Concept** | **Extensive Evidence** | **Convincing Evidence** | **Limited Evidence** | **No Evidence** |
| **Project Preparation** | Step 1 and 2 is filled out completely. The issue statement is clear and each brainstorm field in Step 2 has at least one app idea. | Step 1 and 2 are mostly filled out, but the issue statement may be unclear or there is not an app idea in each brainstorm field in Step 2 | Step 1 and 2 are mostly filled out, but the issue statement does not meet the guidelines or multiple boxes or prompts are left blank in Step 2 | Steps 1 and 2 of the project guide are blank |
| **Survey and Data Collection** | Steps 3-5 are filled out completely. Responses are thoughtful and reflective of the community that is submitting data. An effort was made to collect data from the community, even if there are not a lot of responses. | Steps 3-5 are filled out completely, but responses are generic or vague and are not specific to the community that is submitting data. An effort was made to collect data from the community, even if there are not a lot of responses. | Steps 3-5 are mostly filled out, but some responses are blank. Or, no effort was made to collect data from the community. | Steps 3-5 are blank and no effort was made to collect data from the community |
| **Creating a Model** | Step 6 is completed. You trained a model either from survey data or a provided dataset, and answers to the prompts are clear and reflective | Step 6 is completed. You trained a model either from survey data or a provided dataset, but the answers to the prompts are unclear or generic | Step 6 is mostly completed, but at least one prompt is blank. You trained a model either from survey data or a provided dataset. | You did not train a model from a survey or provided dataset |
| **Model Card** | Your model card is complete, with detailed information in the intended uses and limitations sections of the model card. | Your model card is complete. The intended uses and limitations sections are complete, but are vague or generic without considering your specific data or survey | Your model card is mostly complete, but at least one box is blank. The intended uses and limitations sections are complete, but are vague or generic without considering your specific data or survey | Your model card is mostly complete, but at least one box is blank. At least one of the intended uses or limitations sections are blank. |
| **Creating an App** | The app works without error and includes a welcome screen and a theme. The app incorporates information from the model card into the app, such as the accuracy, intended use, or warnings. | The app works without error and includes a welcome screen and a theme. | The app works without error, but does not contain a welcome screen or theme - it may be a single-screen app. | App is not complete or does not work |