Project: Etch & Sketch

# Overview

Programming is a collaborative and creative process that brings ideas to life through the development of software. Programs can help solve problems, enable innovations, or express personal interest. In this project you will be developing a program with set expectations. Your development process should include iteratively designing, implementing and testing your program. You are strongly encouraged to work with another student in class.

Upon completion you should be submitting the following:

* A video of your program running
* Individual written responses about your program and development process
* Program code.

# General Requirements

This project requires you to develop a program that mimics an Etch and Sketch. During the completion of this project, you will iteratively design, implement, and test your program. You will provide written responses to prompts about your program code that are significant to the functionality of your program. It is strongly recommended that a portion of the program involve some form of collaboration with another student in the class, for example; in the planning process, designing, or testing part of the development cycle. Your program development must also involve a significant amount of independent work writing your 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 be easily accomplished without computing tools and techniques. Your program should draw upon mathematical and logical concepts, such as using numbers, variables, mathematical express, decisions statements, iteration, and/or collections.

You program must demonstrate:

* The use of event handlers and events to track keystrokes inputted by an end user.
* A graphical user interface which can allow the user to interact with the program.
* The ability to connect with GPIO and receive user input through the use of a joystick
* Interactions between external files, modules and user inputs

# Submission Requirements

## Video

Submit one video in .mp3, .wmv, .avi or .mov format that demonstrates the running of at least one significant feature of your program.

## Written Response

Submit one PDF file in which you respond directly to each prompt. Clearly label your response and place them in order.

### Program Purpose and Development

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

* Identifies the programming language;
* Identifies the purpose of your program;
* explain what the video illustrates

### State Competency

This is what we are looking.at when we grade your assignment. Each competency has associated skills which you need to address when creating your project. Each skill will require a write up and a good bit of evidence to support your answer or explanation.

#### CP4 - Understand event handling and user interaction in order to understand data flow and control

CP4.19 - Explain the difference between an event and an event handler. How have you used both in your program? Describe the difficulties and/or opportunities you encountered and how they were resolved or incorporated. In your description clearly indicate whether the development described was collaborative or independent. At least one of these points must refer to independent program development.

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CP4.20 - Explain what we mean by graphical user interface. Capture and paste the user interface for your program. Describe how it is a user interface and how does it function. What events are linked to your user interface?

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CP4.21 - Explain whether or not your user interface would be considered a good one? What makes it good/bad? Provide a code snippet or capture image of your interface to support your response.

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CP4.22 - Create and attach a test case for your project’s user interface. How will you test your interface, what motions, options and different techniques will you use to test the program? Explain what a usability test is and how you will conduct one. Describe your process, including documentation for what you are trying to test and what result you recieve from those tests.

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CP4.23 - Describe how you access external files in your program. How is it used in your program, what files do you access and why?

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CP4.24 - Describe how your program accesses external devices. What external devices do you use, and how do you use them?

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CP4.25 - Describe the differences between file formats found in your program. What file types do you use, how do you use them, and do they function differently. Remember not all files of the same type serve the same purpose.

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## Program Code

Capture and paste your entire program code in this section.

* Mark with an oval the segment of the program code that implements the event handler you created for your program.
* Mark with a rectangle the segment of program code that represents the event
* Mark with a circle the segment where you interact with external files.
* Capture and paste your graphical user interface and mark with a rectangle what users interact with.
* Copy and Paste a clearly labelled Test document with its test cases and results