

## ECE-218 EMBEDDED MICROCONTROLLER PROJECTS

### *GUIDED PROJECT DELIVERABLES - PROJECT 2*

#### DEMONSTRATION VIDEO

The purpose of the video is to demonstrate both the functionality and your understanding of your final system. It will also evaluate your ability to communicate with the general public. **Assume that you are preparing the demo for a high school student or an adult without technical training.** Both partners should participate equally, and you should practice it a few times before filming. The video should be no longer than 5 minutes and there should be three parts:

1. Intro and goals: A segment that shows you (both) and your system, where you introduce yourselves and explain the project goals **in simple terms**, but in enough detail that the demo will be clear. You are answering the question “**what is this system supposed to do?**”. Props to explain the goals are helpful for the audience, **please don’t read a set of pre-written goals!**
2. Hardware: A segment that zooms in on the system, where you give an overview of the hardware, including the laptop terminal, and then point out the key system components (small things like resistors can be skipped) and explain the purpose of each one in the system function. Use simple terms that the general public will understand. **“The Nucleo board” for example, means nothing to most people.**
3. Code: Although you **should not review your actual code in this video**, since your audience will not understand it, you should communicate the role of the code in your system.
4. Demo: A segment where you demonstrate that the system is working correctly. Here you should remember all of the goals of the project and **point out as each is accomplished**. This is the most important part - to show that it works, and works well. Don’t make it too short for the audience to really tell for sure.

#### CODE

The code should have the **comments at the top of the file with your names**, and the intended behavior of the code. The code should be well organized, easy to follow and read, and have some meaningful comments that are helpful for understanding the system, especially for the code that you wrote yourself.

You will submit both your code and the executable file this time on Nexus:

1. Submit your code by pasting **the link from your personal GitHub account** into the Code assignment.
2. Also **upload the .bin file** from the working project.

In addition to reviewing your code to see that it is maintainable, I will also download the .bin file and check that:

1. All of the Chapter 1-4 functions work: temperature and gas sensor display, alarm system, event logging, deactivation with keypad and keyboard.

2. The serial monitor reveals the passcode for the gated entry.
3. The gated entry works when the passcode is entered, and locks after 3 failed attempts.

## REPORT

The project report is where you document the details of how you solved the problem. The audience for this is your instructor and your peers. Follow the [design report format guidelines](#) posted on Nexus.

## TEAMWORK SURVEY

You will get an email from the CATME system for each project. Teamwork skills are important learning goals for this course and completing the CATME survey will give you and your partner valuable feedback to improve your skills, and a few points for each project.

## GRADING RUBRICS

Code			
Features	Weight	Positives	Negatives
Correct behavior	20	Code implements correct behavior for both Chapter 3 tasks and entry gate specifications	Behavior does not match project specifications
Maintainability	10	Indented consistently for clarity Well formatted Logical variable names Meaningful comments Variables scoped appropriately Code included in correct categories in template	Indented inconsistently Too much or little white space Variable names do not indicate what they represent Lame comments Not modular
Video			
Intro and goals	10	Includes introduction of project team Introduction clearly explains what the project is supposed to do, <b>in layman terms</b> Explanation includes all expected behavior,	Missing image or names of team members Some goals are unclear or missing <b>Wording is too technical for general public</b> Wording is too vague to be meaningful
Hardware	10	Hardware explained in context of role in project Video is clear and all important parts are pointed out Verbal explanations correct and easy to understand	Some hardware explanations missing Explanations not appropriate for intended audience Difficult to follow, understand Incorrect explanations
Demo	10	Demo illustrated all features All features operate correctly Demo is narrated to explain what is happening and how it meets the goals of the project	Some features not working Some features not present Demo did not show some features Demo is not clear or difficult to follow
Report			
Objective	10	Introduces idea of project Goals are complete Concise and well written	Incomplete Poorly organized Grammar errors, irrelevant information
Design	30	Introduction gives overview and design strategy Hardware and software sections are complete Schematic are complete and easy to follow Explanations are correct and clear	Starts with a figure, rather than introductory text Incomplete Poorly organized Incorrect or unclear explanations Too wordy, writing errors

Results	20	Clear and complete description of how the system behaves Quantitative data that illustrates how well the system met the goals Objective writing	Subjective or vague statements about the results Not all goals addressed Lack of quantitative data Not enough data presented Poorly organized or written
Conclusion	10	Draws conclusions that are based on the results Explains significance of results Links results to general embedded systems.	Does not address the results of the project. Does not link the results/conclusion to the broader topic of embedded systems.
<b>Teamwork</b>			
CATME survey	2	Complete each survey honestly and completely	Forget to complete survey Failed to complete training
<b>TOTAL</b>	<b>132(Project 2)</b>		