Project:
Make Something Cool

Making stuff is fun. Making cool stuff is even more fun. It is easier than ever to conceptualize something and then bring it to fruition using the tools, technology, and software at your disposal (and a little elbow grease). In this project, we'll do just that: we'll make something cool.

This is an **individual** project work project. You are encouraged to collaborate with others and leverage work you find online, but the project must overall be an original effort. This means you can't just reproduce something you find on the web -- but you can incorporate it into a larger design. Think of a concept that is either:

- completely original (go for it, because this will attract bonus marks)
- a substantial extension of something that already exists
- can be adapted from an online design to a new purpose

For instance, maybe you have a cat. Your cat is probably alone all day while you are at college. How can you combine a microcontroller, sensors, servo motors, a 3D printed part, and clever programming to make something to entertain your cat?

WHAT TO DO

Here's a checklist to help you complete this project.

Start noodling. You have a few weeks to consider your concept so don't rush into it. Think of something you feel is missing from your world, or something that would be uber-cool, or something that would be tremendously useful. It can be simple or complex. Don't be afraid to **think outside the box**. If this is all new to you, take a deep breath and jump right in.

Extend. It is often easier to find inspiration to **improve or extend** an existing design than to come up with a completely new idea. For instance, think of your ordinary boring phone case. What does it do, aside from protect your phone? What if it could do something else? Hmmmm.

Freewheel. Jot down your ideas right away, even if it occurs to you at 3am while you're in the shower. **Don't box in your creativity**. If your first reaction to a new idea is "that's crazy", then your new idea might just be incredible. Disruptive change is a force for good in our society and culture; don't ever feel

your ideas are "not worth exploring". To borrow an expression from sports: *you miss one hundred percent of the shots you don't take*. Keep in mind you'll be building a prototype of your concept from the parts in your Arduino kit (you can obtain extra parts also; your instructor can help with this).

Propose. I want to ensure everyone's ideas fit into the course. That means three things:

- your idea is acceptably complex, so that you have a fabulous learning experience in the course
- your idea meets all the criteria listed below (e.g. it must have a 3D printed part)
- your idea is not toooooo complex for a 15-week IOT course

Thus, your next step is to **write a proposal**. You don't need to be fancy: a half-page or so of well written text is fine. Explain what your project will do, and how you plan to build a prototype using the parts available to you. Use the link provided by your instructor to submit your proposal and remember your proposal must be submitted by the date set in class AND, if approved, is irrevocable.

Build. Once your proposal is approved, **go crazy**. If you need parts that are not in your kit, chat with your instructor who may be able to obtain them (heads up: nuclear reactors are not available). You have the entire course to build your thing.

Enjoy the moment. Okay, that probably sounds weird because you will **no doubt hit obstacles** along the way. That's the nature of the maker experience. Set out along your path knowing that roadblocks are inevitable. The secret to success lies in knowing how to go around/above/under/through them. Sometimes you simply need to retreat. Celebrate your successes and don't sweat the setbacks: they happen. Your instructor is here to help.

Present. You'll be doing a presentation of your work to your instructor, the class, and (probably) at a media event organized by the college. Be ready to shine.

REQUIREMENTS

To ensure that everyone works on a project of roughly equivalent complexity, please ensure your project incorporates **at least** the following:

- Arduino Uno (the microcontroller must control the project)
- At least three sensors or input devices from your kit (push buttons excluded)
- At least one servo motor and some kind of drive mechanism/actuator
- A three-color LED or a 10-LED strip of color-programmable LEDs
- Some way of interacting directly and immediately with a user, even if the user is a cat

There is latitude in the preceding list. Chat with your instructor if you have an idea that doesn't quite fit.

FOR YOUR PROPOSAL

Answer the questions below. Please submit your answers using **Project Proposal Dropbox**, and remember to work independently on this.

Worksheet Name: A Proposal To Make Something Cool

Worksheet Code: MSCWOW

Collaborators: (blank)

Q1. What cool thing are you proposing to make (please explain in detail)?

Q2. What part(s) does it use from the course kit?

Q3. What extra part(s) will you require, if any?

Q4. What part(s) will you 3D print?

Upload the document file to D2L using **Project Proposal Dropbox.**

You're done! Thank you for completing this step.

HOW TO GET TOP MARKS

It's important to note that I am not judging your idea on its merit (utility, marketability, coolness). I am judging the implementation of your idea. Strive to achieve a prototype that actualizes your vision. Top marks are awarded to projects that clearly fulfill the goals set out in the proposal.

ASSESSMENT CHECKLIST (PROPOSAL)

Here is the grid I will use to assess your work. Please note the significant weight attached to spelling, grammar, and sentence structure.

Clearly identifies a cool thing to make (Q1)	/70
Identifies parts in kit / parts needed / parts to be printed (Q2-Q4)	/30
Total	/100
Spelling/grammar/clarity/sentence structure (@5/ea)	
Plagiarized or unoriginal work (0% + **academic sanction**)	
Total adjusted	/100

FOR YOUR PROJECT

Please answer the questions below. Please submit your answers on D2L using **Project Dropbox.**

Project Name: Something Cool, Made

Project Code: **COOLMD**

Collaborators: (blank)

Q1. Please attach a **.zip** file containing your Arduino code for your made project (**use file**).

Q2-Q4. Please attach three clear distinct **.jpg** format photos of your made project (**use file**).

Q5. Please attach a video of your made project in action (**use file**) showing all and every feature and

functionality you have added.

Q6. How does this prototype actualize the vision you articulated in your proposal (**use text**)?

Upload the .zip file to D2L. Please upload the .zip file to D2L using **Project Dropbox**.

You're done! Thank you for completing this step.

HOW TO GET TOP MARKS

I'm looking for evidence that you made a solid effort to actualize your vision. Obviously, the closer your prototype comes to achieving your original goal, the better. It is helpful to describe how the prototype was successful, and where it still needs work. Try to explain at least one major roadblock and how you worked around it.

ASSESSMENT CHECKLIST (PROJECT)

Here is the grid I will use to assess your work. Please note the significant weight attached to spelling, grammar, and sentence structure.

Demonstrates a reasonable prototype implementation of the proposed concept	/70
Explains how prototype actualizes vision	/30
Total	/100
Spelling/grammar/clarity/sentence structure (@5/ea)	
Plagiarized or unoriginal work (0% + **academic sanction**)	
Total adjusted	/100

FOR YOUR PRESENTATION

You don't need to submit anything for this component of the project. Instead, your instructor will ask you to present your work either directly or to a small group of judges. Be prepared to answer questions such as:

- what parts of the kit did you use?
- how does your project interact with its environment?
- what obstacles did you need to overcome while building your project?
- some mystery questions related to Arduino programming.

HOW TO GET TOP MARKS

Be candid; be direct; be clear. I will favor clear and concise explanations over long-winded speeches, vagueness, and attempts to obfuscate the issue!

ASSESSMENT CHECKLIST (PRESENTATION)

Here is the grid I will use to assess your work.

Presents deliverables from project work clearly and accurately	/50
Articulates answers to judges' questions	/50
Total	/100