

## Senior Design Preparation: Idea Conception

---

1. Browse through the projects from the previous two semesters (on canvas). This will give you an idea of what the appropriate scale and scope for a senior design project is. Note a good project should include a mix of hardware, software and the application of advanced engineering math or science. It is not necessary for your idea to be completely novel or something that has never been done before but rather your implementation will be unique.
2. Come up with at least one idea for a semester project and write a < 1 page description of it. If you have multiple ideas you are welcome to include write-ups about them. On the following page, provide a high-level description of your idea, describe the benefits of your design or unmet need that it fulfills and any features of your design that you feel are unique. At this stage you should not worry too much about the implementation details, focus on the concept. Even if you already know who you want to work with and what you want to do, you should still submit your own idea for a project. We will have an activity on the second day of class where we evaluate all of the idea submissions and form teams. Not all ideas will end up being used, but everyone is required to submit at least one idea.
3. Please use this document as a template and submit your writeup via canvas

**Name**

Yinhao Qian (yiq25)

**Project Title**

Kensington Safety Lock

**Short Project Description (Describe the idea in one sentence)**

An electronics module that will be mounted directly on the existing Kensington Safety Lock that adds up the smart functions such as real-time monitoring through BLE.

**Proposed Project Idea****CONCEPTS**

Because I am currently taking ENGR1050 – Product Realization as an alternative to Senior Design Projects, I would like to demonstrate the ideas that both I and my group member have come up with.

First, an accelerometer and a BLE module are needed. The accelerometer detects the movement whenever the lock is being moved, and subsequently notifies the BLE module, which will subsequently broadcast the signal to a Bluetooth-compatible devices such as smartphones or tablets.

A cross-platform applications will be developed using QT Framework with extensive usage of QBluetooth library.

A prototype of the application I made is ready to view: <https://youtu.be/eFzugULcg3c>

**BENEFITS**

The current Kensington Safety Lock secures the laptop or PCs by merely attaching them to a cable via the lock, and there is no way to make sure if the protected device is actually secure or not unless a janitor is physically there. With the new E-Kensington Lock however, we are able to directly view the status of the safety lock as long as the lock is within the Bluetooth range within the application. There is a potential to eliminate the usage of physical cable in the later stage of development. This will work like the Apple Tag, but with more functionalities.

[Additional Space (If needed)]