



**PennState**  
Behrend

## CMPEN 480/ EE 400:Senior Design Report

Author 1<Email 1> Author 2<Email 2> Author 3<Email 3>

Project Advisors:

Advisor 1<Email 1> Advisor 2<Email 2>

Course Advisor:

Dr. Abdallah S. Abdallah

Assistant Professor of Electrical & Computer Engineering

CMPEN 480 / EE 400

Revision 1.0

October 13, 2022

**Table 1.** Document Revision History

<b>Revision</b>	<b>Date</b>	<b>Reason for Revision Change(s)</b>
Number	Date	Add explanation

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## List of Acronyms

**CSD** Collective System Design. 4

**FR** Functional Requirement. 4

**PS** Physical Solution. 4

## Acknowledgments

Here is a sample for how to use acronyms. "Defining a Functional Requirement (FR) and a Physical Solution (PS) provides a language for system design. This language is an important aspect of Collective System Design (CSD)."

## Abstract

Enter your project abstract right here

# 1 Problem Statement

## 1.1 Needs

The needs statement is about the problem, not the solution. It is usually two or three paragraphs and gives motivation for doing the project. It should: Briefly and clearly state the need to be met Do Not provide a solution to the problem Provide any major supporting statistics and/or anecdotes (you will need to do some research as described in Section 2.5) You will expand on this research outcomes and the problem background in the third section of this report. That is the research survey section Describe current limitations Describe any supporting processes or technologies that the reader should understand to understand the need

## 1.2 Objectives

The objective statement is about what will be done to meet the need. In other words, it is the objective of the project. It should summarize what is being proposed to meet the need It might provide some preliminary design objectives (detailed objectives will be developed later and presented in your next report) It might provide a preliminary description of the technical solution, avoiding details and specifics

## 1.3 Background and Literature Survey

In this section, you will develop a summary of the research survey on the relevant technologies and systems.

The goal is to provide an introduction answer the questions posed in Section 2.5.

The length and content of this section varies depending upon the project. In general, you should stay focused and precise so an average of two to 4 pages should be good. We care about quality not quantity.

Make sure that you add your references using the references section provided in this template and use citation correctly following the standard ways to add a bibliography file in Latex.

**Example Text for how to cite a reference that is added into MyReferences.bib file:**

According to the authors of [1], it seems like the world is ending very soon. But lets be optimistic, it is not the first time scientists think so. On the other hand, the authors in [2] think that the world is so lovely place and life is always like a beautiful blue sky.

**1.4 System Use Case(s)**

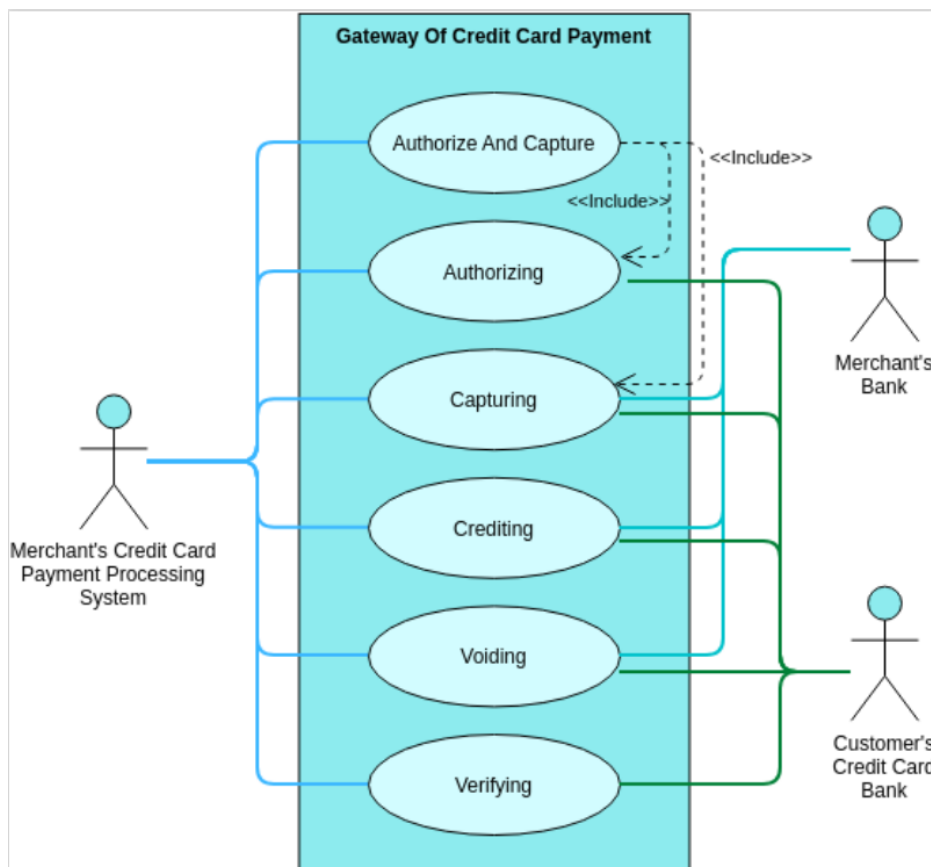
Develop Use Cases that define the actions or steps taken by an individual to interact with your system. Who will operate the system and what must they be able to accomplish?

Your answer to this section is to insert a figure of your high level Use-Cases UML diagram for the whole system according to your analysis of the project requirements up to this point.

This is just the first draft of the Use-Cases diagram. In next report, you will be able to update it and add more figures to provide the detailed Use-Case diagram of each of these high-level Use-Cases.

You should use one of the professional UML Diagram tools such as <https://online.visual-paradigm.com/diagrams/solutions/free-use-case-diagram-tool/>

An example of a use case Figure can be found below in Figure 1.



**Figure 1.** General system use-cases diagram

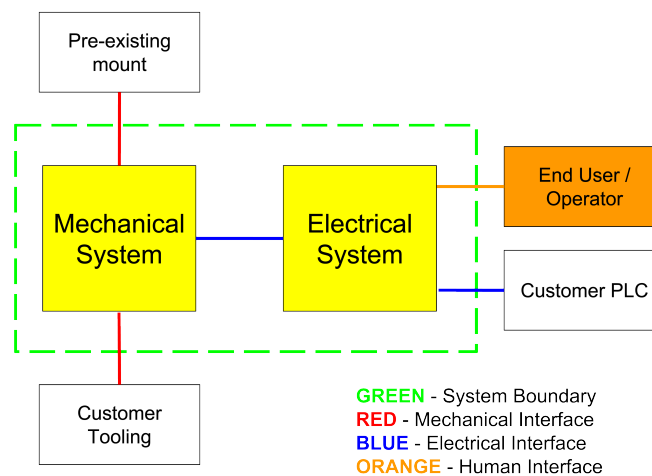
### 1.5 Examples of Figures and Tables And How to References Both

Comment the code of this section before generating your PDF file to submit. This is only meant as educational section to help you using the appropriate latex syntax to enter tables or figures when you need to use tables or figures into the other sections.

for more examples on how to design certain tables, check the <https://www.overleaf.com/learn/latex/Tables>

**Example Text for how to refer to a figure or table:**

Define the System Boundary with respect to your project. The system boundary distinguishes between what you can control and what your system must interface with (i.e., can't control, but assume to be provided). Poorly defined interfaces are the number one reason for system failure! Define the information that is passed across the system boundary for each of the interfaces. See Figure 2 to learn how to add a normal figure in the middle of text. For an example of how to insert a figure and rotate it 90 degrees into a landscape view, you can check the code of Figure 3.



**Figure 2.** Example of a system boundary diagram

For an example of the table templates, you can check Table 2 or Table 3.

item1	Specs1	Specs2	Spec3
1	6	87837	787
2	7	78	5415
3	545	778	7507
4	545	18744	7560
5	88	788	6344

**Table 2.** Example of inserting a table

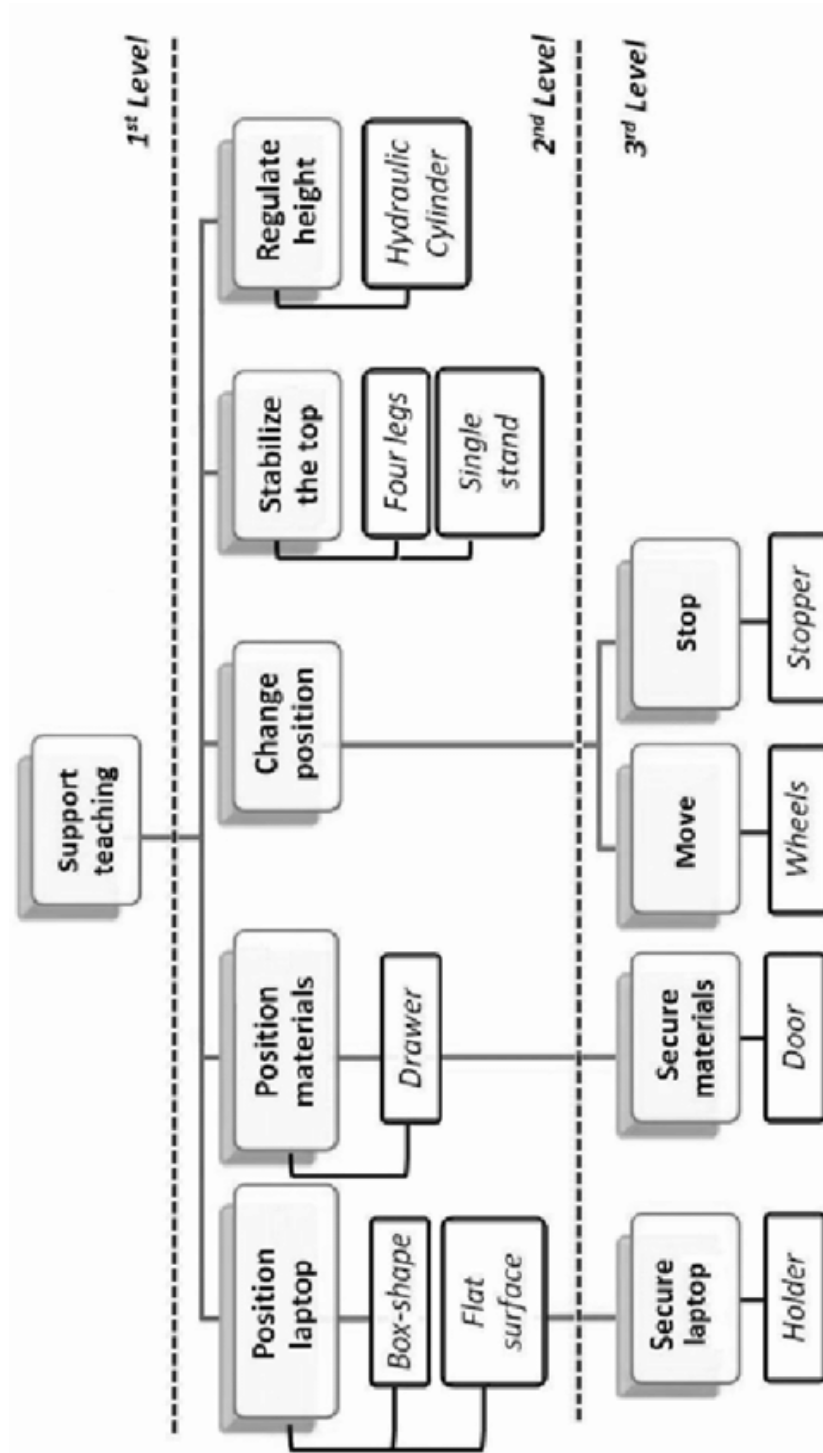


Figure 3. System Design Map

Country List			
Country Name or Area Name	ISO ALPHA 2 Code	ISO ALPHA 3 Code	ISO numeric Code
Afghanistan	AF	AFG	004
Aland Islands	AX	ALA	248
Albania	AL	ALB	008
Algeria	DZ	DZA	012
American Samoa	AS	ASM	016
Andorra	AD	AND	020
Angola	AO	AGO	024

**Table 3.** Another Example of inserting a table



Use the OverLeaf Primer to understand the different ways to format the references.

## References

- [1] A. Einstein, “Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies],” *Annalen der Physik*, vol. 322, no. 10, pp. 891–921, 1905.
- [2] P. A. M. Dirac, *The Principles of Quantum Mechanics*, ser. International series of monographs on physics. Clarendon Press, 1981.