# Programming Distributed Components

# COMP1690

Final Report

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# Contents

|  |  |  |
| --- | --- | --- |
| Section 1 | Introduction |  |
| Section 2 | Design Documentation |  |
| Section 3 | Screenshots of Features |  |
| Section 4 | Evaluation |  |
| Section 5f | Algorithms Explanation |  |

# Introduction

This report discusses the design, evolution, and evaluation of the intruder alert system, ‘Safe Home’. The system is composed of three applications, the web forms application, the SOAP API, and the website.

Section 1 contains all the design documentation of the system, including the database ERD and UML diagrams.

Section 2 contains screenshots of the finished product, demonstrating each feature that has been implemented.

Section 3 is a critical evaluation of the evolution of the applications. Including any issues during development, an evaluation of the finished product, and how the implemented system could be improved.

Section 4 is an explanation of how the system checks that layouts are physically feasible (i.e. that no two rooms can reside in the same location).

# Design Documentation

## ERD

Figure 1 shows the Entity Relationship Diagram (ERD) of the Safe Home database. It denotes the tables, column names, keys (i.e. Primary, Foreign), data types, and relationships.

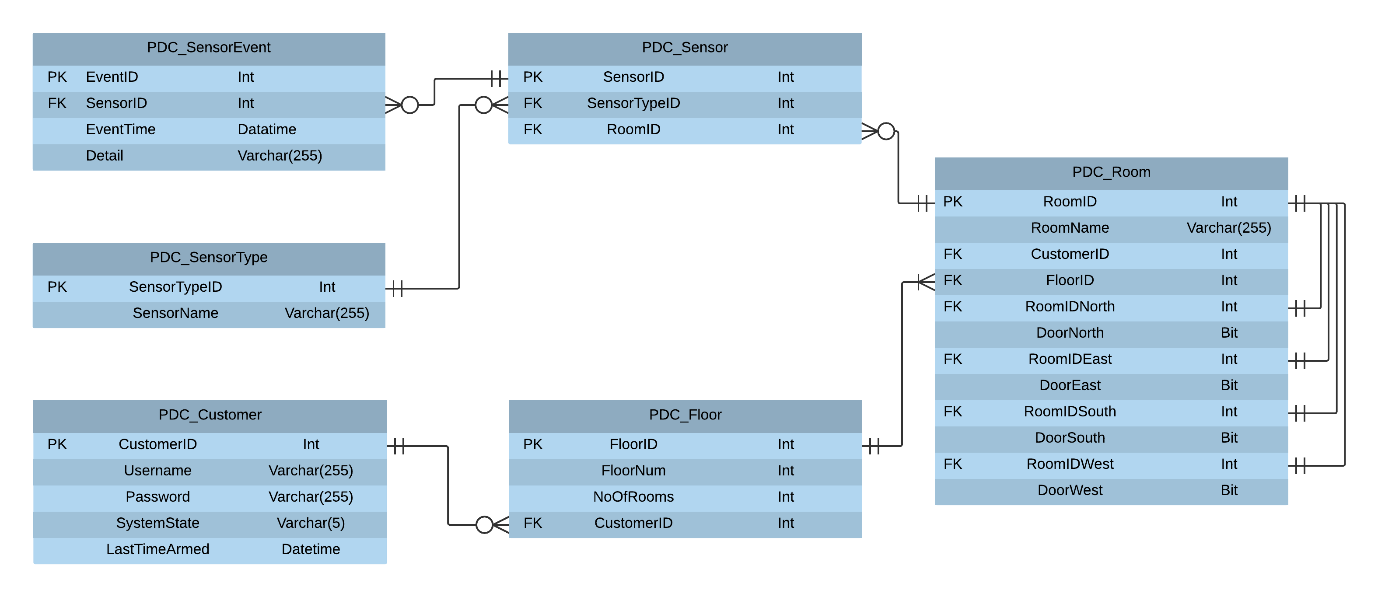


Figure 1 – ERD

## Class Diagram

### Windows Forms Application

Figure 2 displays the Class diagram for the Safe Home Windows forms application (including the Sensor emulator and Floor visualisation pages). The diagram shows the classes, relationships, variables, and methods.

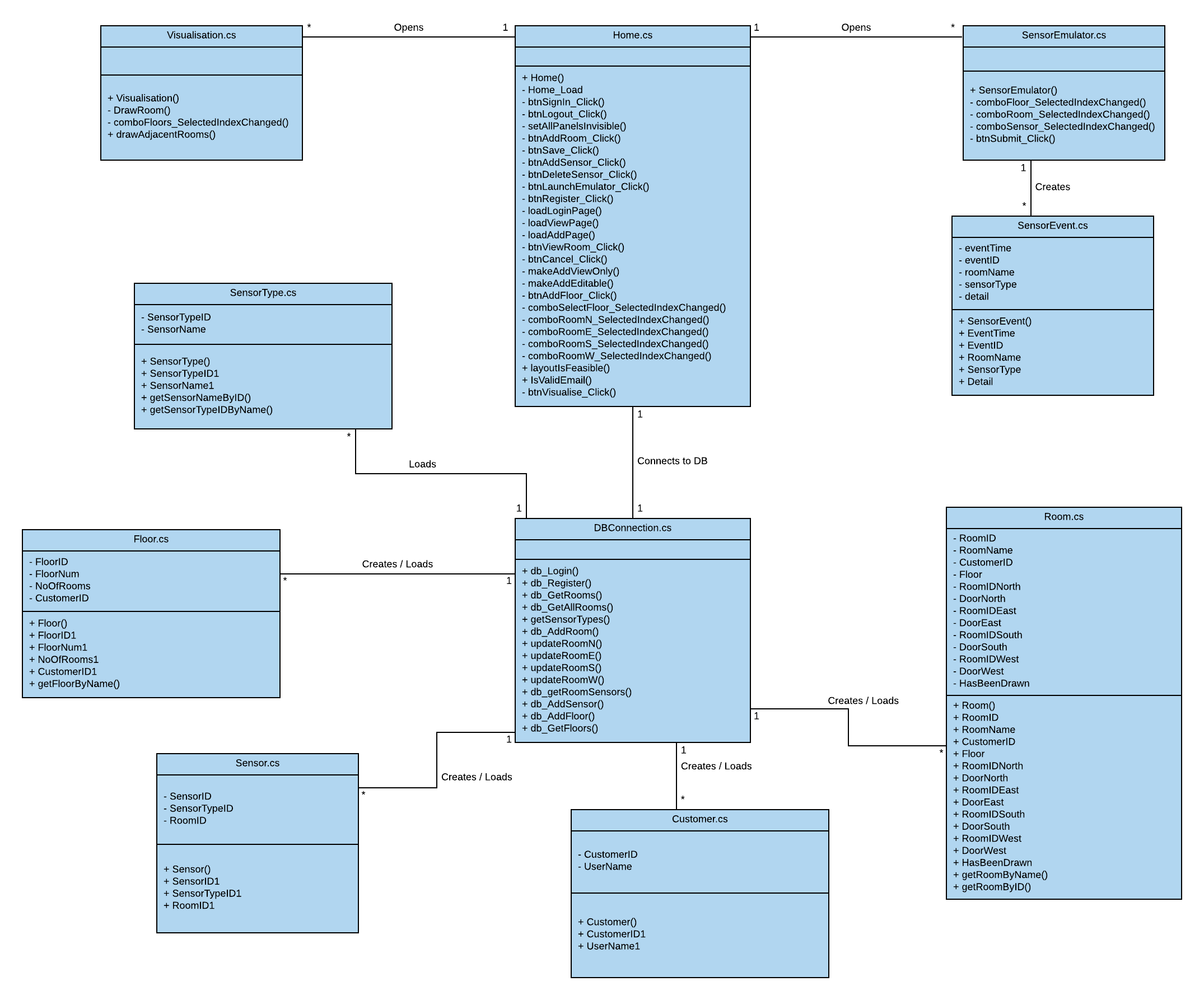


Figure 2 – Windows Forms Class Diagram

### SOAP API

Figure 3 displays the classes, relationships, attributes, and methods used within the SOAP API. There are no visual classes here as the API does not have a visual aspect.

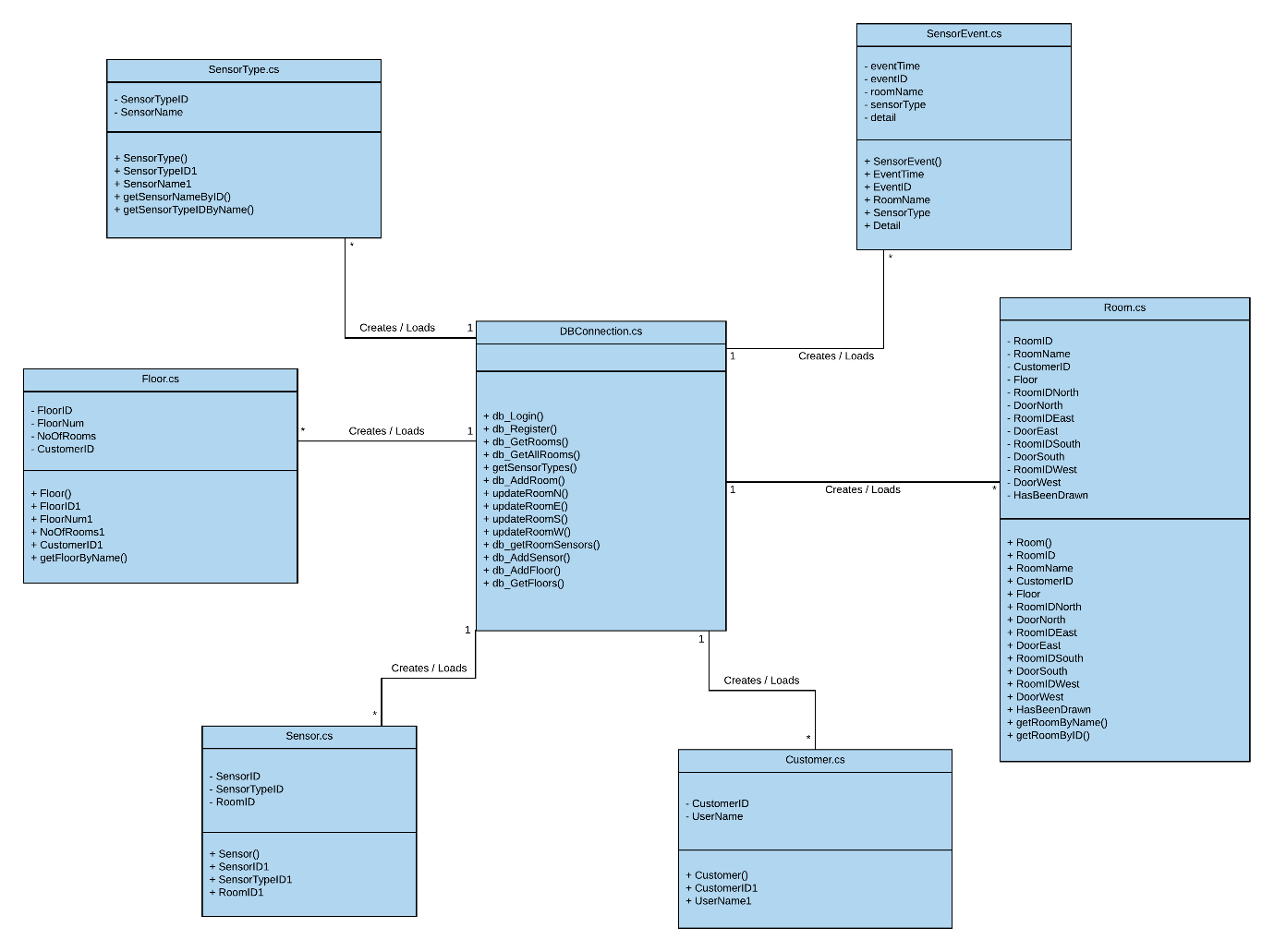


Figure 3 – SOAP API Class Diagram

### Web Forms Application

Figure 4 displays the only two classes used by the Web Forms application. There are no non-visual classes here as the application holds a web reference to the SOAP API in which instances of the classes can be created.

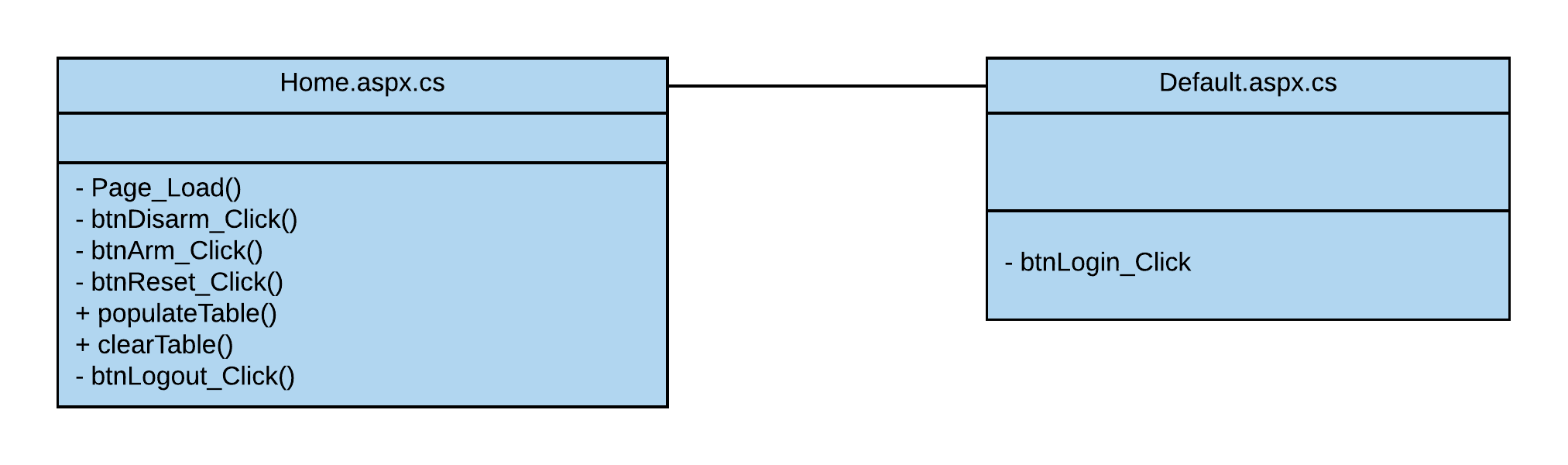


Figure 4 – Web Forms Class Diagram

## Use Case

Figure 5 (below) demonstrates all actors that will use the system, what they will use the system for, and further steps involved in completing these use cases (where appropriate).

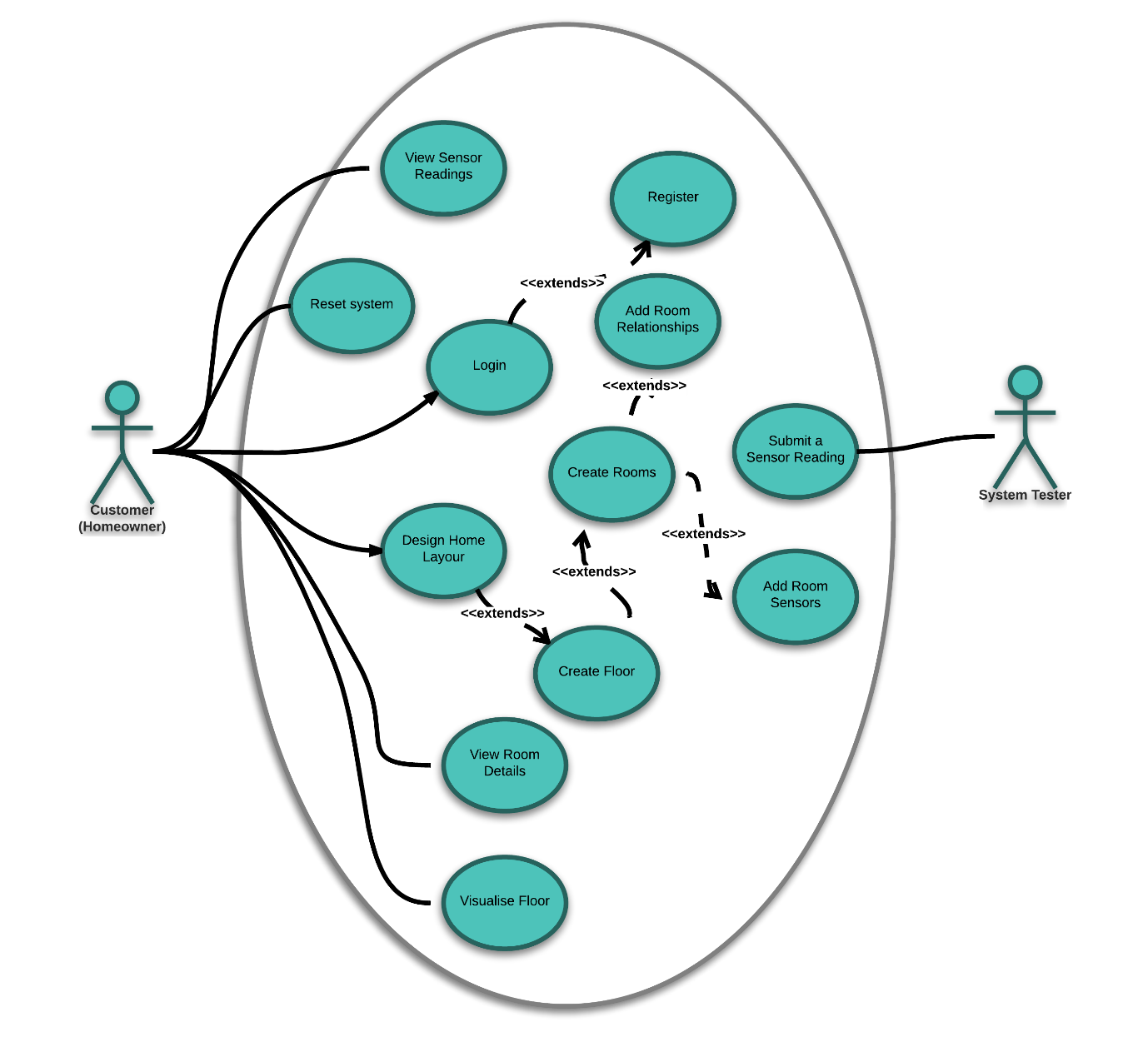


Figure 5 – Use Case

# Screenshots of Features

## Windows Forms Application

### Register / Login Page

Figure 6 shows the SafeHome register and login page. The user simply enters their email address and desired password to register (a message is displayed upon successful registration). Subsequently entering these details into the login form allows the user to sign into their newly created account.



Figure 6 - Register / Login Page

### Home Page

### Add Room Page

### View Room Page

## Web Forms Application

# Evaluation

# Algorithms Explanation