COEN 160 Project – Deliverable 1

Steven Booth, Nick Goodpaster
Rani Mikkilineni
13 November 2016

Table of Contents:

1. CRC Cards for Major Classes:

Class: SystemWindow	
Superclasses: N/A	
Subclasses: N/A	
Responsibility	**Collaborator**
Contains panels to hold Home-Owner interface modules	ConfigurationPanel, GardenViewPanel
Runs a timer in the background	

Class: DailySchedule	
Superclasses: Schedule	
Subclasses: N/A	
Responsibility	**Collaborator**
Update SprinklerSystem with the next updated schedule with day/time for sprinkler to be on/off.	SprinklerSystem
Constructs a schedule and stores user-input received from Configuration Panel.	ConfigurationPanel, MySystemWindow

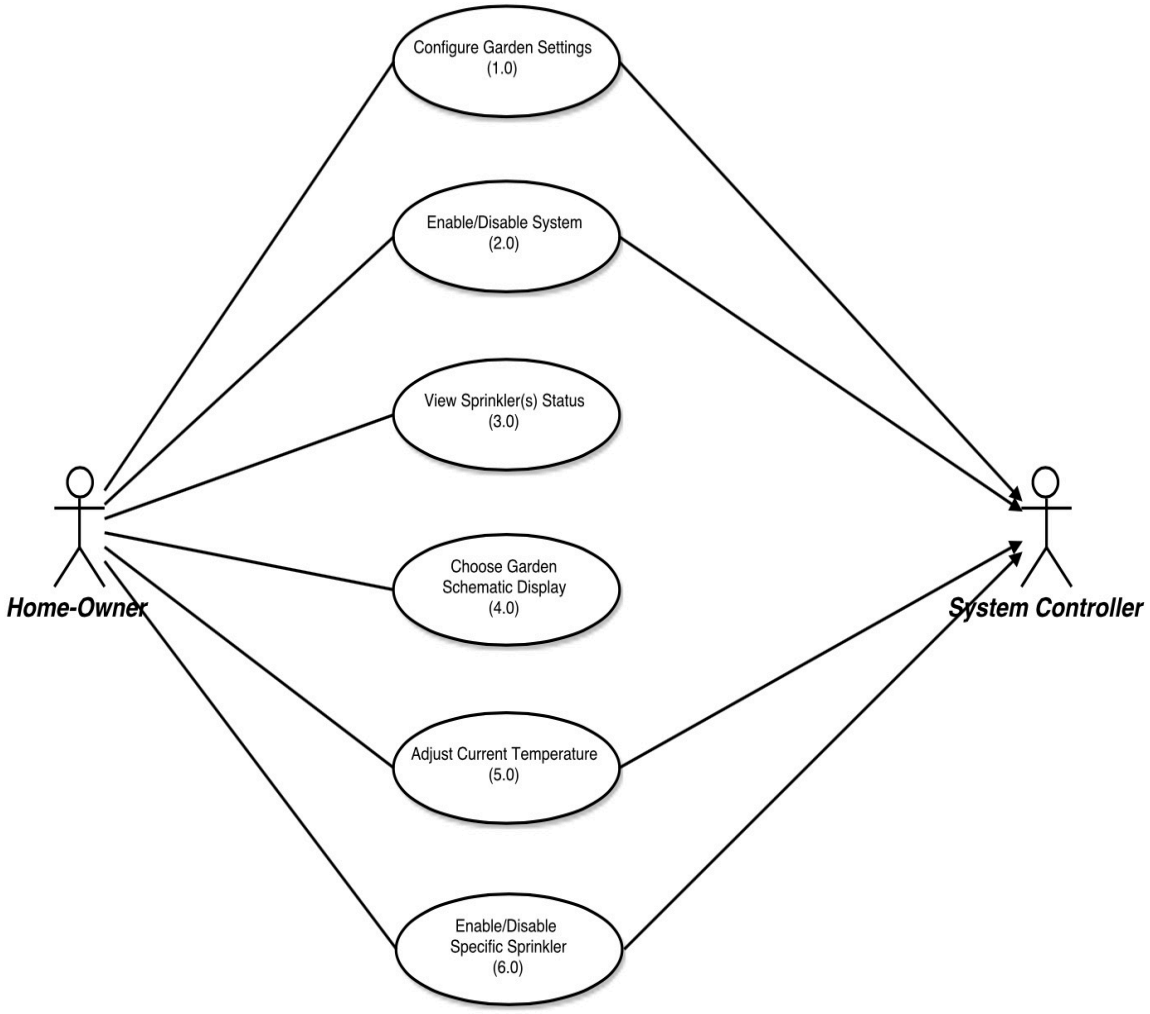
Class: ConfigurationPanel	
Superclasses: JPanel	
Subclasses: N/A	
Responsibility	**Collaborator**
Supplies the user with input fields to configure the sprinkler system.	SystemWindow
Initialize a schedule object with the user defined configuration to be pushed into the SprinklerSystem's nextSchedule member object (of type Schedule).	SprinklerSystem, DailySchedule, TemperatureSchedule

Class: TemperatureSchedule	
Superclasses: Schedule	
Subclasses: N/A	
Responsibility	**Collaborator**
Update SprinklerSystem with the next updated schedule with day/time for sprinkler to be on/off.	Sprinkler System
Retrieve and store Schedule Data received from User-Input	ConfigurationPanel, MySystemWindow

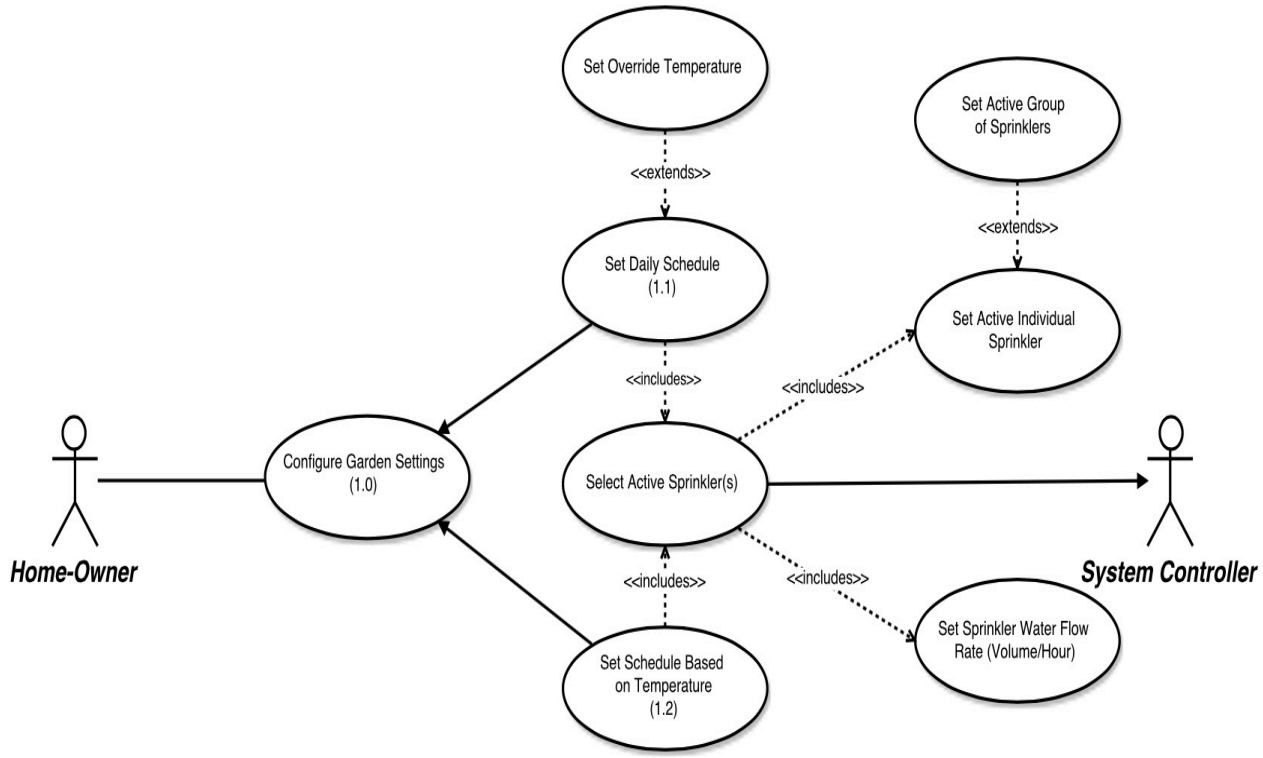
Class: SprinklerSystem	
Superclasses: N/A (implements observer)	
Subclasses: N/A	
Responsibility	**Collaborator**
Contains Sprinklers and Schedules	Sprinkler, Schedule
Calculates total Water flow	Sprinkler
Displays contents in GardenViewPanel	GardenViewPanel
Observes Temperature and Time to determine when to update activate/deactivate sprinklers.	DailySchedule, TemperatureSchedule
Observes ConfigurationPanel to see when user enters a new sprinkler configuration, updates nextSchedule with new configuration.	ConfigurationPanel, Schedule

2. Use-Case Diagrams:

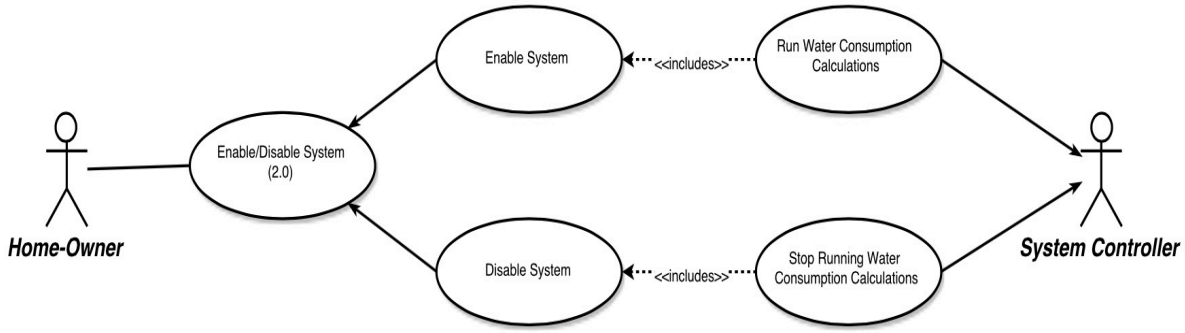
High-Level Use-Case Diagram:



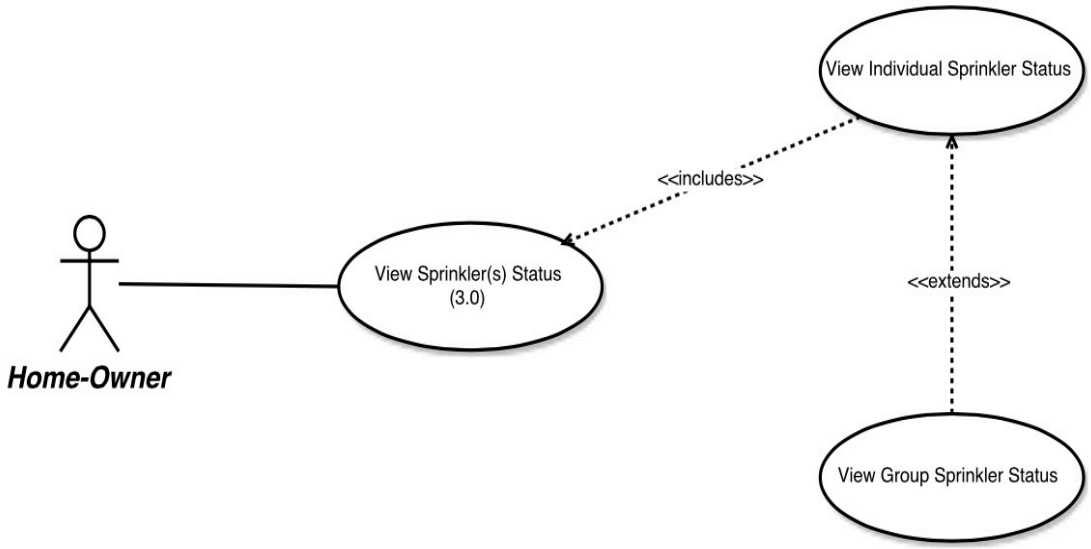
Lower-Level Use-Case Diagram – Includes Case(s) 1.0, 1.1, 1.2:



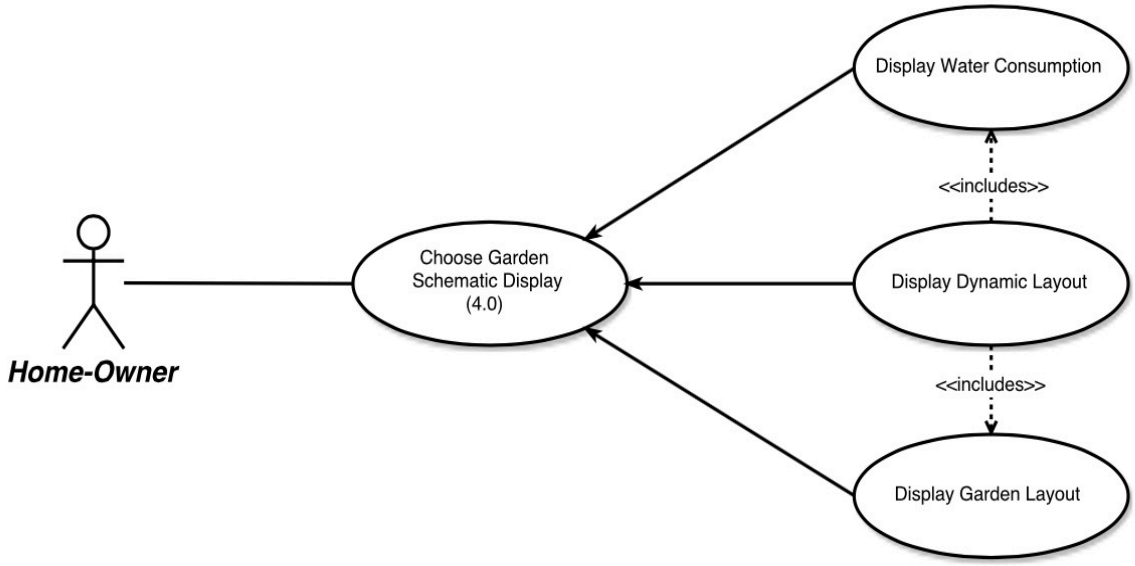
Lower-Level Use-Case Diagram – Includes Case(s) 2.0:



Lower-Level Use-Case Diagram – Includes Case(s) 3.0:



Lower-Level Use-Case Diagram – Includes Case(s) 4.0:



3. Use-Case Analysis:

Use-Case (Goal): Configure Garden Settings – 1.0	
Actors: Home-Owner , System-Controller	
Purpose and Description: Home-Owner wants to create a garden configuration based on either on a temperature or timed schedule. System will take Home-Owner input and formulate a schedule which will be implemented in the sprinkler system for a week.	
Type: Primary, Essential	
Cross-References: Set Daily Schedule, Set Schedule Based on Temperature	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner chooses Schedule type (either Daily Schedule or Temperature Schedule).	2. Provides configuration options for chosen schedule type.
3. Enters configuration settings details into input fields (i.e. temperature bounds, time spans for sprinkler activation).	4. Checks to make sure all fields are valid. If so, updates the sprinkler system's schedule for following week with configuration details.
Alternative Courses: Line 4: If Home-Owner does not provide valid input, indicate required corrections.	

Use-Case (Goal): Enable/Disable System – 2.0	
Actor: Home-Owner , System-Controller	
Purpose and Description: Home-Owner wants to turn on/off the entire sprinkler system.	
Type: Primary, Essential	
Cross-References: N/A	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner toggles system enable/disable button.	2. If off, system will turn on the sprinkler system with current configuration. Will begin calculations for water consumption. If on, turns system off.
Alternative Courses: Line 2: If the Home-Owner has not provided a configuration, prompt Home-Owner to input a configuration (Use-Case 1.0)	

Use-Case (Goal): View Sprinkler(s) Status –3.0	
Actor: Home-Owner	
Purpose and Description: Home-Owner wants to view the status of individual sprinklers, a group of sprinklers, or all sprinklers in the system.	
Type: Primary, Essential	
Cross-References: N/A	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner selects a sprinkler or a group of sprinklers to view.	2. System displays selected sprinklers' statuses with group name, id, and status (OK or NOTOK, and ON or NOTON).
Alternative Courses: N/A	

Use-Case (Goal): Choose Garden Schematic Display – 4.0	
Actor: Home-Owner	
Purpose and Description: Home-Owner wants to view the garden schematic, the water consumption graph, or both.	
Type: Primary, Essential	
Cross-References: Display Water Consumption, Display Garden Layout, Display Dynamic Layout	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner selects from a tri-panel view selector to change the current Garden Schematic Display.	2. System displays selected view layout.
Alternative Courses: N/A	

Use-Case (Goal): Adjust Current Temperature – 5.0	
Actor: Home-Owner	
Purpose and Description: Home-Owner wants to adjust the current temperature. Used to modify temperature for testing temperature-based schedule.	
Type: Primary, Essential	
Cross-References: N/A	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner selects a new temperature for the sprinkler system environment.	2. System updates temperature and checks for conflicts with the current configuration. If it conflicts, sprinklers are disabled accordingly. If it does not conflict, normal sprinkler system operations continue.
Alternative Courses: N/A	

Use-Case (Goal): Enable/Disable Specific Sprinkler – 6.0	
Actor: Home-Owner , System-Controller	
Purpose and Description: Home-Owner wants to turn on single sprinklers. Allows Home-owner to activate specific sprinklers and set time bounds.	
Type: Primary, Essential	
Cross-References: N/A	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner selects activate or deactivate	2. System displays pane to choose sprinkler(s)
3. Home-Owner chooses which sprinkler(s) it would like to turn on/off, and enters time bounds, and clicks activate/deactivate	4. If all sprinklers selected are in an opposite state than Home-Owner selected (Off for activate, etc.), the system changes the state of those sprinklers. If not all sprinklers are in the opposite state, system changes those that are, and leaves those that aren't alone.
Alternative Courses: Line 4: If some sprinklers are not in opposite state, the system notifies the Home-Owner which sprinklers are already in the desired state.	

Use-Case (Goal): Set Daily Schedule – 1.1	
Actor: Home-Owner	
Purpose and Description: Home-Owner wants to create a time-based sprinkler schedule for the upcoming week.	
Type: Primary, Real	
Cross-References: Activate/Deactivate Sprinkler(s)	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner Enters time bounds, selects sprinklers, and chooses a temperature override option (on/off).	2. System controller saves information to a configuration
3. Home-owner clicks set configuration button to signal the configuration is complete.	4. System controller checks that all data fields are valid, and if so sends configuration to sprinkler system which is saved to next configuration variable
Alternative Courses: Line 4: If Home-Owner does not provide valid input, indicate required corrections.	

Use-Case (Goal): Set Schedule Based on Temperature – 1.2	
Actor: Home-Owner	
Purpose and Description: Home-Owner wants to create a temperature-based sprinkler schedule for the upcoming week.	
Type: Primary, Real	
Cross-References: Activate/Deactivate Sprinkler(s)	
Scenario Details (Typical Course of Events):	
Actor Action:	**System Response:**
1. Home-Owner Enters temperature bounds, and selects sprinklers.	2. System controller saves information to a configuration
3. Home-owner clicks set configuration button to signal the configuration is complete.	4. System controller checks that all data fields are valid, and if so sends configuration to sprinkler system which is saved to next configuration variable
Alternative Courses: Line 4: If Home-Owner does not provide valid input, indicate required corrections.	