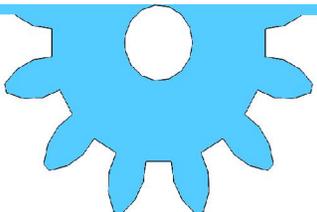


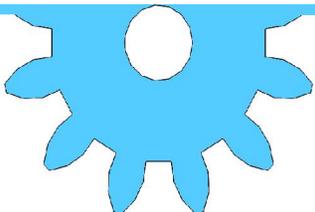
## System Test Plan

The test plan for our system is split into two parts, hardware and software. This test plan focuses on the functionality of our proof of concept model. The hardware test plan illustrates the procedures we took to test the functionality of each of our components to ensure that they work as expected. The software test plan is designed to ensure that our code works with our hardware components to produce a functional device. In the software test plan we outlined the expected result of our system based on different environmental conditions.



## Hardware Test Plan

Unit	Test Procedure	Expected Results
<p>Arduino Uno</p> <p>Sensors</p>	<p>Connect the Arduino to PC, and then test the board function on specialized software interface with our test program.</p> <p>Connect one of the sensors to the Arduino board, and the Arduino board to the PC. With the correct code and under specific environmental conditions, display the input data (temp, lighting, etc) on a text window. Observe the data.</p>	<p>The LED indicator would response correctly under the test program. Also the size of our code must fit within the Arduino`s 32kb memory.</p> <p>On the text window, the numbers indicating the input data should remain in a small range unless changes are detected by the sensor.</p>
<p>Motors</p>	<p>Connect the stepper motor to the Arduino and a 9V power supply. Upload our motor test program and observe results.</p>	<p>The motor should be able to rotate in any direction and for any degree and also provide enough torque to move the windows and curtains.</p>
<p>LCD Screen</p> <p>Remote Control</p> <p>Temperature Switch</p> <p>Windows and Curtain Mechanism</p>	<p>Connect the LCD to Arduino board with sensors.</p> <p>Point remote in the direction of IR detector and press a button.</p> <p>Turn the knob on the temperature switch to set desired indoor temperature.</p> <p>Fully assemble our proof of concept model and run our program to control the windows and curtains</p>	<p>The LCD should display the correct values and modes.</p> <p>The system should respond to each individual press (eg. Auto/Manual modes, open/close windows and curtain).</p> <p>The desired temperature should be displayed on the LCD and windows and curtain should react based on this temperature.</p> <p>The motors should be able to open and close the windows and curtain easily.</p>



## Software Test Plan

Normal Case	Condition	Expected Outcome
1	Rain drops outside the house.	The gliding window will close to prevent rain from entering the building.
2	Room temperature too high.	The both windows and curtain will be open to ventilate the room. (close if too low).
3	High gas levels in the room.	The both windows and curtain will be open to ventilate the room.
4	Too much sunlight passes through the window.	The curtain will be lowered to the bottom position to block the sunlight.
Special Case	Condition	Expected Outcome
1	Combination of normal case 1 & 2 (rain & temperature).	The awning window and curtain shall open to ventilate the room and prevent rain from getting in. The gliding window will remain closed.
2	Combination of normal case 1 & 3 (rain & gas detection).	The awning window and curtain shall open to ventilate the room and prevent rain from getting in. The gliding window will remain closed.
3	Combination of normal case 1 & 2 & 3 (rain & temperature & gas detection).	The awning window and curtain shall open to ventilate the room and prevent rain from getting in. The gliding window will remain closed.
4	Combination of normal case 2 & 3 (temperature & gas detection).	The both windows and curtain will be open to ventilate the room.
5	Combination of any normal case(s) & case 4 (Light).	Any other case takes priority over case 4. Windows and curtains react based on the other case(s).

