**Temperature Setting**

|  |  |
| --- | --- |
| Requirments | Done ? |
| The “Up” or “Down” buttons are used to change the required water temperature (set temperature) | yes |
| The first “Up” or “Down” button press, enters the temperature setting mode | yes |
| After entering temperature setting mode, a single “Up” button press increase the set temperature by 5 degrees | yes |
| After entering temperature setting mode, a single “Down” button press decrease the set temperature by 5 degrees | yes |
| The minimum possible set temperature is 35 degrees | yes |
| The maximum possible set temperature is 75 degrees | yes |
| The “External E2PROM” should save the set temperature once set | yes |
| If the electric water heater is turned OFF then ON, the stored set temperature should be retrieved from the “External E2PROM” | yes |
| The initial set temperature is 60 degrees | yes |

**ON/OFF Behavior**

|  |  |
| --- | --- |
| Requirments | Done ? |
| If power is connected to the heater, the electric water heater is in OFF state | yes |
| If the “ON/OFF” button is released and the electric water heater is in OFF state, the electric water heater goes to ON state | yes |
| If the “ON/OFF” button is released and the electric water heater is in ON  state, the electric water heater goes to OFF state | yes |
| In the OFF state, all display should be turned OFF | yes |

**Temperature Sensing**

|  |  |
| --- | --- |
| Requirments | Done ? |
| 1. The temperature sensor measures the water temperature | yes |
| 2. The water temperature should increase, if the “Heating Element” is ON | yes |
| 3. The water temperature should decrease, if the “Cooling Element” is ON | yes |
| 4. Temperature should be sensed once every 100 ms | yes |
| 5. The decision to turn ON or OFF either the “Heating Element” or the “Cooling Element” based on the average of the last 10 temperature reading | yes |

**Heating/Cooling Elements**

|  |  |
| --- | --- |
| Requirments | Done ? |
| The “Heating Element” should be turned ON, if the current water temperature is less than the set temperature by 5 degrees | yes |
| The “Cooling Element” should be turned OFF, if the current water temperature is less than the set temperature by 5 degrees | yes |
| The “Heating Element” should be turned OFF, if the current water temperature is greater than the set temperature by 5 degrees | yes |
| The “Cooling Element” should be turned ON, if the current water temperature is less than the set temperature by 5 degrees | yes |

**Seven Segments**

|  |  |
| --- | --- |
| Requirments | Done ? |
| 2 seven segment by default show the current water temperature or the set temperature | yes |
| By default, the 2 seven segment display are show the current water temperature | yes |
| If the electric water heater is in the temperature setting mode, the 2 seven segment displays should blink every 1 second and show the set temperature | yes |
| In the temperature setting mode, every change in the set temperature should be reflected on the 2 seven segment displays | yes |
| The 2 seven segment display should exit the temperature setting mode, if the “UP” and “Down” buttons are not pressed for 5 seconds | yes |

**Heating Element Led**

|  |  |
| --- | --- |
| Requirments | Done ? |
| If the “Heating Element” is ON, the “Heating Element Led” should blink every 1 second | yes |
| If the “Cooling Element” is OB, the “Heating Element Led” should be ON | yes |

All Specifications Are Implemented Properly .