***AMIT Project Documentation***

***By:***

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***The Electric water heater*** *is an embedded system program that aims to control the object’s ex.(water) Temperature by making the user enter a temperature (Set Temperature) and comparing it with the object’s temperature and determine what is the proper action to do (heating, cooling).*

*The project has 3 push buttons:*

1. *Button2 is used for the ON / OFF conditions*
2. *Button1 is used for rising the set temperature*
3. *Button0 is used to reduce the set temperature*

*,1 LED that has two actions:*

1. *To be set when the water temperature is higher than the set temperature “Cooling”*
2. *To blink when the water temperature is lower than the set temperature “Heating”*

*, A Temperature sensor (LM35) That reads the current water temperature.*

*And a 2 display seven segment which has two actions:*

1. *Blink every 1 second while displaying the current set temperature in the TEMPERATURE\_SETTING\_MODE.*
2. *To display the current Set Temperature by default while in DEFAULT\_MODE.*
3. *To display the current Water Temperature while in* SENSING\_TEMPERATURE\_MODE*.*

*How the system works?*

* *By pressing on Button2 for the first time the system goes on the default mode and the seven segment displays the value from EEPROM (the set temperature).*
* *By pressing on Button1 or Button0 for the first time you enter the SET\_TEMPERATURE\_MODE.*
* *While being in the SET\_TEMPERATURE\_MODE the seven segment starts blinking every 1 second.*
* *By pressing on Button1 or Button0 again, Button1 increase the set temperature by 5 degrees, Button0 decrease the set temperature by 5 degrees.*
* *While Button1 or Button0 are not pressed for 5 Seconds the final set temperature and saved to the EEPROM, the system automatically exits the SET\_TEMPERATURE\_MODE and enters SENSING\_TEMPERATURE\_MODE.*
* *In the SENSING\_TEMPERATURE\_MODE the 2 display seven segment displays the current water temperature, the system also compares the set temperature with the current water temperature if the set temperature is higher than the current water temperature the LED blinks every one second, if the set temperature is lower than the current water temperature the LED is set.*
* *The current water temperature is calculated by the average of the last 10 temperature reads in the last second 100 millisecond each*
* *If you pressed Button2 all displays go OFF*