Swift Act Project

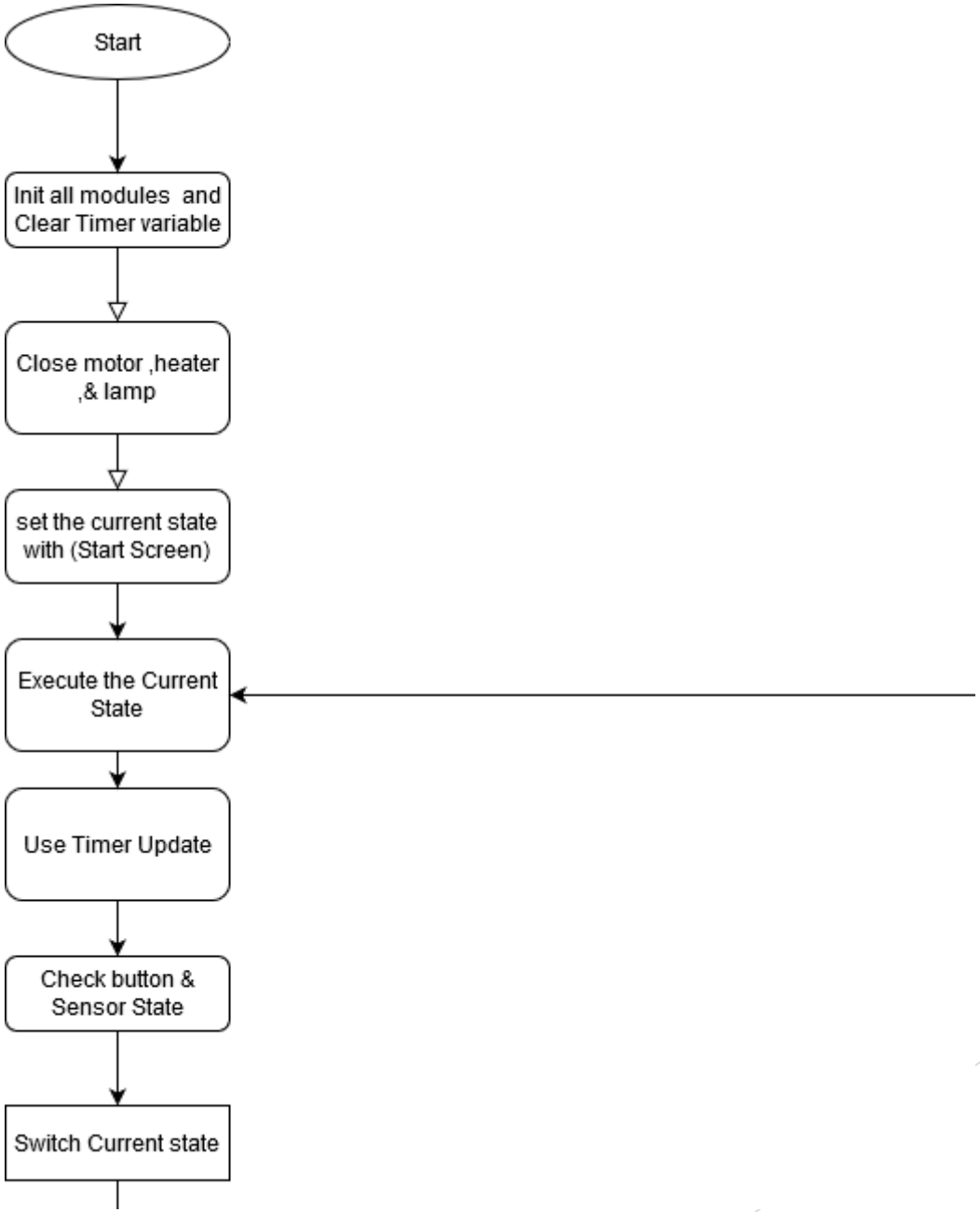
Microwave test case

Block Diagram

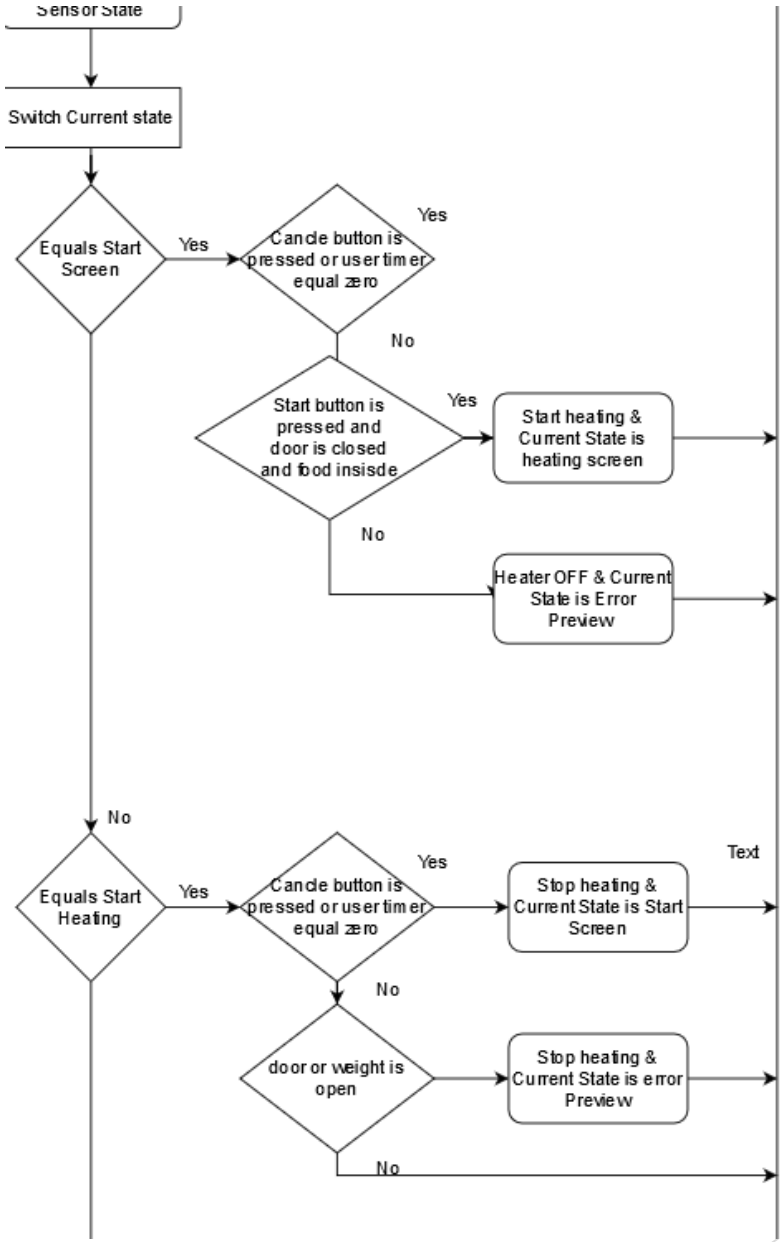
- Full :- https://drive.google.com/open?id=1meL9YCS7k-wFLUemDNHbcwHtjuDPBcpP

  https://drive.google.com/open?id=1OOeeBNS1BQNe7ZMSkliDZDFVGIrDBTQH

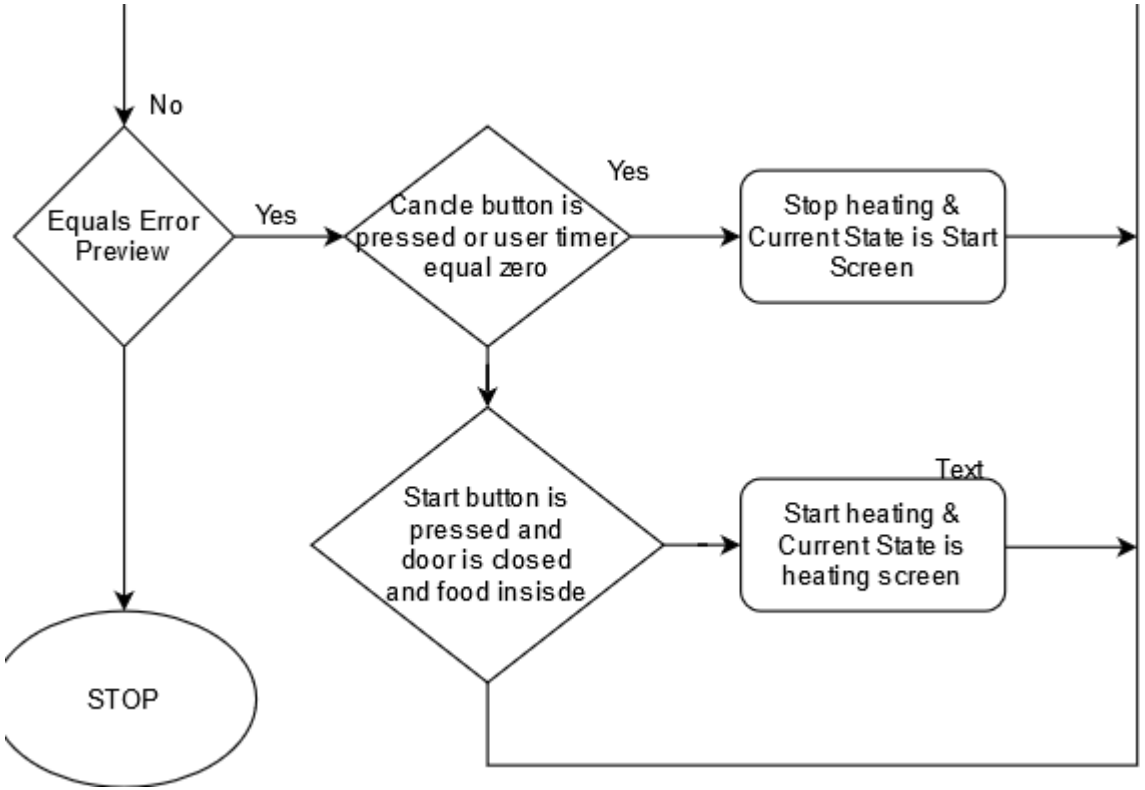
Block Diagram



Block Diagram



Block Diagram



Block Diagram

- Full :- https://drive.google.com/open?id=1meL9YCS7k-wFLUemDNHbcwHtjuDPBcpP

  https://drive.google.com/open?id=1OOeeBNS1BQNe7ZMSkliDZDFVGIrDBTQH

Modules

Module	Description
Timer 0	Timer in order to calculate the counter for the microwave user counter
Timer 2	Timer in order to generate the PWM signal in order to operate the motor
DIO	Dio module in order to collect sensor reading and generate output values for lamp and heater
External interrupt	In order to have an ISR when cancel button pressed
LCD and Keypad	HAL module in order to give a user interface
App Module	it's the application module which uses all the previous module functions

Module 1:- Timer0

Function	Parameter	Description
Timer0_init	Void	It take values from precompiled defines from cfg file , it init the mode of the timer and prescaller
Timer0_Start	Void	It start the timer when heating start
Timer0_Stop	Void	It stops the timer when the heating stop
Set_isr_Fun_over flow_timer0	Pointer to function	It is set the callback function which will be called by the isr

Module 2:- Timer2

Function	Parameter	Description
Timer2_init	Void	It take values from precompiled defines from cfg file , it init the mode of the timer and prescaller
Timer2_Start	Void	It start the PWM signal when heating start
Timer2_Stop	Void	It stops the PWM signal when the heating stop
Timer2_set_CTC_ value	Void	It is set OCR2 value in order to use in PWM signal

Module 3:- DIO

Function	Parameter	Description
set_pin_value	Port ,pin, state	It set the value of the output pin whether it's high or low
set_pin_direction	Port ,pin, direction	It set the direction of pins whether it's output or input

Module 4:- External interrupt

Function	Parameter	Description
interrupt_init	Void	Enable the global interrupt
interrupt_INT0	signal	It set the activation signal of the external interrupt
interrupt0_isr_Set	Pointer to function	It is set the callback function which will be called by the isr

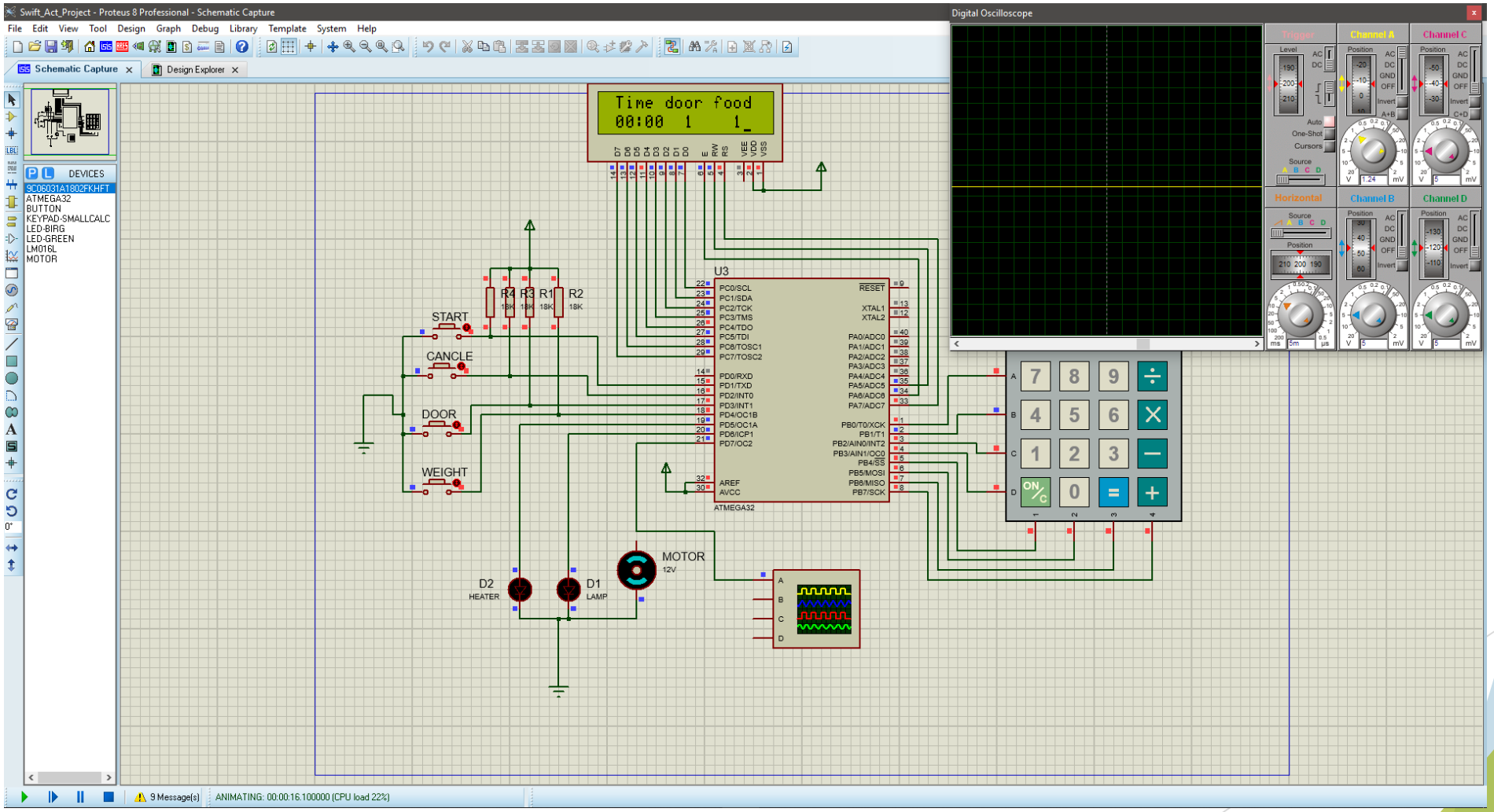
Module 5:- LCD & Keypad

Function	Parameter	Description
LCD_init	Void	Init the LCD pins and the coding sequence
LCD_out	U8 value	Show the value on LCD
LCD_print_sring	Pointer of u8	It loops over the string and show it on LCD
LCD_GOTO_XY	Row ,column	Move the cursor for the desired place
LCD_clearscreen	Void	Clear LCD screen
LCD_integerToString	u16	Show the integer on LCD
Keypad_init	Void	Init the keypad using dio module
Keypad_getkey	Void	Get value from keypad

Module 6:- App module

Function	Parameter	Description
Buttons_Sensors_init	void	It init the sensors and buttons as input and motor , heater and lamp as output
Sensor_Button_Check	void	Check the values of buttons and sensors
Current_State_Update	void	Assign the value of the current state of system
Heating_Start	void	Start the pwm signal and lamp and heater and start counting
Heating_Stop	void	Stop counting and pwm signal of motor and lamp and heater
LCD_Start_Screen	void	The first state which is the initial it take the value of the keypad
LCD_timer_update	void	It is the heating state which update timer
LCD_Error_Prev	void	Last state which show the error in sensors
Time_out_check	void	The timer update
Timer0_ISR	void	The function used in timer 0 ISR inc counter
External_Interrupt_0_ISR	void	Function used in external interrupt function to set cancel button

Simulation


Swift_Act_Project - Proteus 8 Professional - Schematic Capture
File Edit View Tool Design Graph Debug Library Template System Help
Schematic Capture
Design Explorer
DEVICES
ATMEGA32
BUTTON
KEYPAD-SMALLCALC
LED-BIRG
LED-GREEN
LM016L
MOTOR
Time door food
00:00 1 1
U3
ATMEGA32
START
CANCLE
DOOR
WEIGHT
R4 R3 R1 R2
18K
D2
HEATER
D1
LAMP
MOTOR
12V
Digital Oscilloscope
Trigger
Channel A
Channel B
Channel C
Channel D
Horizontal
9 Message(s)
ANIMATING: 00:00:16.100000 (CPU load 22%)