see the following program and schematic and then** .answer the questions

We want to develop an embedded system that has the following functionality:

- At startup, the LCD displays the current temperature.
- The user can push a button to switch between (min -- max) temperature.
- After the user releases the button for 30 seconds the screen displays the current temperature.
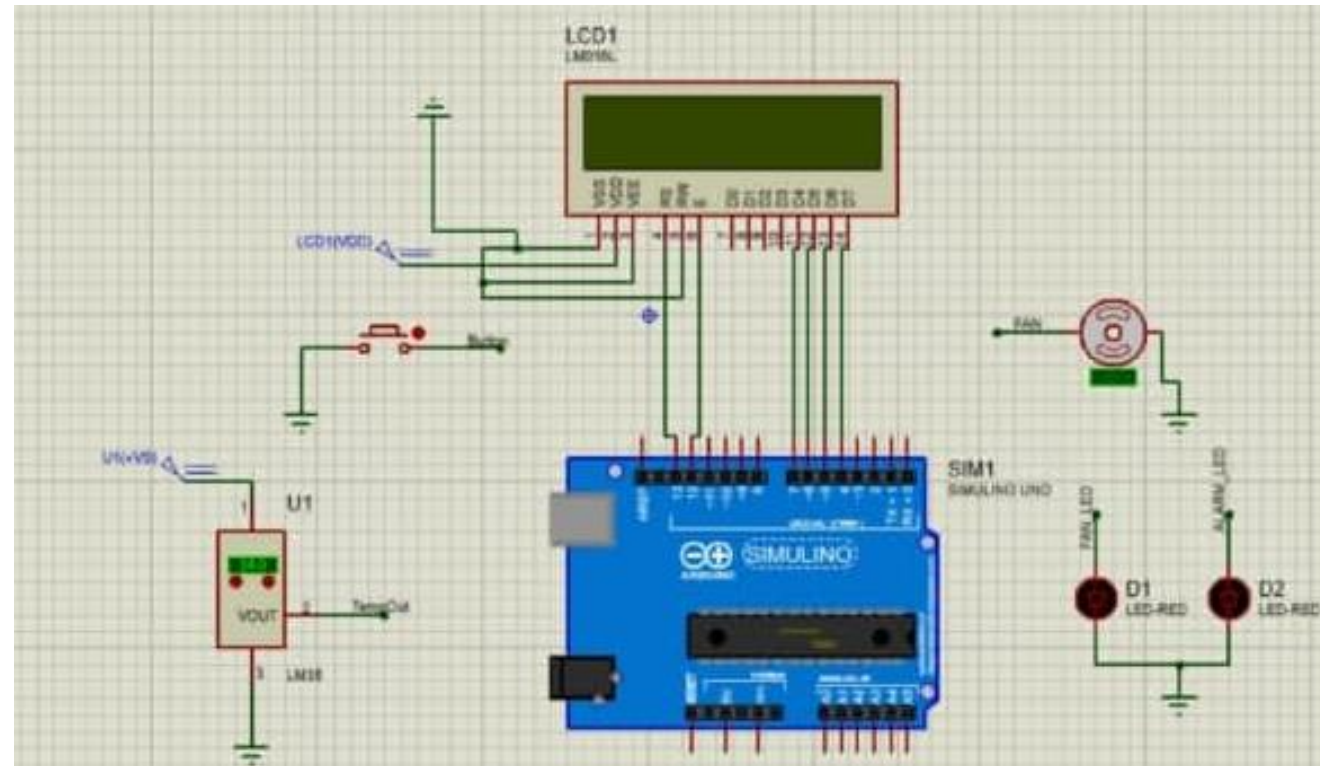- There are 2 leds (FAN_LED : ON if the fan is on, ALARM_LED : ON if the alarm is on).
- If the temperature is below 20°C : the fan is off
- If the temperature is between 20°C and 50°C : the fan is turned on and its speed is proportional to the temperature value.
- If the temperature is above 50°C : the fan is turned off and the alarm is turned on

Note : the push button should work as an interrupt to the system.

```
#include<LiquidCrystal.h>
LiquidCrystal lcd(12, 13, 7,6,5,4); // sets the interfacing pins


#define TEMP_OUT <PIN1> // output from the temperature sensor to the arduino board
#define BUTTON <PIN2> // the push button to switch between min and max temp modes
#define FAN <PIN3> // output from the arduino board to the fan
#define FAN_LED <PIN4> // output from the arduino board to the fan led
#defim ALARM_LED <PIN5> // output from the arduino board to the alarm led


// screen modes
#define CURRENT_TEMP 0
#define MIN_TEMP 1
#define MAX_TEMP 2


#define LIMIT 30000


unsigned long lastTime = millis();
float minTemp = getTemp();
float maxTemp = getTemp();
```

```
int screenMode = CURRENT_TEMP;

float getTemp()
{
    float curr_temp = <line1>;
    return curr_temp;
}

void setup() {
    interrupts();
    lcd.begin(16, 2);
    pinMode(FAN,OUTPUT);
    pinMode(FAN_LED,OUTPUT);
    pinMode(ALARM_LED,OUTPUT);
    pinMode(BUTTON,<MODE1>);
    attachInterrupt(0,<function_name>,FALLING);
    showCurrentTemp();
}
```

```cpp
void showCurrentTemp()
{
  lcd.setCursor(0,0);
  lcd.print("Temp : ");
  lcd.print(getTemp(),DEC);
}
void showMinTemp()
{
  lcd.setCursor(0,0);
  lcd.print("Min Temp : ");
  lcd.print(minTemp,DEC);
}
void showMaxTemp()
{
  lcd.setCursor(0,0);
  lcd.print(" Max Temp : ");
  lcd.print(maxTemp,DEC);
}
```

```cpp
void changeState()
{
  lastTime = millis();
  if(screenMode==CURRENT_TEMP)
  {
  screenMode = <MODE2>;
  <function1>;
  }
  if(screenMode==MIN_TEMP)
  {
  screenMode = <MODE3>;
  <function2>;
  }
  if(screenMode==MAX_TEMP)
  {
  screenMode = <MODE4>;
  <function3>;
  }
}
```

```
void loop() {
  float currTemp = getTemp();
  if (<C1>)
  minTemp = currTemp;
  if (<C2>)
  maxTemp = currTemp;
  if (<C3>)
  showCurrentTemp();
  if (<C4>)
  {
  analogWrite(FAN, 0);
  digitalWrite(FAN_LED, LOW);
  digitalWrite(ALARM_LED, LOW);
  }

  else if (<C5>)
  {
  analogWrite(FAN, map(currTemp, 0, 1023, 0, 255));
  digitalWrite(FAN_LED, HIGH);
  digitalWrite(ALARM_LED, LOW);
  }
  else if (<C6>)
  {
  analogWrite(FAN, 0);
  digitalWrite(FAN_LED, LOW);
  digitalWrite(ALARM_LED, HIGH);
  }
}
```

What are the values of the PIN1, PIN2, PIN3, PIN4, PIN5 respectively *

Mark only one oval.

- A0, 3, 2, 8, 10
- A1, 2, 3, 8, 10 ✓
- 10, 2, 3, A0, A1
- A0, 8, 2, 9, 10

What is line1? *

Mark only one oval.

- analogRead(TEMP_OUT)
- analogRead(TEMP_OUT)/1023
- analogRead(TEMP_OUT)/1023.0 * 500 ✓
- analogRead(TEMP_OUT)/1023 * 500

What is the value of MODE1? *

Mark only one oval.

- ( ) INPUT
- ( ) OUTPUT
- ( ) INOUT
- (✓) INPUT_PULLUP

In the attach Interrupt, what should the callback function_name be? *

Mark only one oval.

- (✓) changeState
- ( ) getTemp
- ( ) showCurrentTemp
- ( ) loop

What are the values of MODE2, *
MODE3, MODE4 (the screen modes
in changeState) respectively?

○ MIN_TEMP, MIN_TEMP, MAX_TEMP

☑ MIN_TEMP, MAX_TEMP, MIN_TEMP

○ MAX_TEMP, MIN_TEMP, MIN_TEMP

○ MAX_TEMP, MAX_TEMP,
CURRENT_TEMP

What are the values of function1, *
function2, function3 (in
changeState) respectively?

○ showMinTemp(), showMinTemp(),
showMaxTemp()

☑ showMinTemp(), showMaxTemp(),
showMinTemp()

○ showMaxTemp(), showMinTemp(),
showMinTemp()

○ showMaxTemp(), showMaxTemp(),
showCurrentTemp()

What is the value of C1? *

○ currTemp > maxTemp

⦿ currTemp < minTemp

○ currTemp < maxTemp

○ currTemp > minTemp

What is the value of C2? *

⦿ currTemp > maxTemp

○ currTemp < minTemp

○ currTemp < maxTemp

○ currTemp > minTemp

What is the value of C3? *

Mark only one oval.

- ( ) lastTime > LIMIT

- ( ) millis() > LIMIT

- ( ) millis() - lastTime > LIMIT || screenMode == CURRENT_TEMP

- ( ) lastTime - millis() > LIMIT || screenMode == CURRENT_TEMP

What is the value of C4? *

- ( ) currTemp < 20

- ( ) currTemp >= 20

- ( ) currTemp >= 20 && currTemp <= 50

- ( ) currTemp > 50

What is the value of C5? *

○ currTemp < 20

○ currTemp >= 20

✓ currTemp >= 20 && currTemp <= 50

○ currTemp > 50

What is the value of C6? *

○ currTemp < 20

○ currTemp >= 20

○ currTemp >= 20 && currTemp <= 50

✓ currTemp > 50