ARDUINO TUTORIAL

1. LED &BUZZERINTERFACING:

ESDI1.1	Flash/toggle/on off single LED.
ESDI1.2	Flash/toggle/on off eigESDI LEDs.
ESDI1.3	Interface 8 LEDs. Out of Four LED ON and Four LED OFF.
ESDI1.4	Alternate ON OFF eigESDI LED.
ESDI1.5	Interface 8 LEDs. Generate left series patterns.
ESDI1.6	Interface 8 LEDs. Generate rigESDI series patterns.
ESDI1.7	Interface 8 LEDs. Generate left and rigESDI series patterns.
ESDI1.8	Combine all above in single program
ESDI1.9	Display 00 to FF on LED
ESDI1.10	Sound the buzzer every 1 second.

2. SEVEN SEGMENT INTERFACING:

ESDI2.1	Display 0 to 9 on segment
ESDI2.2	Display 00 to 99 on segment
ESDI2.3	Display 000 to 999on segment
ESDI2.4	Display 0000 to 9999 on segment
ESDI2.5	Multiplexed 4 7-segment & do following: IfSW1 press, display 0 to 9 If SW2 press, display 00 to 99 If SW3 press, display 000 to 999 If SW4 press, display 0000 to 9999
ESDI2.6	Display the clock(MM : SS) on segment
ESDI2.7	Display the clock(HH : MM) on segment
ESDI2.8	Display the clock(HH : MM:SS) on segment
ESDI2.9	Set the time using four switch and display the clock on segment SW1 : when press, increment 1 digit SW2 : when press, decrement 1 digit SW3 : when press, display set time SW4 : when press, start the clock

3. SERIAL COMMUNICATION:

ESDI3.1	Transmit “Hello World!” serially and display on monitor
ESDI3.2	Receive the data between 0 to 9 serially and display on LED
ESDI3.3	Transmit and receive the data in serially
ESDI3.4	Interface switch and to following: SW1 : when press, transmit “Good Morning ” SW1 : when open, transmit “Bad Morning ”
ESDI3.5	Receive data between 0 t0 9 and display on segment

4. LCD INTERFACING:

ESDI4.1	Display 0 to 9 on LCD
ESDI4.2	Display 00 to 99 on LCD
ESDI4.3	Display 000 to 999 on LCD
ESDI4.4	Display 0000 to 9999 on LCD
ESDI4.5	Display the string on LCDEx.; “Hello World”
ESDI4.6	Interface 4 push button & do following: SW1 : when press, display 0 to 9 SW2 : when press, display 00 to 99 SW3 : when press, display 000 to 999 SW4 : when press, display 0000 to 9999
ESDI4.7	Display the clock(HH : MM : SS) on LCD
ESDI4.8	Set the time using four switch and display the clock on LCD SW1 : when press, increment 1 digit SW2 : when press, decrement 1 digit SW3 : when press, display set time and start the clock SW4 : when press, reset the clock
ESDI4.9	Receive serially data 0 t0 9 and display on LCD
ESDI4.10	Display animation using the custom character on LCD
ESDI4.11	Display the string on LCD using 4 pin Ex.; “Hello World”
ESDI4.12	Read data from LCD and display on serial port(monitor)
ESDI4.13	Receive string from monitor (serial port) and also transmit again and display on LCD

5.KEYPAD INTERFACING

ESDI5.1	Press any key from 4*4 keypad and display on lcd.
ESDI5.2	Press any key from keypad and display on segment.
ESDI5.3	Assume one password is stored in system. Enter password using keypad and check whether is correct or wrong and display status on LCD.
ESDI5.4	Set password in system. Enter password using keypad and check whether is

	correct or wrong and display status on LCD.
ESDI5.5	Set password in system also confirm it. Enter password using keypad and check whether is correct or wrong and display status on LCD. Give maximum three trial if three attempts wrong password then sound the buzzer.
ESDI5.6	Interface button for set functionality when user press this button set password in system also confirm it otherwise enter password using keypad and check whether is correct or wrong and display status on LCD. Give maximum three trial if three attempts wrong password then sound the buzzer.

6. ADC INTERFACING

ESDI6.1	Using Trim Pot of 5K set the voltage range between 0 V to 5V. Monitor value of voltage & transmit it serially.
ESDI6.2	Using Trim Pot of 5K set the voltage range between 0 V to 5V. Monitor value of voltage &Display on LCD.
ESDI6.3	Monitor the temperature using LM35 temperature sensor and display on LED
ESDI6.4	Monitor the temperature using LM35 temperature sensor and display on 7-segment
ESDI6.5	Monitor the temperature using LM35 temperature sensor and display on LCD.
ESDI6.6	LigESDI fall on LDR and display value on lcd. if value < 50,device off serially print and buzzer off if value > 50,device on serially print and buzzer on

7. DAC INTERFACING

ESDI 7.1	Interface DAC0808.Generate saw tooth wave.
ESDI 7.2	Interface DAC0808.Generate stair case wave.
ESDI 7.3	Interface DAC0808.Generate triangular wave.
ESDI 7.4	Interface DAC0808.Generate sine wave.

8. RELAY INTERFACING

ESDI8.1	Led flash using Relay.
ESDI8.2	Monitor temperature using LM35 and display on lcd if temperature > 20,device on and buzzer on if temperature < 20,device off and buzzer off
ESDI8.3	Monitor temperature using LM35 and display on 7-segment

	if temperature > 20,device on and buzzer on if temperature < 20,device off and buzzer off

9. DC MOTOR INTERFACING

ESDI9.1	Rotate motor clockwise and anticlockwise for 1second.
ESDI9.2	Rotate motor clockwise and anticlockwise using switch • If SW open, rotate clockwise • If SW close, rotate anticlockwise
ESDI9.3	Enter password and password display on lcd • if password rigESDI then door open(motor rotate clockwise); otherwise close

10. PWM

ESDI10.1	Using PWM control the brigESDIness of LED.
ESDI10.2	Using PWM control the speed of DC motor.
ESDI10.3	Interface three push button. If SW1 pressed, rotate motor with full speed. SW2 pressed, rotate motor with 1/2 speed. SW3 pressed, rotate motor with 1/3 speed.

11. STEPPER MOTOR INTERFACING

ESDI11.1	Rotate stepper motor clockwise.
ESDI11.2	Rotate stepper motor anticlockwise.
ESDI11.3	Rotate stepper motor clockwise and anticlockwise.
ESDI11.4	Rotate stepper motor using full wave step-4 sequence. • if switch open; then clockwise • if switch press, then anticlockwise

12. EEPROM INTERFACING

<table>
<tr><td>ESDI12.1</td><td>Rom table given below. Write data in EEPROM. Read it and display on 7-segment.
<table>
<tr><td>address</td><td>data</td></tr>
<tr><td>00</td><td>05</td></tr>
<tr><td>01</td><td>09</td></tr>
<tr><td>02</td><td>86</td></tr>
</table>
</td></tr>
<tr><td>ESDI12.2</td><td>Rom table given below. Write data in EEPROM. Read it from EEPROM and display on lcd.
<table>
<tr><td>address</td><td>data</td></tr>
<tr><td>00</td><td>AA</td></tr>
<tr><td>01</td><td>04</td></tr>
<tr><td>02</td><td>56</td></tr>
</table>
</td></tr>
</table>

13. RTC INTERFACING

ESDI13.1	Interface DS1307. Set time 09:10:11. Read it and display on 7-segment.
ESDI13.2	Interface DS1307. Set time and date. Read it and display LCD.

14. INTERRUPT

ESDI14.1	Generate square wave for 1ms pulse using timer 0.
ESDI14.2	Generate square wave for 1s pulse using timer 1.
ESDI14.3	Generate two square wave of different frequencies using timer 0 and timer1.
ESDI14.4	Interface switch (active LOW) .toggle the LEDwhen sw pressed using external interrupt
ESDI14.5	Interface switch (active HIGH) . toggle the LED when sw pressed using external interrupt

Prepared By:

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