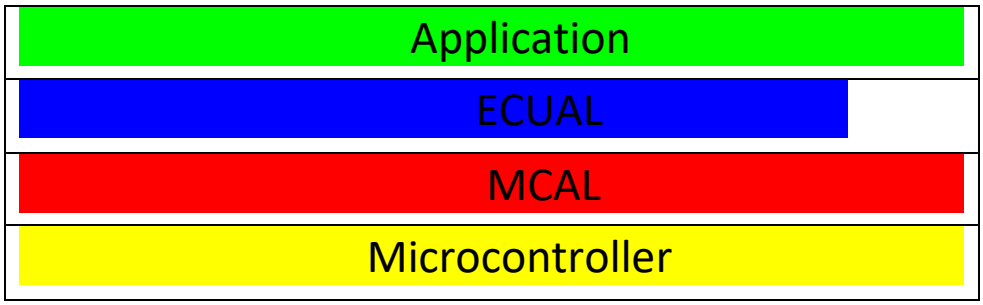
Moving Car Design

1-layered architecture



-There are 4 layers (Application - ECUAL – MCAL - Microcontroller) each layer can call with contiguous layers

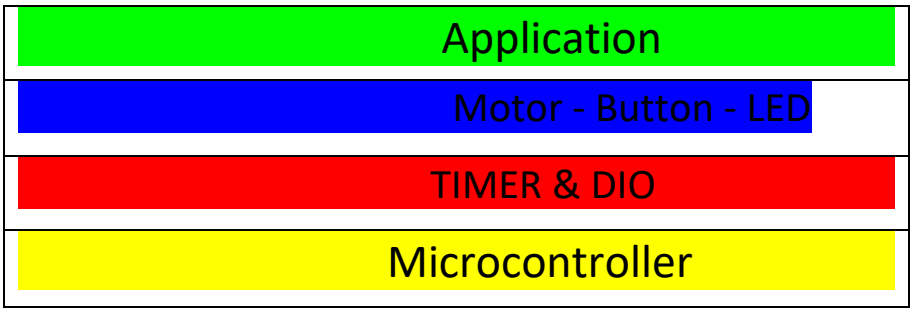
-MCAL is abbreviation for Microcontroller Abstraction Layer that directly accesses on-chip MCU peripheral modules

-ECUAL is abbreviation for Electronic Control Unit Abstraction Layer

2- System Modules/Drivers

- Motor & Button & LED (ECUAL)

- TIMER & DIO (MACL)



3- APIs

1- Buttons

void BUTTON_init (uint8_t buttonPort, uint8_t buttonPin);

void BUTTON_read (uint8_t buttonPort, uint8_t buttonPin, uint8_t *value);

2-Motor

```
void Motor_init( );
```

3- LED

```
void LED_init (uint8_t LedPort, uint8_t LedPin);
void LED_on (uint8_t LedPort, uint8_t LedPin);
void LED_off (uint8_t LedPort, uint8_t LedPin);
void LED_toggle (uint8_t LedPort, uint8_t LedPin);
```

4- TIMER

```
void Timer_init ();

void Timer_on (uint8_t time);

void Timer_off ();
```

5- DIO

```
void DIO_init (uint8_t portNumber, uint8_t pintNumber, uint8_t direction);

void DIO_write (uint8_t portNumber, uint8_t pintNumber, uint8_t value);

void DIO_toggle (uint8_t portNumber, uint8_t pintNumber);

void DIO_read (uint8_t portNumber, uint8_t pintNumber, uint8_t* value);
```