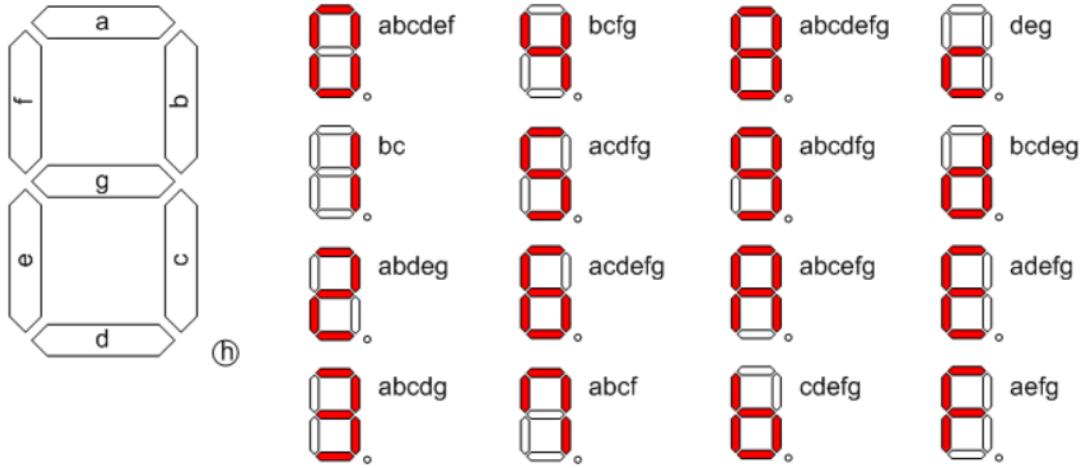
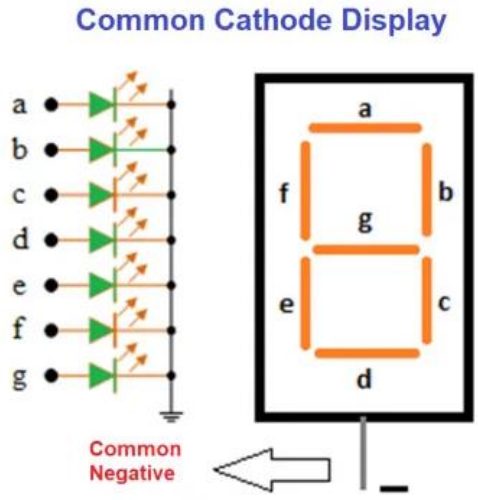
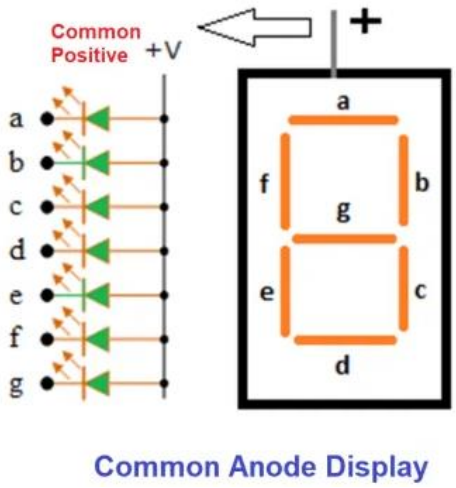
Getting Start ESP32: ESP32 GPIO + ESP32 Interface
Mission 3/12 – ESP32 with Single Digit 7_Segment

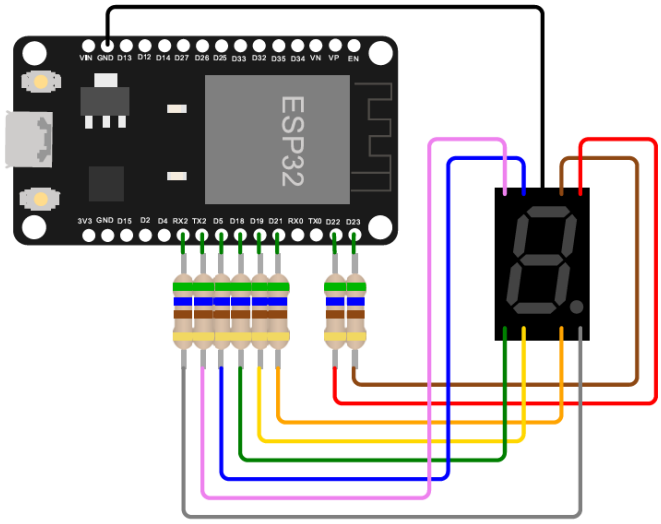
1. Read https://www.9engineer.com/index.php?m=article&a=print&article_id=2605



Common Cathode	Common Anode
Comm Pin = GND	Comm Pin = Vcc
a, b, c, d… Pin = Active High	a, b, c, d… Pin = Active Low
	

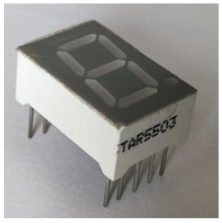
2. Read https://www.cybertice.com/b/58
3. Read https://linuxhint.com/digital-dice-seven-segment-esp32-arduino-ide/
4. Test Code “Test0301-Test 7 Segment” with esp32 board

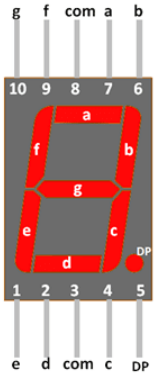
```
#define minData 0
#define maxData 9
int SegmentPort[] = {16, 17, 5, 18, 19, 21, 22, 23}; // tgfe dcba
int SegmentTable[] = {0x3F, 0x06, 0x5B, 0x4F, 0x66,
                      0x6D, 0x7D, 0x07, 0x7F, 0x6F
                     }; // tgfe dcba
int nCounter = 0;

void Display_1Digit_7Segment(int iData) {
 int SegDecode = SegmentTable[iData]; // CK 7-Segment – GND
Common
 // int SegDecode = ~SegmentTable[iData]; // CA-Segment – Vcc
Common
 for (int i = 0; i < 8; i++) {
  digitalWrite(SegmentPort[7-i], SegDecode & 1);
  SegDecode = SegDecode >> 1;
 }
}

void setup() {
 for (int i = 0; i < 8; i++)
  pinMode(SegmentPort[i], OUTPUT);
 Serial.begin(115200);
}

void loop() {
 Display_1Digit_7Segment(nCounter);
 Serial.println(nCounter);
 nCounter++;
 nCounter = nCounter < minData ? maxData : nCounter;
 nCounter = nCounter > maxData ? minData : nCounter;
 delay(1000);
}
```



Common

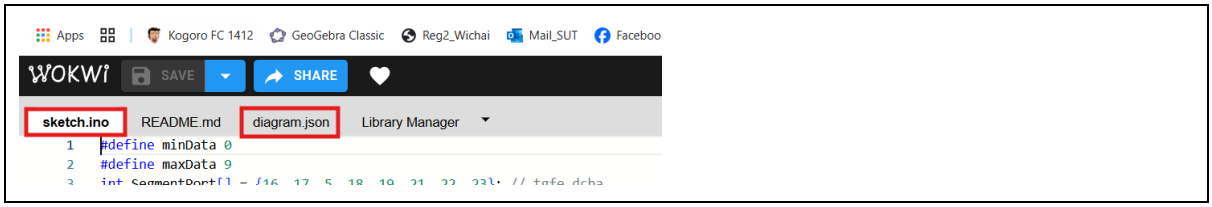
tgfe -- dcba = 16, 17, 5, 18 -- 19, 21, 22, 23





- How to display 0-F

5. Simulator On https://wokwi.com/
6. Read https://youtu.be/j2yh_sxCbgo?list=PLuCK22HcVLB1AtX6f9ODpgjxeTlQpBCIT
7. Read https://www.youtube.com/watch?v=TOmveNCbmbU
8. Create New ESP32 Project https://wokwi.com/projects/new/esp32
9. Edit diagram_json →
10. Edit Arduino C Code →



11. Online Wokwi by Wichai Srisuruk >> https://wokwi.com/projects/388873810912894977

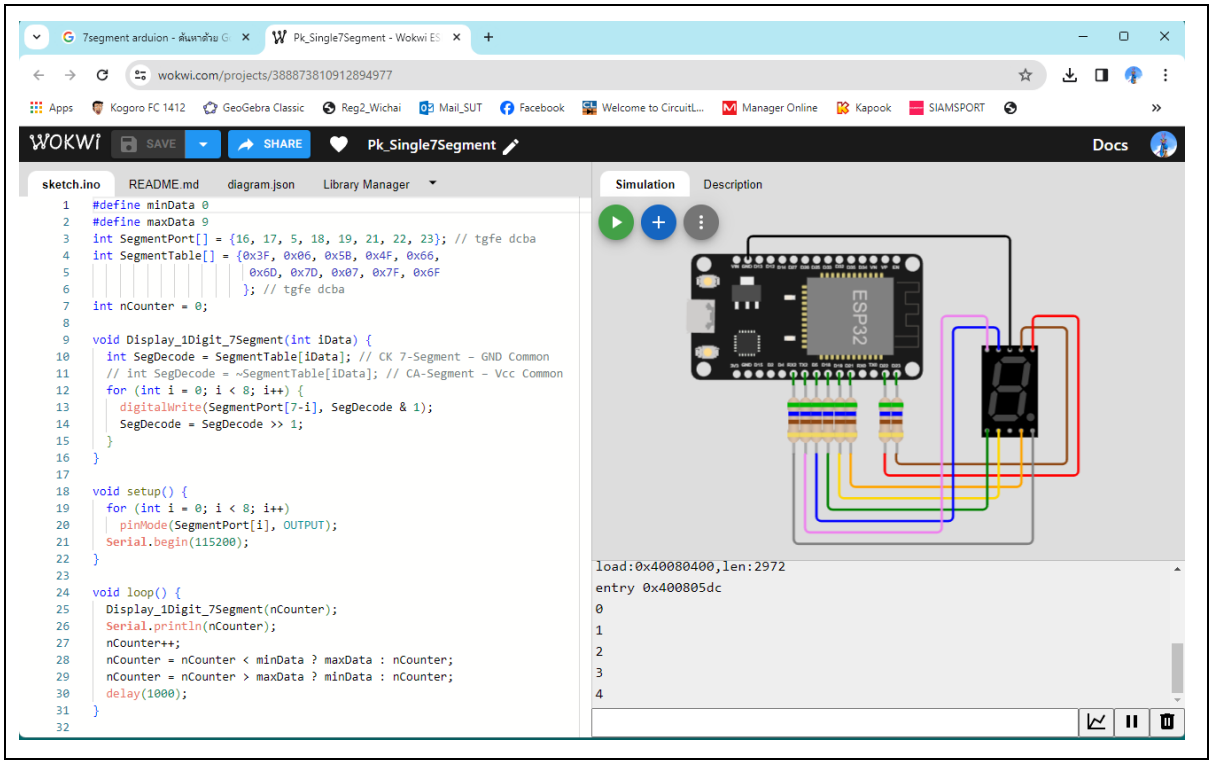


diagram.json

```
{
 "version": 1,
 "author": "Wichai Srisuruk",
 "editor": "wokwi",
 "parts": [
  {
   "type": "wokwi-esp32-devkit-v1",
   "id": "esp",
   "top": 52.1,
   "left": -275.4,
   "rotate": 90,
   "attrs": {}
  },
  {
   "type": "wokwi-7segment",
   "id": "sevseg1",
   "top": 177.78,
   "left": -71.72,
   "attrs": { "common": "cathode", "color": "red" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r1",
   "top": 235.2,
   "left": -173.35,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r2",
   "top": 235.2,
   "left": -182.95,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r3",
   "top": 235.2,
   "left": -221.35,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r4",
   "top": 235.2,
   "left": -211.75,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r5",
   "top": 235.2,
   "left": -240.55,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r6",
   "top": 235.2,
   "left": -230.95,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r7",
   "top": 235.2,
   "left": -259.75,
   "rotate": 90,
   "attrs": { "value": "560" }
  },
  {
   "type": "wokwi-resistor",
   "id": "r8",
   "top": 235.2,
   "left": -250.15,
   "rotate": 90,
   "attrs": { "value": "560" }
  }
 ],
 "connections": [
  [ "esp:TX0", "$serialMonitor:RX", "", [] ],
  [ "esp:RX0", "$serialMonitor:TX", "", [] ],
  [ "r1:1", "esp:D23", "green", [ "h0" ] ],
  [ "r2:1", "esp:D22", "green", [ "h0" ] ],
  [ "esp:D21", "r4:1", "green", [ "v0" ] ],
  [ "esp:D19", "r3:1", "green", [ "v0" ] ],
  [ "esp:D18", "r6:1", "green", [ "v0" ] ],
  [ "esp:D5", "r5:1", "green", [ "v0" ] ],
  [ "esp:TX2", "r8:1", "green", [ "v0" ] ],
  [ "esp:RX2", "r7:1", "green", [ "v0" ] ],
  [ "r1:2", "sevseg1:A", "#8f4814", [ "h0", "v8.4", "h144", "v-115.2", "h-9.6" ] ],
  [ "r2:2", "sevseg1:B", "red", [ "h0", "v18", "h163.2", "v-134.4", "h-38.4" ] ],
  [ "r4:2", "sevseg1:C", "orange", [ "h0", "v27.6", "h124.8" ] ],
  [ "r3:2", "sevseg1:D", "gold", [ "h0", "v37.2", "h105.6" ] ],
  [ "r6:2", "sevseg1:E", "green", [ "h0", "v46.8", "h115.2" ] ],
  [ "r5:2", "sevseg1:F", "blue", [ "h0", "v56.4", "h115.2", "v-163.2", "h9.6" ] ],
  [ "r8:2", "sevseg1:G", "violet", [ "h0", "v66", "h115.2", "v-182.4", "h38.4" ] ],
  [ "r7:2", "sevseg1:DP", "gray", [ "h0", "v75.6", "h192" ] ],
  [ "esp:GND.2", "sevseg1:COM.2", "black", [ "v-19.2", "h201.7" ] ]
 ],
 "dependencies": {}
}
```

Code7Seg.ino

```
#define minData 0
#define maxData 9
int SegmentPort[] = {16, 17, 5, 18, 19, 21, 22, 23}; // tgfe dcba
int SegmentTable[] = {0x3F, 0x06, 0x5B, 0x4F, 0x66,
                      0x6D, 0x7D, 0x07, 0x7F, 0x6F
                     }; // tgfe dcba
int nCounter = 0;

void Display_1Digit_7Segment(int iData) {
  int SegDecode = SegmentTable[iData]; // CK 7-Segment – GND Common
  // int SegDecode = ~SegmentTable[iData]; // CA-Segment – Vcc Common
  for (int i = 0; i < 8; i++) {
    digitalWrite(SegmentPort[7-i], SegDecode & 1);
    SegDecode = SegDecode >> 1;
  }
}

void setup() {
  for (int i = 0; i < 8; i++)
    pinMode(SegmentPort[i], OUTPUT);
  Serial.begin(115200);
}

void loop() {
  Display_1Digit_7Segment(nCounter);
  Serial.println(nCounter);
  nCounter++;
  nCounter = nCounter < minData ? maxData : nCounter;
  nCounter = nCounter > maxData ? minData : nCounter;
  delay(1000);
}
```