DIGITAL ASSIGNMENT : BCD COUNTER USING ARDUINO

CSE2006 - MICROPROCESSOR AND INTERFACING(L39-40)[MRS SHOBHA REKH]

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DIGITAL ASSIGNMENT : BCD COUNTER USING ARDUINO

Explanation:

High – 5V

Low – GND

CONNECTIONS:

7 Segment Display - IC

PinA – Port 6

PinB – Port 7

PinC – Port 8

PinD – Port 9

PinE – Port 10

PinF – Port 11

PinG – Port 12

GND - Port GND

Delay – 1000ms or 1 sec

Every 1 sec our counter proceeds further

The code is written in loop function so the code will loop once it's over.

Screenshot of Embedded C Code in Tinkercad editor:

Text

```
// C++ code
//

int pinA = 6;
int pinB = 7;
int pinC = 8;
int pinD = 9;
int pinE = 10;
int pinF = 11;
int pinG = 12;


void setup()
{
  pinMode(pinA, OUTPUT);
  pinMode(pinB, OUTPUT);
  pinMode(pinC, OUTPUT);
  pinMode(pinD, OUTPUT);
  pinMode(pinE, OUTPUT);
  pinMode(pinF, OUTPUT);
  pinMode(pinG, OUTPUT);
}

void loop()
{
  // 0
  digitalWrite(pinA, HIGH);
  digitalWrite(pinB, HIGH);
  digitalWrite(pinC, HIGH);
  digitalWrite(pinD, HIGH);
  digitalWrite(pinE, HIGH);
  digitalWrite(pinF, HIGH);
  digitalWrite(pinG, LOW);
  delay(1000); // Wait for 1000 millisecond(s)
```

Text

```
void loop()
{
  // 0
  digitalWrite(pinA, HIGH);
  digitalWrite(pinB, HIGH);
  digitalWrite(pinC, HIGH);
  digitalWrite(pinD, HIGH);
  digitalWrite(pinE, HIGH);
  digitalWrite(pinF, HIGH);
  digitalWrite(pinG, LOW);
  delay(1000); // Wait for 1000 millisecond(s)

  // 1

  digitalWrite(pinA, LOW);
  digitalWrite(pinB, HIGH);
  digitalWrite(pinC, HIGH);
  digitalWrite(pinD, LOW);
  digitalWrite(pinE, LOW);
  digitalWrite(pinF, LOW);
  digitalWrite(pinG, LOW);
  delay(1000); // Wait for 1000 millisecond(s)

  // 2

  digitalWrite(pinA, HIGH);
  digitalWrite(pinB, HIGH);
  digitalWrite(pinC, LOW);
  digitalWrite(pinD, HIGH);
  digitalWrite(pinE, HIGH);
  digitalWrite(pinF, LOW);
  digitalWrite(pinG, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
```

Text

```
58   // 3
59
60   digitalWrite(pinA, HIGH);
61   digitalWrite(pinB, HIGH);
62   digitalWrite(pinC, HIGH);
63   digitalWrite(pinD, HIGH);
64   digitalWrite(pinE, LOW);
65   digitalWrite(pinF, LOW);
66   digitalWrite(pinG, HIGH);
67   delay(1000); // Wait for 1000 millisecond(s)
68
69   // 4
70
71   digitalWrite(pinA, LOW);
72   digitalWrite(pinB, HIGH);
73   digitalWrite(pinC, HIGH);
74   digitalWrite(pinD, LOW);
75   digitalWrite(pinE, LOW);
76   digitalWrite(pinF, HIGH);
77   digitalWrite(pinG, HIGH);
78   delay(1000); // Wait for 1000 millisecond(s)
79
80   // 5
81
82   digitalWrite(pinA, HIGH);
83   digitalWrite(pinB, LOW);
84   digitalWrite(pinC, HIGH);
85   digitalWrite(pinD, HIGH);
86   digitalWrite(pinE, LOW);
87   digitalWrite(pinF, HIGH);
88   digitalWrite(pinG, HIGH);
89   delay(1000); // Wait for 1000 millisecond(s)
90
```

Text

```
90
91   // 6
92
93   digitalWrite(pinA, HIGH);
94   digitalWrite(pinB, LOW);
95   digitalWrite(pinC, HIGH);
96   digitalWrite(pinD, HIGH);
97   digitalWrite(pinE, HIGH);
98   digitalWrite(pinF, HIGH);
99   digitalWrite(pinG, HIGH);
100  delay(1000); // Wait for 1000 millisecond(s)
101
102  // 7
103
104  digitalWrite(pinA, HIGH);
105  digitalWrite(pinB, HIGH);
106  digitalWrite(pinC, HIGH);
107  digitalWrite(pinD, LOW);
108  digitalWrite(pinE, LOW);
109  digitalWrite(pinF, LOW);
110  digitalWrite(pinG, LOW);
111  delay(1000); // Wait for 1000 millisecond(s)
112
113  // 8
114
115  digitalWrite(pinA, HIGH);
116  digitalWrite(pinB, HIGH);
117  digitalWrite(pinC, HIGH);
118  digitalWrite(pinD, HIGH);
119  digitalWrite(pinE, HIGH);
120  digitalWrite(pinF, HIGH);
121  digitalWrite(pinG, HIGH);
122  delay(1000); // Wait for 1000 millisecond(s)
123
```

```
123
124  // 9
125
126  digitalWrite(pinA, HIGH);
127  digitalWrite(pinB, HIGH);
128  digitalWrite(pinC, HIGH);
129  digitalWrite(pinD, HIGH);
130  digitalWrite(pinE, LOW);
131  digitalWrite(pinF, HIGH);
132  digitalWrite(pinG, HIGH);
133  delay(1000); // Wait for 1000 millisecond(s)
134
135 }
```

Serial Monitor

Embedded C Code:

```
// C++ code
//

int pinA = 6;
int pinB = 7;
int pinC = 8;
int pinD = 9;
int pinE = 10;
int pinF = 11;
int pinG = 12;



void setup()
{
  pinMode(pinA, OUTPUT);
  pinMode(pinB, OUTPUT);
  pinMode(pinC, OUTPUT);
  pinMode(pinD, OUTPUT);
  pinMode(pinE, OUTPUT);
  pinMode(pinF, OUTPUT);
  pinMode(pinG, OUTPUT);
}

void loop()
{
  // 0
  digitalWrite(pinA, HIGH);
  digitalWrite(pinB, HIGH);
  digitalWrite(pinC, HIGH);
```

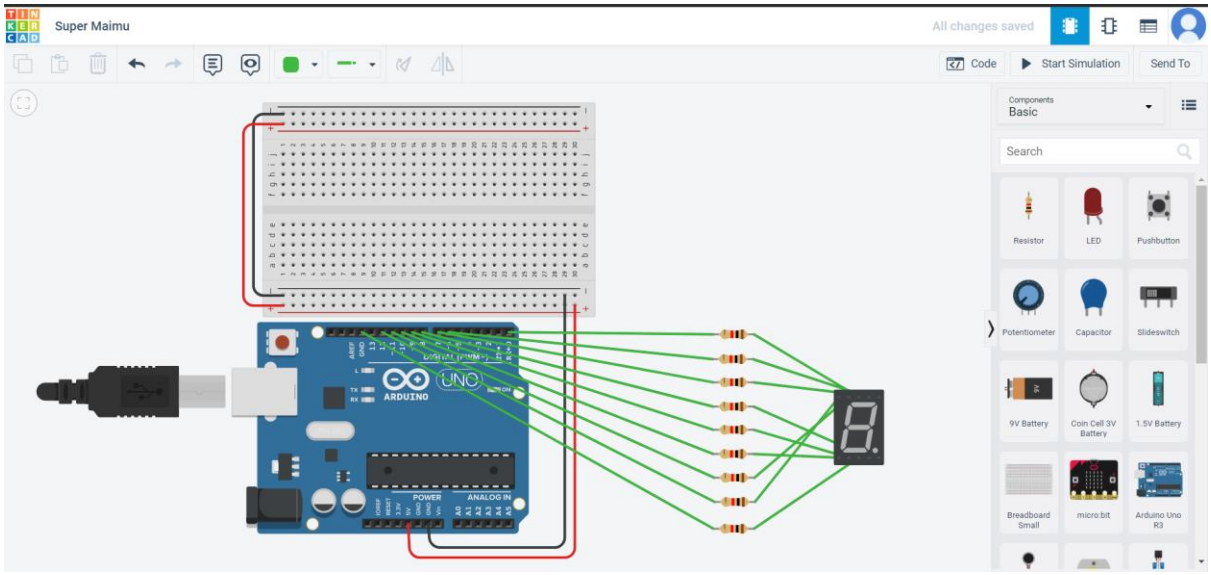
```
digitalWrite(pinD, HIGH);
digitalWrite(pinE, HIGH);
digitalWrite(pinF, HIGH);
digitalWrite(pinG, LOW);
delay(1000); // Wait for 1000 millisecond(s)

// 1

digitalWrite(pinA, LOW);
digitalWrite(pinB, HIGH);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, LOW);
digitalWrite(pinE, LOW);
digitalWrite(pinF, LOW);
digitalWrite(pinG, LOW);
delay(1000); // Wait for 1000 millisecond(s)

// 2

digitalWrite(pinA, HIGH);
digitalWrite(pinB, HIGH);
digitalWrite(pinC, LOW);
digitalWrite(pinD, HIGH);
digitalWrite(pinE, HIGH);
digitalWrite(pinF, LOW);
digitalWrite(pinG, HIGH);
delay(1000); // Wait for 1000 millisecond(s)

// 3

digitalWrite(pinA, HIGH);
```

```
digitalWrite(pinB, HIGH);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, HIGH);
digitalWrite(pinE, LOW);
digitalWrite(pinF, LOW);
digitalWrite(pinG, HIGH);
delay(1000); // Wait for 1000 millisecond(s)

// 4

digitalWrite(pinA, LOW);
digitalWrite(pinB, HIGH);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, LOW);
digitalWrite(pinE, LOW);
digitalWrite(pinF, HIGH);
digitalWrite(pinG, HIGH);
delay(1000); // Wait for 1000 millisecond(s)

// 5

digitalWrite(pinA, HIGH);
digitalWrite(pinB, LOW);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, HIGH);
digitalWrite(pinE, LOW);
digitalWrite(pinF, HIGH);
digitalWrite(pinG, HIGH);
delay(1000); // Wait for 1000 millisecond(s)

// 6
```

```
digitalWrite(pinA, HIGH);
digitalWrite(pinB, LOW);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, HIGH);
digitalWrite(pinE, HIGH);
digitalWrite(pinF, HIGH);
digitalWrite(pinG, HIGH);
delay(1000); // Wait for 1000 millisecond(s)

// 7

digitalWrite(pinA, HIGH);
digitalWrite(pinB, HIGH);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, LOW);
digitalWrite(pinE, LOW);
digitalWrite(pinF, LOW);
digitalWrite(pinG, LOW);
delay(1000); // Wait for 1000 millisecond(s)

// 8

digitalWrite(pinA, HIGH);
digitalWrite(pinB, HIGH);
digitalWrite(pinC, HIGH);
digitalWrite(pinD, HIGH);
digitalWrite(pinE, HIGH);
digitalWrite(pinF, HIGH);
digitalWrite(pinG, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
```

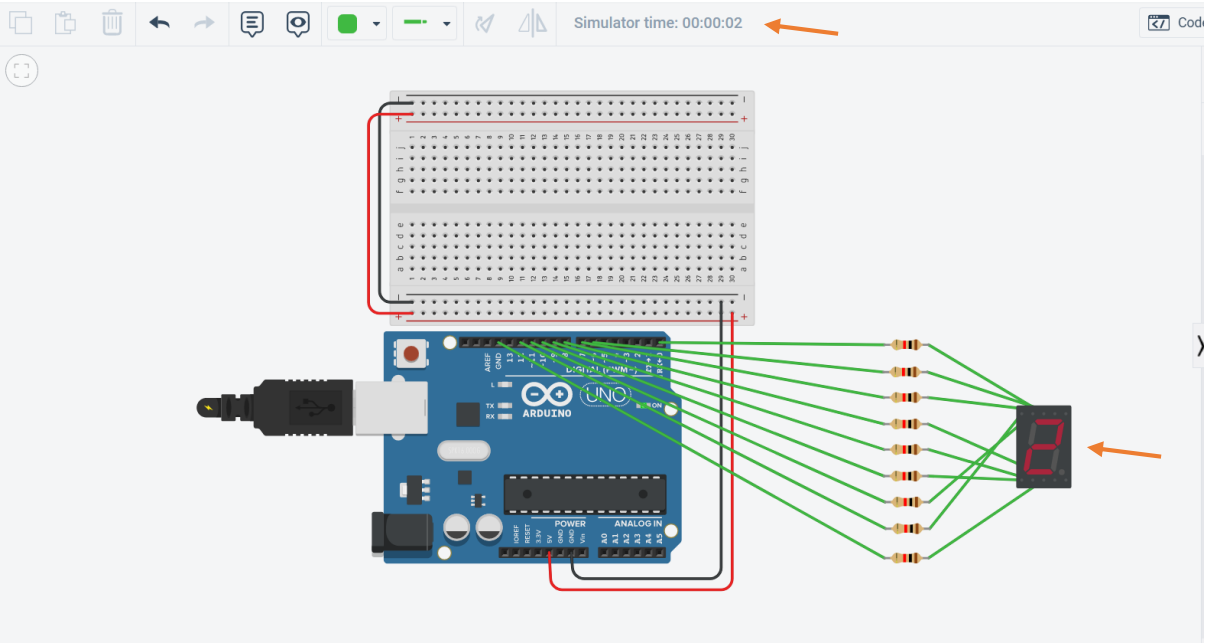
```
// 9

 digitalWrite(pinA, HIGH);
 digitalWrite(pinB, HIGH);
 digitalWrite(pinC, HIGH);
 digitalWrite(pinD, HIGH);
 digitalWrite(pinE, LOW);
 digitalWrite(pinF, HIGH);
 digitalWrite(pinG, HIGH);
 delay(1000); // Wait for 1000 millisecond(s)

}
```

Circuit Designed From TinkerCad:

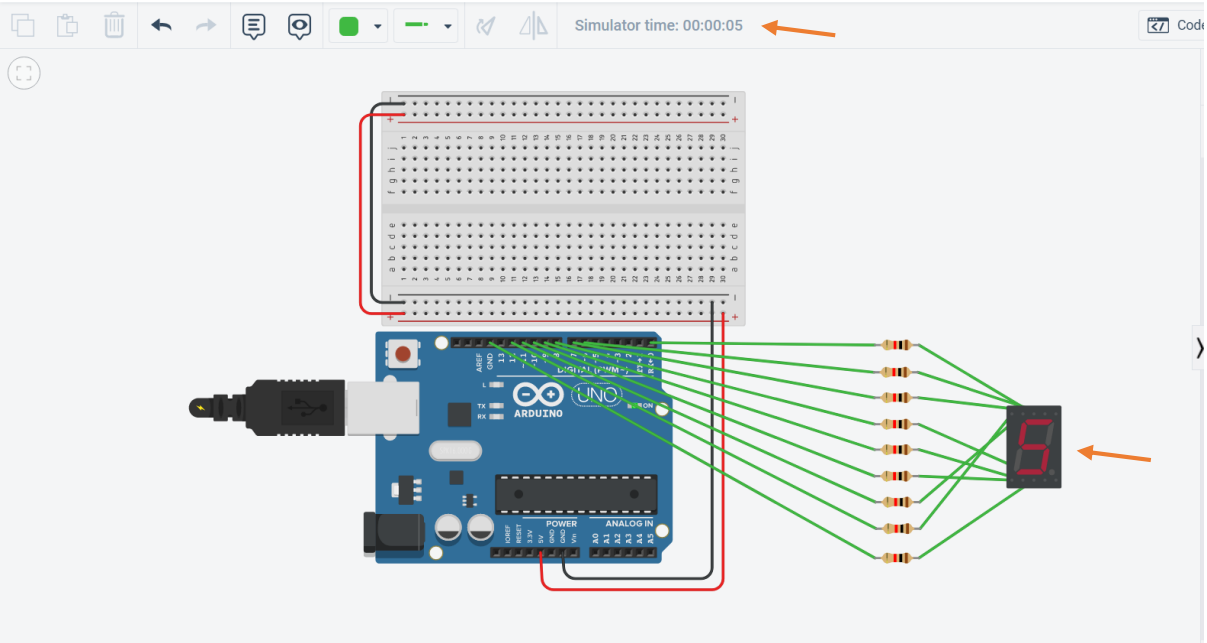


Simulation of counter progressing as time increases:

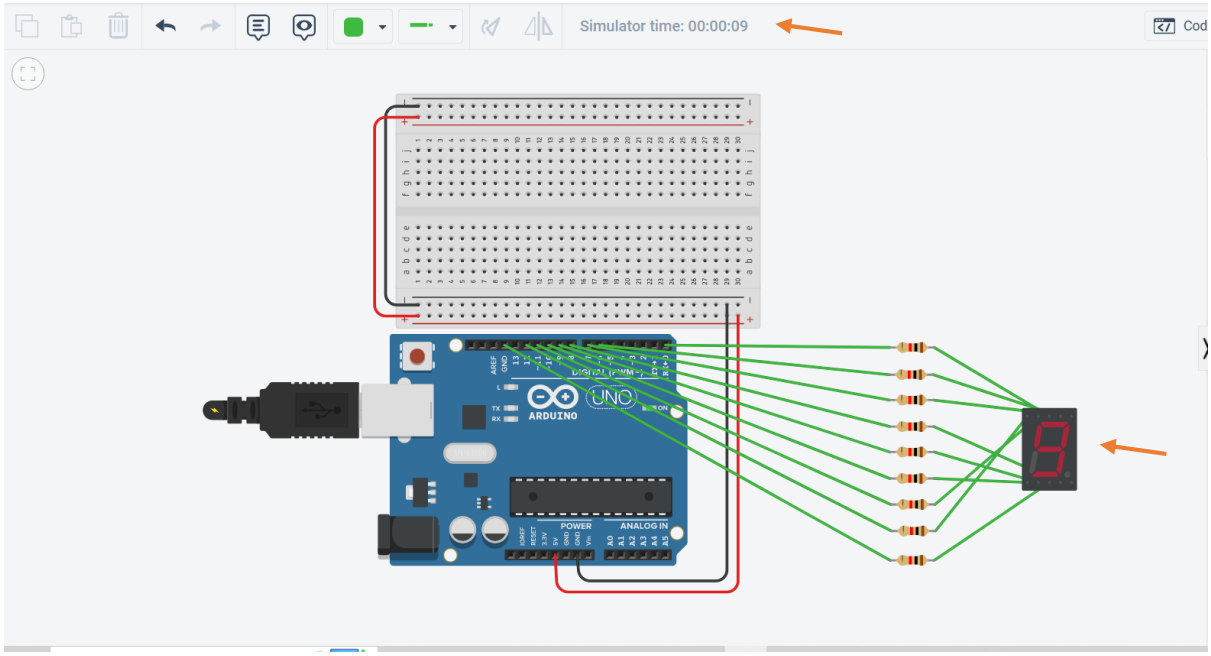
Time: 2sec, Counter: 2



Time: 5sec, Counter: 5



Time: 9sec, Counter: 9



Time: 1 Min 3sec, Counter: 3