



DIGITAL ASSIGNMENT : BCD COUNTER USING ARDUINO

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



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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
1 // C++ code
2 //
3
4 int pinA = 6;
5 int pinB = 7;
6 int pinC = 8;
7 int pinD = 9;
8 int pinE = 10;
9 int pinF = 11;
10 int pinG = 12;
11
12
13 void setup()
14 {
15   pinMode(pinA, OUTPUT);
16   pinMode(pinB, OUTPUT);
17   pinMode(pinC, OUTPUT);
18   pinMode(pinD, OUTPUT);
19   pinMode(pinE, OUTPUT);
20   pinMode(pinF, OUTPUT);
21   pinMode(pinG, OUTPUT);
22 }
23
24 void loop()
25 {
26   // 0
27   digitalWrite(pinA, HIGH);
28   digitalWrite(pinB, HIGH);
29   digitalWrite(pinC, HIGH);
30   digitalWrite(pinD, HIGH);
31   digitalWrite(pinE, HIGH);
32   digitalWrite(pinF, HIGH);
33   digitalWrite(pinG, LOW);
34   delay(1000); // Wait for 1000 millisecond(s)
```

```
Text
24 void loop()
25 {
26   // 0
27   digitalWrite(pinA, HIGH);
28   digitalWrite(pinB, HIGH);
29   digitalWrite(pinC, HIGH);
30   digitalWrite(pinD, HIGH);
31   digitalWrite(pinE, HIGH);
32   digitalWrite(pinF, HIGH);
33   digitalWrite(pinG, LOW);
34   delay(1000); // Wait for 1000 millisecond(s)
35
36   // 1
37
38   digitalWrite(pinA, LOW);
39   digitalWrite(pinB, HIGH);
40   digitalWrite(pinC, HIGH);
41   digitalWrite(pinD, LOW);
42   digitalWrite(pinE, LOW);
43   digitalWrite(pinF, LOW);
44   digitalWrite(pinG, LOW);
45   delay(1000); // Wait for 1000 millisecond(s)
46
47   // 2
48
49   digitalWrite(pinA, HIGH);
50   digitalWrite(pinB, HIGH);
51   digitalWrite(pinC, LOW);
52   digitalWrite(pinD, HIGH);
53   digitalWrite(pinE, HIGH);
54   digitalWrite(pinF, LOW);
55   digitalWrite(pinG, HIGH);
56   delay(1000); // Wait for 1000 millisecond(s)
57
```

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```
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
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
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 }
```

```
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);
```

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```
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);
```

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```
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
```

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```
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
```

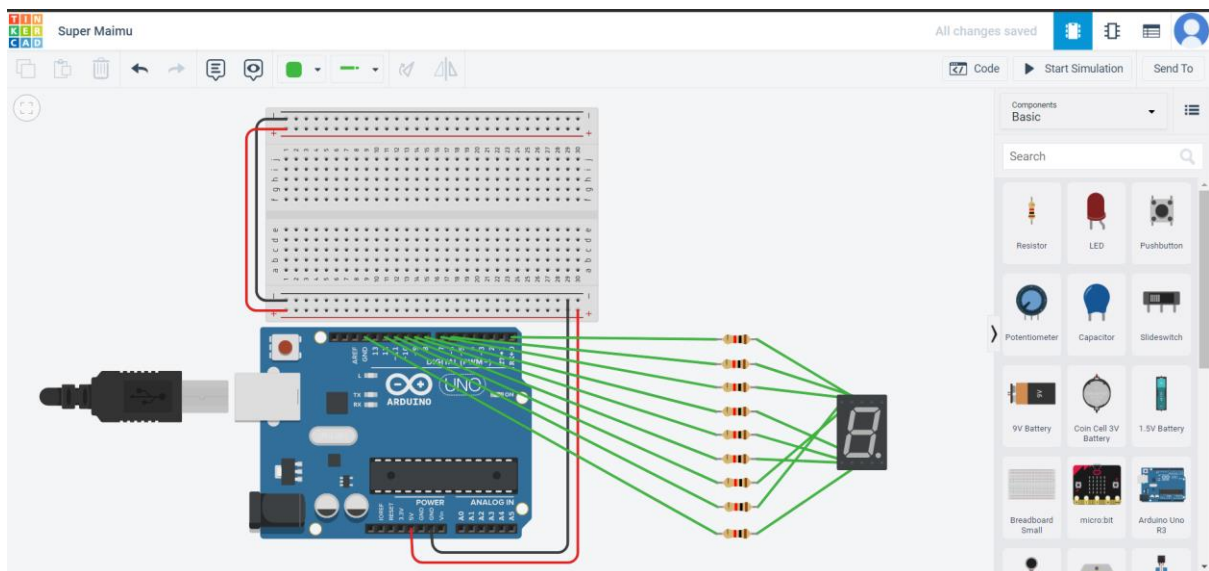
```
digitalWrite(pinA, HIGH);  
digitalWrite(pinB, HIGH);  
digitalWrite(pinC, HIGH);  
digitalWrite(pinD, HIGH);  
digitalWrite(pinE, HIGH);  
digitalWrite(pinF, HIGH);  
digitalWrite(pinG, HIGH);  
delay(1000); // Wait for 1000 millisecond(s)
```

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```
// 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)  
  
}
```

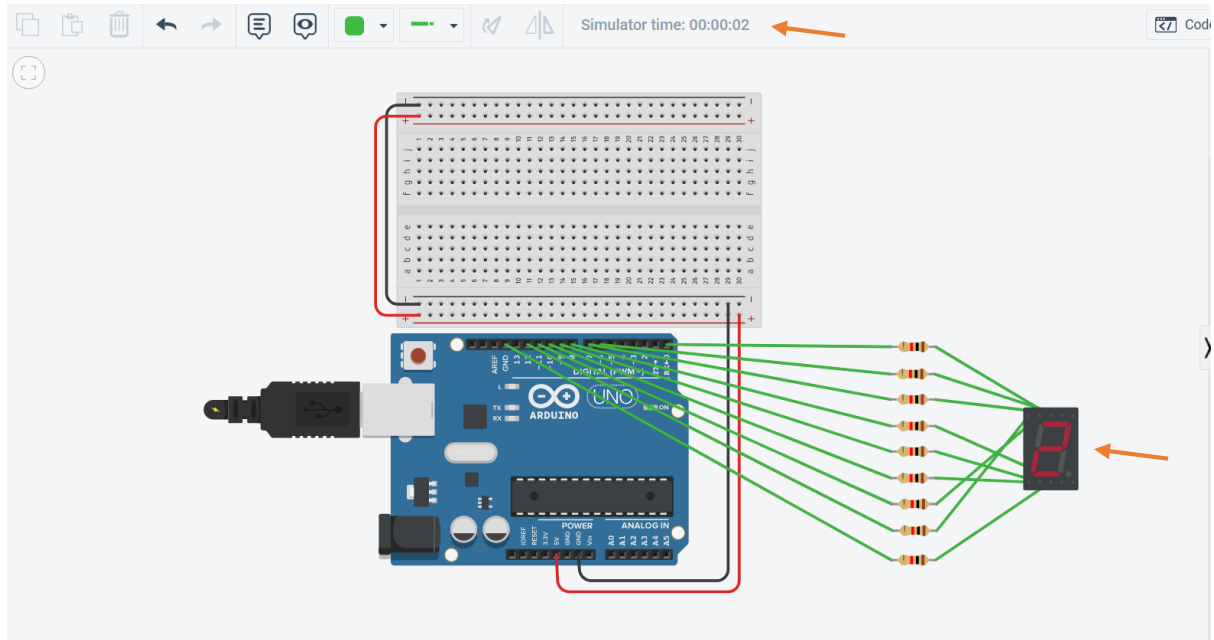
Circuit Designed From TinkerCad:



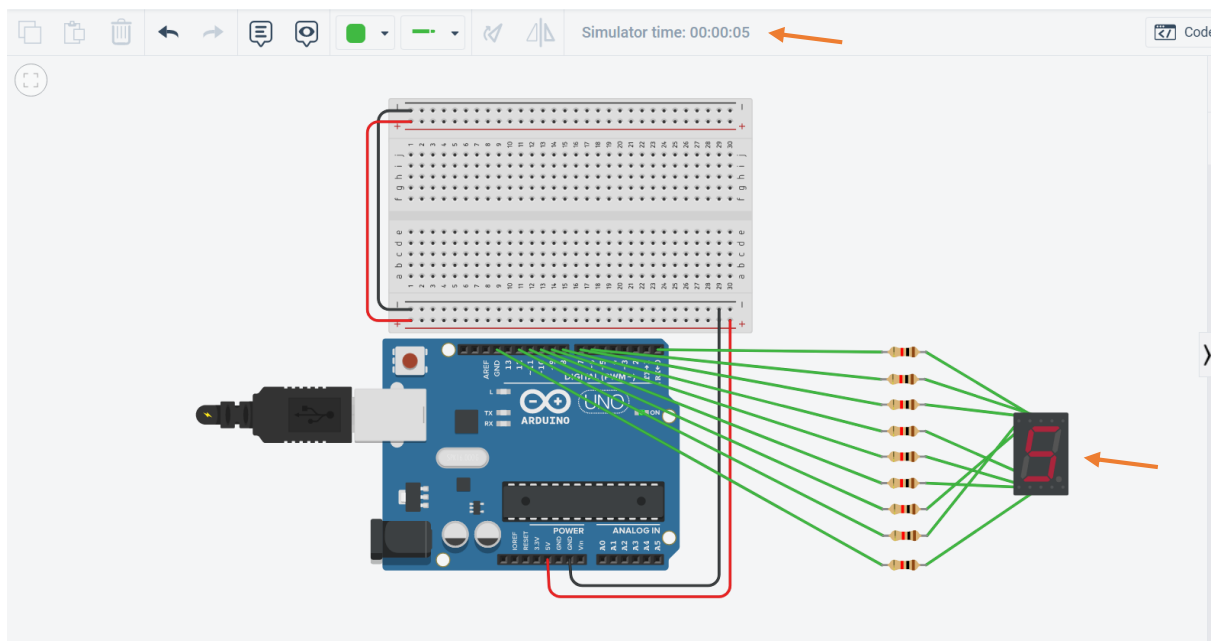
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Simulation of counter progressing as time increases:

Time: 2sec, Counter: 2

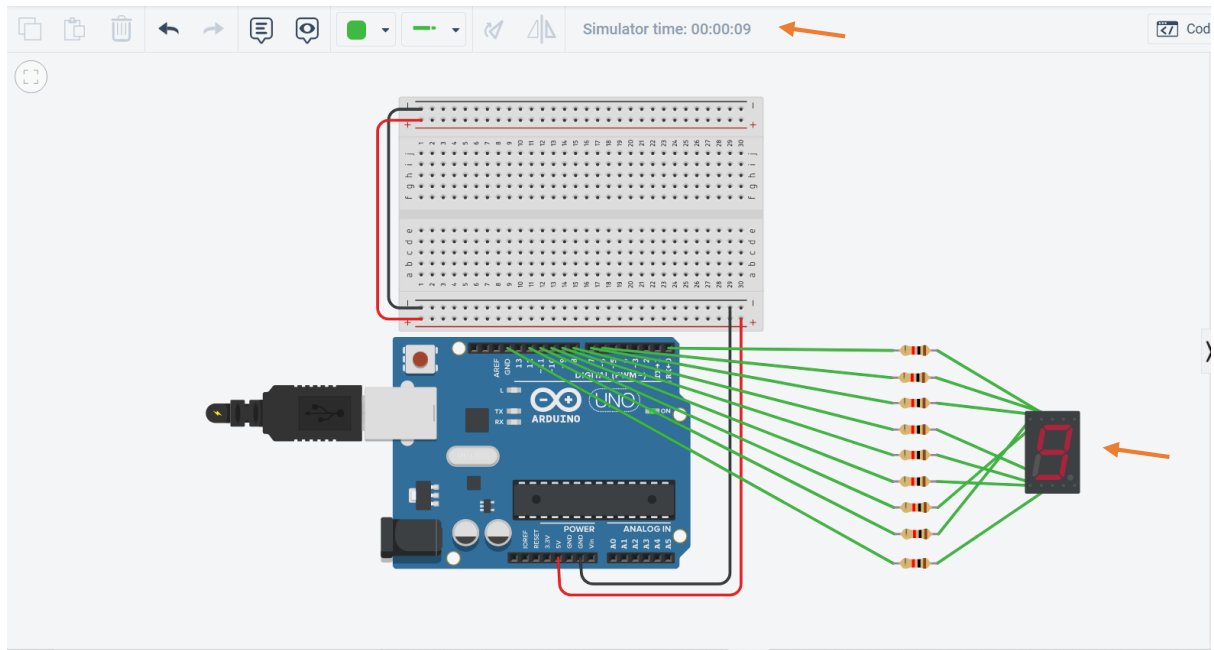


Time: 5sec, Counter: 5



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Time: 9sec, Counter: 9



Time: 1 Min 3sec, Counter: 3

