

Day 2

LED LIGHT PROJECT WITH JAVA



GenCyber San Antonio

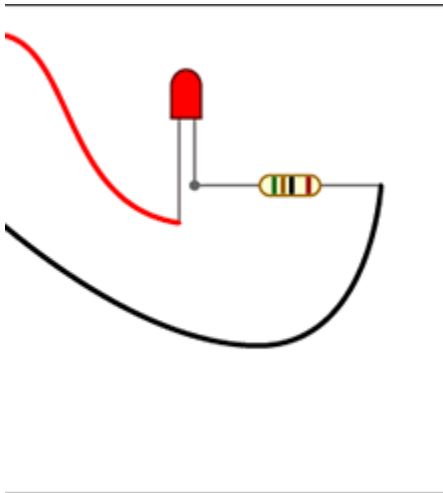
2017

What we need?

- Raspberry Pi
- 1 Resistor
- 2 Wires
- 1 LED Light
- Electrical Tape

STEPS

- 1) Connect the resistor to the longer leg of LED light by twisting. (Tape over the connection point if you have trouble)
- 2) Connect the green cable to the other end of resistor by twisting the metal parts of the cables. (Tape over the connection point if you have trouble)
- 3) Connect the yellow cable to the shorter leg of LED light by twisting (Tape over the connection point if you have trouble)

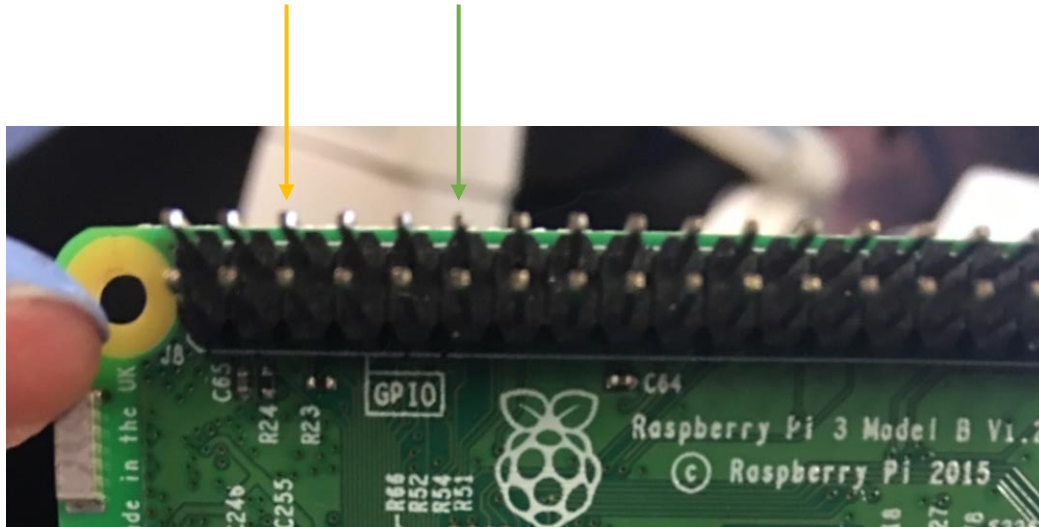


- 4) Take of your raspberry pi out the boxes. Build all the connections again.

- 5) Connect your long cable to the upper left pin on your Raspberry Pi. And your short yellow cable to the 3rd pin as in below schema.

Raspberry Pi 3 Model B (48 Header)					
GPIO	NAME	VALUE	GPIO		
1	3.3VDC	3.3VDC	40	GPIO 28	GPIO 28
2	5VDC	5VDC	41	GPIO 29	GPIO 29
3	Ground	Ground	42	GPIO 30	GPIO 30
4	5VDC	5VDC	43	GPIO 31	GPIO 31
5	Ground	Ground	44	GPIO 32	GPIO 32
6	GPIO 2	GPIO 2	45	GPIO 33	GPIO 33
7	GPIO 3	GPIO 3	46	GPIO 34	GPIO 34
8	GPIO 4	GPIO 4	47	GPIO 35	GPIO 35
9	GPIO 5	GPIO 5	48	GPIO 36	GPIO 36
10	GPIO 6	GPIO 6	49	GPIO 37	GPIO 37
11	GPIO 7	GPIO 7	50	GPIO 38	GPIO 38
12	GPIO 8	GPIO 8	51	GPIO 39	GPIO 39
13	GPIO 9	GPIO 9	52	GPIO 40	GPIO 40
14	GPIO 10	GPIO 10	53	GPIO 41	GPIO 41
15	GPIO 11	GPIO 11	54	GPIO 42	GPIO 42
16	GPIO 12	GPIO 12	55	GPIO 43	GPIO 43
17	GPIO 13	GPIO 13	56	GPIO 44	GPIO 44
18	GPIO 14	GPIO 14	57	GPIO 45	GPIO 45
19	GPIO 15	GPIO 15	58	GPIO 46	GPIO 46
20	GPIO 16	GPIO 16	59	GPIO 47	GPIO 47
21	GPIO 17	GPIO 17	60	GPIO 48	GPIO 48
22	GPIO 18	GPIO 18	61	GPIO 49	GPIO 49
23	GPIO 19	GPIO 19	62	GPIO 50	GPIO 50
24	GPIO 20	GPIO 20	63	GPIO 51	GPIO 51
25	GPIO 21	GPIO 21	64	GPIO 52	GPIO 52
26	GPIO 22	GPIO 22	65	GPIO 53	GPIO 53
27	GPIO 23	GPIO 23	66	GPIO 54	GPIO 54
28	GPIO 24	GPIO 24	67	GPIO 55	GPIO 55
29	GPIO 25	GPIO 25	68	GPIO 56	GPIO 56
30	GPIO 26	GPIO 26	69	GPIO 57	GPIO 57
31	GPIO 27	GPIO 27	70	GPIO 58	GPIO 58
32	GPIO 28	GPIO 28	71	GPIO 59	GPIO 59
33	GPIO 29	GPIO 29	72	GPIO 60	GPIO 60
34	GPIO 30	GPIO 30	73	GPIO 61	GPIO 61
35	GPIO 31	GPIO 31	74	GPIO 62	GPIO 62
36	GPIO 32	GPIO 32	75	GPIO 63	GPIO 63
37	GPIO 33	GPIO 33	76	GPIO 64	GPIO 64
38	GPIO 34	GPIO 34	77	GPIO 65	GPIO 65
39	GPIO 35	GPIO 35	78	GPIO 66	GPIO 66
40	GPIO 36	GPIO 36	79	GPIO 67	GPIO 67
41	GPIO 37	GPIO 37	80	GPIO 68	GPIO 68
42	GPIO 38	GPIO 38	81	GPIO 69	GPIO 69
43	GPIO 39	GPIO 39	82	GPIO 70	GPIO 70
44	GPIO 40	GPIO 40	83	GPIO 71	GPIO 71
45	GPIO 41	GPIO 41	84	GPIO 72	GPIO 72
46	GPIO 42	GPIO 42	85	GPIO 73	GPIO 73
47	GPIO 43	GPIO 43	86	GPIO 74	GPIO 74
48	GPIO 44	GPIO 44	87	GPIO 75	GPIO 75
49	GPIO 45	GPIO 45	88	GPIO 76	GPIO 76
50	GPIO 46	GPIO 46	89	GPIO 77	GPIO 77
51	GPIO 47	GPIO 47	90	GPIO 78	GPIO 78
52	GPIO 48	GPIO 48	91	GPIO 79	GPIO 79
53	GPIO 49	GPIO 49	92	GPIO 80	GPIO 80
54	GPIO 50	GPIO 50	93	GPIO 81	GPIO 81
55	GPIO 51	GPIO 51	94	GPIO 82	GPIO 82
56	GPIO 52	GPIO 52	95	GPIO 83	GPIO 83
57	GPIO 53	GPIO 53	96	GPIO 84	GPIO 84
58	GPIO 54	GPIO 54	97	GPIO 85	GPIO 85
59	GPIO 55	GPIO 55	98	GPIO 86	GPIO 86
60	GPIO 56	GPIO 56	99	GPIO 87	GPIO 87
61	GPIO 57	GPIO 57	100	GPIO 88	GPIO 88
62	GPIO 58	GPIO 58	101	GPIO 89	GPIO 89
63	GPIO 59	GPIO 59	102	GPIO 90	GPIO 90
64	GPIO 60	GPIO 60	103	GPIO 91	GPIO 91
65	GPIO 61	GPIO 61	104	GPIO 92	GPIO 92
66	GPIO 62	GPIO 62	105	GPIO 93	GPIO 93
67	GPIO 63	GPIO 63	106	GPIO 94	GPIO 94
68	GPIO 64	GPIO 64	107	GPIO 95	GPIO 95
69	GPIO 65	GPIO 65	108	GPIO 96	GPIO 96
70	GPIO 66	GPIO 66	109	GPIO 97	GPIO 97
71	GPIO 67	GPIO 67	110	GPIO 98	GPIO 98
72	GPIO 68	GPIO 68	111	GPIO 99	GPIO 99
73	GPIO 69	GPIO 69	112	GPIO 100	GPIO 100
74	GPIO 70	GPIO 70	113	GPIO 101	GPIO 101
75	GPIO 71	GPIO 71	114	GPIO 102	GPIO 102
76	GPIO 72	GPIO 72	115	GPIO 103	GPIO 103
77	GPIO 73	GPIO 73	116	GPIO 104	GPIO 104
78	GPIO 74	GPIO 74	117	GPIO 105	GPIO 105
79	GPIO 75	GPIO 75	118	GPIO 106	GPIO 106
80	GPIO 76	GPIO 76	119	GPIO 107	GPIO 107
81	GPIO 77	GPIO 77	120	GPIO 108	GPIO 108
82	GPIO 78	GPIO 78	121	GPIO 109	GPIO 109
83	GPIO 79	GPIO 79	122	GPIO 110	GPIO 110
84	GPIO 80	GPIO 80	123	GPIO 111	GPIO 111
85	GPIO 81	GPIO 81	124	GPIO 112	GPIO 112
86	GPIO 82	GPIO 82	125	GPIO 113	GPIO 113
87	GPIO 83	GPIO 83	126	GPIO 114	GPIO 114
88	GPIO 84	GPIO 84	127	GPIO 115	GPIO 115
89	GPIO 85	GPIO 85	128	GPIO 116	GPIO 116
90	GPIO 86	GPIO 86	129	GPIO 117	GPIO 117
91	GPIO 87	GPIO 87	130	GPIO 118	GPIO 118
92	GPIO 88	GPIO 88	131	GPIO 119	GPIO 119
93	GPIO 89	GPIO 89	132	GPIO 120	GPIO 120
94	GPIO 90	GPIO 90	133	GPIO 121	GPIO 121
95	GPIO 91	GPIO 91	134	GPIO 122	GPIO 122
96	GPIO 92	GPIO 92	135	GPIO 123	GPIO 123
97	GPIO 93	GPIO 93	136	GPIO 124	GPIO 124
98	GPIO 94	GPIO 94	137	GPIO 125	GPIO 125
99	GPIO 95	GPIO 95	138	GPIO 126	GPIO 126
100	GPIO 96	GPIO 96	139	GPIO 127	GPIO 127
101	GPIO 97	GPIO 97	140	GPIO 128	GPIO 128
102	GPIO 98	GPIO 98	141	GPIO 129	GPIO 129
103	GPIO 99	GPIO 99	142	GPIO 130	GPIO 130
104	GPIO 100	GPIO 100	143	GPIO 131	GPIO 131
105	GPIO 101	GPIO 101	144	GPIO 132	GPIO 132
106	GPIO 102	GPIO 102	145	GPIO 133	GPIO 133
107	GPIO 103	GPIO 103	146	GPIO 134	GPIO 134
108	GPIO 104	GPIO 104	147	GPIO 135	GPIO 135
109	GPIO 105	GPIO 105	148	GPIO 136	GPIO 136
110	GPIO 106	GPIO 106	149	GPIO 137	GPIO 137
111	GPIO 107	GPIO 107	150	GPIO 138	GPIO 138
112	GPIO 108	GPIO 108	151	GPIO 139	GPIO 139
113	GPIO 109	GPIO 109	152	GPIO 140	GPIO 140
114	GPIO 110	GPIO 110	153	GPIO 141	GPIO 141
115	GPIO 111	GPIO 111	154	GPIO 142	GPIO 142
116	GPIO 112	GPIO 112	155	GPIO 143	GPIO 143
117	GPIO 113	GPIO 113	156	GPIO 144	GPIO 144
118	GPIO 114	GPIO 114	157	GPIO 145	GPIO 145
119	GPIO 115	GPIO 115	158	GPIO 146	GPIO 146
120	GPIO 116	GPIO 116	159	GPIO 147	GPIO 147
121	GPIO 117	GPIO 117	160	GPIO 148	GPIO 148
122	GPIO 118	GPIO 118	161	GPIO 149	GPIO 149
123	GPIO 119	GPIO 119	162	GPIO 150	GPIO 150
124	GPIO 120	GPIO 120	163	GPIO 151	GPIO 151
125	GPIO 121	GPIO 121	164	GPIO 152	GPIO 152
126	GPIO 122	GPIO 122	165	GPIO 153	GPIO 153
127	GPIO 123	GPIO 123	166	GPIO 154	GPIO 154
128	GPIO 124	GPIO 124	167	GPIO 155	GPIO 155
129	GPIO 125	GPIO 125	168	GPIO 156	GPIO 156
130	GPIO 126	GPIO 126	169	GPIO 157	GPIO 157
131	GPIO 127	GPIO 127	170	GPIO 158	GPIO 158
132	GPIO 128	GPIO 128	171	GPIO 159	GPIO 159
133	GPIO 129	GPIO 129	172	GPIO 160	GPIO 160
134	GPIO 130	GPIO 130	173	GPIO 161	GPIO 161
135	GPIO 131	GPIO 131	174	GPIO 162	GPIO 162
136	GPIO 132	GPIO 132	175	GPIO 163	GPIO 163
137	GPIO 133	GPIO 133	176	GPIO 164	GPIO 164
138	GPIO 134	GPIO 134	177	GPIO 165	GPIO 165
139	GPIO 135	GPIO 135	178	GPIO 166	GPIO 166
140	GPIO 136	GPIO 136	179	GPIO 167	GPIO 167
141	GPIO 137	GPIO 137	180	GPIO 168	GPIO 168
142	GPIO 138	GPIO 138	181	GPIO 169	GPIO 169
143	GPIO 139	GPIO 139	182	GPIO 170	GPIO 170
144	GPIO 140	GPIO 140	183	GPIO 171	GPIO 171
145	GPIO 141	GPIO 141	184	GPIO 172	GPIO 172
146	GPIO 142	GPIO 142	185	GPIO 173	GPIO 173
147	GPIO 143	GPIO 143	186	GPIO 174	GPIO 174
148	GPIO 144	GPIO 144	187	GPIO 175	GPIO 175
149	GPIO 145	GPIO 145	188	GPIO 176	GPIO 176
150	GPIO 146	GPIO 146	189	GPIO 177	GPIO 177
151	GPIO 147	GPIO 147	190	GPIO 178	GPIO 178
152	GPIO 148	GPIO 148	191	GPIO 179	GPIO 179
153	GPIO 149	GPIO 149	192	GPIO 180	GPIO 180
154	GPIO 150	GPIO 150	193	GPIO 181	GPIO 181
155	GPIO 151	GPIO 151	194	GPIO 182	GPIO 182
156	GPIO 152	GPIO 152	195	GPIO 183	GPIO 183
157	GPIO 153	GPIO 153	196	GPIO 184	GPIO 184
158	GPIO 154	GPIO 154	197	GPIO 185	GPIO 185
159	GPIO 155	GPIO 155	198	GPIO 186	GPIO 186
160	GPIO 156	GPIO 156	199	GPIO 187	GPIO 187
161	GPIO 157	GPIO 157	200	GPIO 188	GPIO 188
162	GPIO 158	GPIO 158	201	GPIO 189	GPIO 189
163	GPIO 159	GPIO 159	202	GPIO 190	GPIO 190
164	GPIO 160	GPIO 160	203	GPIO 191	GPIO 191
165	GPIO 161	GPIO 161	204	GPIO 192	GPIO 192
166	GPIO 162	GPIO 162	205	GPIO 193	GPIO 193
167	GPIO 163	GPIO 163	206	GPIO 194	GPIO 194
168	GPIO 164	GPIO 164	207	GPIO 195	GPIO 195
169	GPIO 165	GPIO 165	208	GPIO 196	GPIO 196
170	GPIO 166	GPIO 166	209	GPIO 197	GPIO 197
171	GPIO 167	GPIO 167	210	GPIO 198	GPIO 198
172	GPIO 168	GPIO 168	211	GPIO 199	GPIO 199
173	GPIO 169	GPIO 169	212	GPIO 200	GPIO 200
174	GPIO 170	GPIO 170	213	GPIO 201	GPIO 201
175	GPIO 171	GPIO 171	214	GPIO 202	GPIO 202
176	GPIO 172	GPIO 172	215	GPIO 203	GPIO 203
177	GPIO 173	GPIO 173	216	GPIO 204	GPIO 204
178	GPIO 174	GPIO 174	217	GPIO 205	GPIO 205
179	GPIO 175	GPIO 175	218	GPIO 206	GPIO 206
180	GPIO 176	GPIO 176	219	GPIO 207	GPIO 207
181	GPIO 177	GPIO 177	220	GPIO 208	GPIO 208
182	GPIO 178	GPIO 178	221	GPIO 209	GPIO 209
183	GPIO 179	GPIO 179	222	GPIO 210	GPIO 210
184	GPIO 180	GPIO 180	223	GPIO 211	GPIO 211
185	GPIO 181	GPIO 181	224	GPIO 212	GPIO 212
186	GPIO 182	GPIO 182	225	GPIO 213	GPIO 213
187	GPIO 183	GPIO 183	226	GPIO 214	GPIO 214
188	GPIO 184	GPIO 184	227	GPIO 215	GPIO 215
189	GPIO 185	GPIO 185	228	GPIO 216	GPIO 216
190	GPIO 186	GPIO 186	229	GPIO 217	GPIO 217
191	GPIO 187	GPIO 187	230	GPIO 218	GPIO 218
192	GPIO 188	GPIO 188	231	GPIO 219	GPIO 219
193	GPIO 189	GPIO 189	232	GPIO 220	GPIO 220
194	GPIO 190	GPIO 190	233	GPIO 221	GPIO 221
195	GPIO 191	GPIO 191	234	GPIO 222	GPIO 222
196	GPIO 192	GPIO 192	235	GPIO 223	GPIO 223
197	GPIO 193	GPIO 193	236	GPIO 224	GPIO 224
198	GPIO 194	GPIO 194	237	GPIO 225	GPIO 225
199	GPIO 195	GPIO 195	238	GPIO 226	GPIO 226
200	GPIO 196	GPIO 196	239	GPIO 227	GPIO 227
201	GPIO 197	GPIO 197	240	GPIO 228	GPIO 228
202	GPIO 198	GPIO 198	241	GPIO 229	GPIO 229
203	GPIO 199	GPIO 199	242	GPIO 230	GPIO 230
204	GPIO 200	GPIO 200	243	GPIO 231	GPIO 231
205	GPIO 201	GPIO 201	244	GPIO 232	GPIO 232
206	GPIO 202	GPIO 202			

- 7) If you passed the 6th step, connect your green cable to 6th pin.



- 8) Open your BlueJ Editor. Create a new Project with a name, that you pick.
9) Click Porject→ Import.
10) Navigate to your Desktop and select PI4J folder. Then, click to import.
11) Create a new class names LedLight.
12) Write the code below to the LedLight class

```
import com.pi4j.io.gpio.GpioController;
import com.pi4j.io.gpio.GpioFactory;
import com.pi4j.io.gpio.GpioPinDigitalOutput;
import com.pi4j.io.gpio.PinState;
import com.pi4j.io.gpio.RaspiPin;

/**
 * This example code demonstrates how to perform simple state
 * control of a GPIO pin on the Raspberry Pi.
 *
 * @author Robert Savage
 */
public class ControlGpioExample {

    public static void main(String[] args) throws InterruptedException {

        System.out.println("<--Pi4J--> GPIO Control Example ... started.");

        // create gpio controller
        final GpioController gpio = GpioFactory.getInstance();

        // provision gpio pin #01 as an output pin and turn on
```

```

    final GpioPinDigitalOutput pin = gpio.provisionDigitalOutputPin(RaspiPin.GPIO_01,
"MyLED", PinState.HIGH);

    // set shutdown state for this pin
    pin.setShutdownOptions(true, PinState.LOW);

    System.out.println("--> GPIO state should be: ON");

    Thread.sleep(5000);

    // turn off gpio pin #01
    pin.low();
    System.out.println("--> GPIO state should be: OFF");

    Thread.sleep(5000);

    // toggle the current state of gpio pin #01 (should turn on)
    pin.toggle();
    System.out.println("--> GPIO state should be: ON");

    Thread.sleep(5000);

    // toggle the current state of gpio pin #01 (should turn off)
    pin.toggle();
    System.out.println("--> GPIO state should be: OFF");

    Thread.sleep(5000);

    // turn on gpio pin #01 for 1 second and then off
    System.out.println("--> GPIO state should be: ON for only 1 second");
    pin.pulse(1000, true); // set second argument to 'true' use a blocking call

    // stop all GPIO activity/threads by shutting down the GPIO controller
    // (this method will forcefully shutdown all GPIO monitoring threads and scheduled tasks)
    gpio.shutdown();

    System.out.println("Exiting ControlGpioExample");
}
}

```

13) Compile your class

14) Right click on your class and run the main method

Your light will turn on. Then, turn off for 2 seconds and then turn on again.