Controlling LED Over Bolt Cloud

In the previous lesson, we have learned the LED connection with the Bolt. Now we will learn how to control the LED using Bolt Cloud.

Imagine you are watching a movie on your laptop and you want to turn off the light of the room to get the feel of a movie hall. What if you can do the same by just one click while sitting on your bed. Sound's interesting!!

So in this lesson, we will learn how to write code to control the LED.

At this point, we believe that you guys are familiar with Bolt cloud i.e how to create a product and link it to the bolt device. In case you don't know, then you can refer 'Building your first IoT sensor project' lesson.

Step 1: Go to cloud.boltiot.com and create a new product. While creating the product, choose product type as Output Device and interface type as GPIO. After creating the product, select the recently created product and then click on configure icon.

Step 2: Move to the code tab and write the following code to control the LED.

In the header, we will include a javascript file which has some pre-defined function like DigitalRead, digitalWrite etc already hosted on our Bolt Cloud.

Script to be included is given below:

```
<script type="text/javascript"
src="https://cloud.boltiot.com/static/js/boltCommands.js"></script>
```

Note: If you want to see the source code of the same open https://cloud.boltiot.com/static/js/boltCommands.js link in the browser.

Now the next step is to set the API key and device name. Syntax for the same is given below:

```
<script type="text/javascript">setKey('{{ApiKey}}','{{Name}}');</script>
```

Note: API key and Device name will be auto-initialized by Bolt cloud. You don't have to replace the device name and API key in the above code.

Now inside the `<body>` tag you have to place two buttons, one for turning the LED on and other to turn it off. The syntax for the same is given below:

```
<body>

<center>

  <button >ON</button>

  <button >OFF</button>

</center>

</body>
```

In the above code, we have place 2 buttons and put the text as 'ON' and 'OFF' respectively. You can change the text as per your choice.

Note: We have put both the buttons inside the `<center></center>` tag to make the button align center.

Now we have to make these 2 buttons clickable. To do so, we have to call a javascript function named as `onclick()` which you have already read in lesson 'Creating your functions in Javascript'. Inside the onclick function, we are calling a function named `digitalWrite()`.

```
<button onclick="digitalWrite(0, 'HIGH');">ON</button>

<button onclick="digitalWrite(0, 'LOW');">OFF</button>
```

`digitalWrite()` function has two parameter. The first parameter is pin number and the second parameter state.

To turn the LED ON, the state would be HIGH and to turn it OFF state would be LOW.

Note: In the above example, the first parameter has value 0 which means LED is connected to pin 0. You can change this value based on your connection where have you connected the LED.

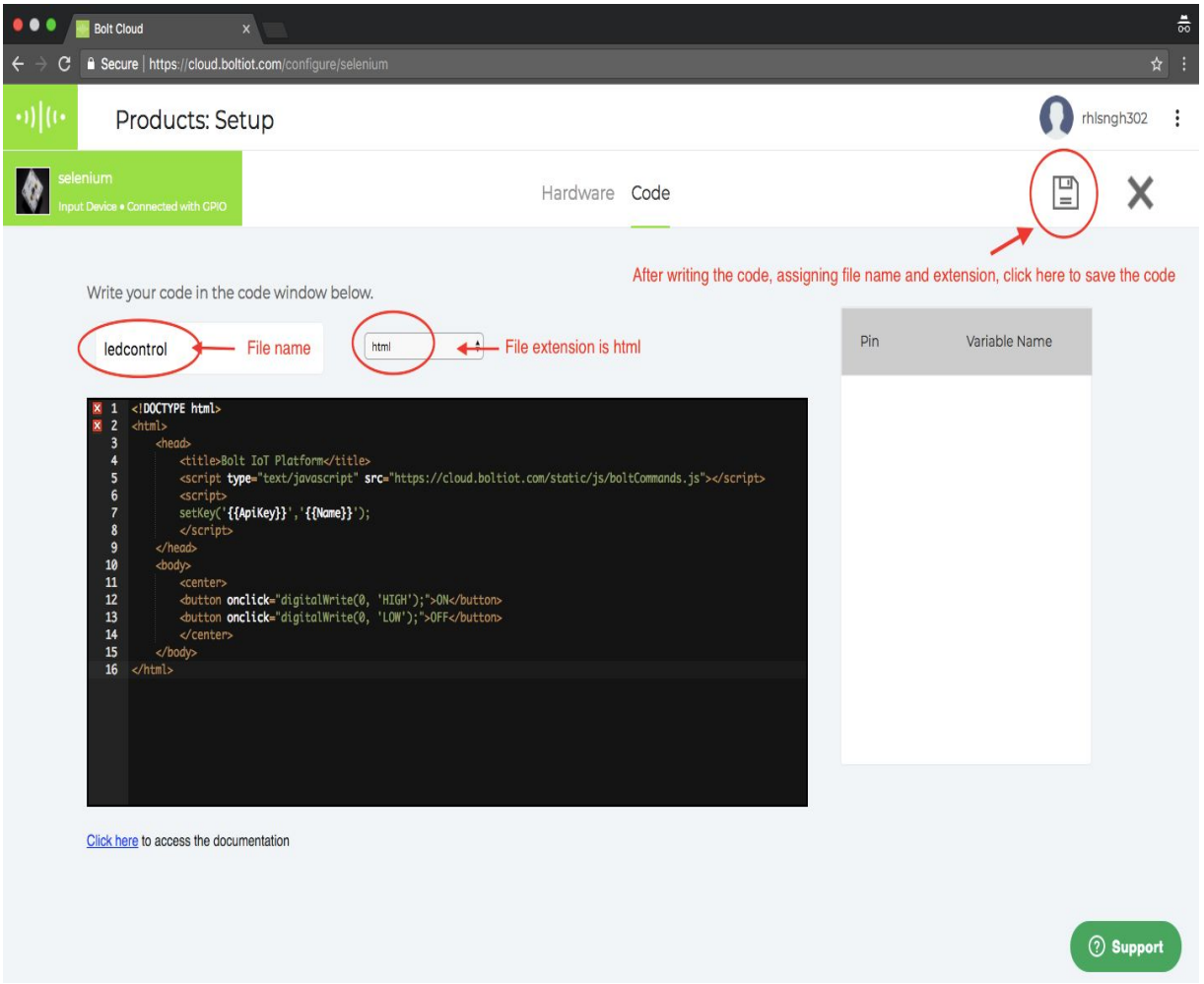
Below is the complete code:


```
<!DOCTYPE html>

<html>

    <head>

        <title>Bolt IoT Platform</title>

        <script type="text/javascript"
src="https://cloud.boltiot.com/static/js/boltCommands.js"></script>

        <script>

        setKey('{{ApiKey}}','{{Name}}');

        </script>

    </head>

    <body>

        <center>

        <button onclick="digitalWrite(0, 'HIGH');">ON</button>

        <button onclick="digitalWrite(0, 'LOW');">OFF</button>

        </center>

    </body>
```



```
</html>
```

Step 3: Once you have written the complete code in the editor, give the file name as ledcontrol and in the drop-down select the file extension as html. Below is the screenshot how it looks after this step.



Step 4: Now click on save icon to save the code. Now go back to the dashboard by clicking on 'X' icon.

Step 5: In the products tab, select the product created and then click on the link icon. Select your Bolt device in the popup and then click the 'Done' button.

Step 6: Now click on view this device icon to view the page that you have designed. Below is the screenshot of the final output.

Now click on ON button, it will turn the LED on. Similarly, clicking on OFF button will turn LED off.

Is it working as expected? Awesome!! Now as an assignment connect the LED to different pins and try to turn it ON/OFF.

Troubleshooting:

In case your LED is not turning ON/OFF below are some of the steps to troubleshoot what went wrong:

1: Go back to products configuration page and check whether the code that you have written is properly saved or not. If the code is not present, then again copy the code from above and paste in the editor and save the code.

2: Check your connection whether the LED is properly connected or not. Refer the previous lesson for the circuit connections.

3: Check on which pin the LED is connected. Make sure you have passed the same value in `digitalWrite()` function as the first parameter.

4: Make sure your API key is enabled. You can check the same by clicking on API icon on the left side of your dashboard.

That's it. In the next lesson, we will learn how to build Safety Alert system using Bolt.

