**Step 7: Troubleshooting**

While setting up your project and following the steps you may encounter many weird situations. Here is the list of some common errors that you may get when working with IR sensor.

**Getting FFFFFF when pressing a key**

When pressing a button you may notice that most of the time it reports a code like FFFFFF. This happens when you press a button and hold it for a while, even for a short period of time. The scenario is that when you press the button initially, IR remote sends the button code and as long as you hold the button, it repeats sending FFFFFF which means that user is still pressing the button reported recently. That would be OK. You can just omit them. The actual code is the one you got right before FFFFFF on the Serial Monitor.

**IR Sensor doesn't react at all and seems it's getting warm!**

Cut the power!!! If you're sure that the key code logger sketch is correct, then the problem maybe due to the wrong setup of your wires. The scenario that happened to me was that for my IR module (the one attached to the board) I had connected the VCC and GND in the opposite way (due to not using a proper colors for my hookup wires). By doing so the sensor component burned and a nice blue smoke raised. I bought a pack of raw IR sensors and tried to replace it and now it works like a charm :). Unfortunately I did the same mistake when I was testing with the raw IR sensor and this time nothing happened except that the sensor got warm. So always check the circuit before turning on the power!

**Sometimes the sensor detects a code that I've never seen before**

This is one of the most common issues. It's most likely due to one of the following reasons:

* You're not pointing your IR remote directly toward the sensor

This will lead to having some new codes (mostly longer codes) that you've never received before and normally doesn't match with the length of the codes you already have. So remember to always point the remote towards your sensor.

* You're using a cheap IR remote (like the one I used in this tutorial)

Instead of using a cheap unpredictable remotes, you can try the same scenario using your TV or DVD Player remote control or an IR remote of any devices you have. They normally have a good signal/hardware quality (and of course are more expensive) and based on my experience, they normally work well even if you don't point your remote directly toward the sensor.

**How do I know if a code that is logged is not a garbage**

The codes are normally presented in hexadecimal format. If you convert them to the corresponding binary value, you'll notice that the binary representation of the last byte is the negation of the byte comes before that. If you know this, you can do this check in your code to make sure that the code you received is actually a valid one or not. As an example, if you got FF7A85 its binary representation would be as below:

1111 1111 0111 1010 1000 0101

From left to right, each batch of 4 digits are representation of a character in the original hexadecimal number. As you can see, the batch corresponding to 7 is 0111 and the batch corresponding to 8 is 1000 which is the exact negation of it. By negation I mean all 0s would be 1s and all 1s would be replaced by 0s. The same is true for the next one which is A (1010) and 5 (0101).

**Step 8: What to Do Next?**

Now it's your turn. It's all up to your imagination to see what you can do with this little simple sensor in your hand. Here are some ideas to begin with:

* Use the IR remote control of one of the devices you have at home (TV, Stereo, etc.) and try to use it in your Arduino project
* Try to turn on all LEDs at once by pressing a key and then turn them off using another key
* Use Up/Down button of the remote to turn LEDs on/off one by one until all of them turn on/off
* Create a traffic light using LEDs and control it using your remote
* If you have a small DC motor at hand, try to start/stop or change its rotation direction via IR remote
* You can use your TV remote to control your robot or enable/disable some sensors/actuators on it

Let me know on comments, what would you do (or you've already done) using IR remote.