**My HTTPS url Expires!**

Oh no! You will notice that when you fire up ngrok, that after a period of time, your https url would have expired. What this means is that if you had set everything up for your TV, after about 12 hrs or so, the skill may not work as the endpoint configuration in the Amazon Developer Portal for the skill will no longer be valid.

So what are we going to do about that??

Well for ngrok, we just ran it without creating an account. Signing up for an ngrok account gives you the added benefit of having a longer lived https endpoint. The account is free and this is one of the added benefits.

Here is the link to setup your ngrok account

<https://dashboard.ngrok.com/user/signup>

Once you set up your account, you can setup your authtoken as described in the link below:

<https://ngrok.com/docs#authtoken>

This will enable you to get a dashboard where you can review your https links and tunnels and they will persist longer!

**All those wires! It's a mess!**

So we quickly prototyped our circuit and had jumper wires everywhere. That's fine to get things up and working, but for a more robust app, you will want to enclose everything in a case or a box.

How you do this is up to you. You can put your circuit on perf board and solder all the connections, you can create a box to house your IR Receiver and Transmitter (for example a custom box using a 3D Printer or just get something that fits and serves as a good housing or encasement).

You can also put your Raspberry Pi in a case and house everything together. That's the great thing about making and prototyping, once you get things working, it is time to pretty it up, make the connections more sturdy and you have the flexibility to be creative and accomplish that however you want.

Although soldering is beyond the scope of this course, there are many online resources that show how to solder if you are not familiar with the process.

**More remote functions!**

So in our project we did the basics of volume control, channel control and power. This is about 90-95% of what we use a remote for. That is why I accounted for those functions in the project. However, there are additional buttons or functions that we might want to support.

Examples include:

* Switching the input from antenna/cable to HDMI
* Listing the TV guide or menu and viewing the menu
* Playback/Pause/Record on remotes that connect to a DVR
* Other menu controls for a smart tv to launch apps like Netflix, Hulu etc

The point is that now you know how to program the functions and store the IR signal for any button on your remote, you can customize the remote to add in any functionality you want. You simply have to add in an Alexa Intent to handle what you need and map this to the appropriate function in your Skill Handler.

You now have the basic knowledge and tools to take the design to the next level.