Alexa Roku

Using a Raspberry Pi for Home Automation Part 9 Alexa Roku

Alexa & Roku Integration

Six Parts:

1.) Download the files you will need.
2.) Setup Amazon AWS Lambda account
3.) Setup Amazon Developer Alexa skills account
4.) Setup Router “DSL/Cable Modem” for port forwarding
5.) Setup Raspberry Pi
6.) Setup Node Forever

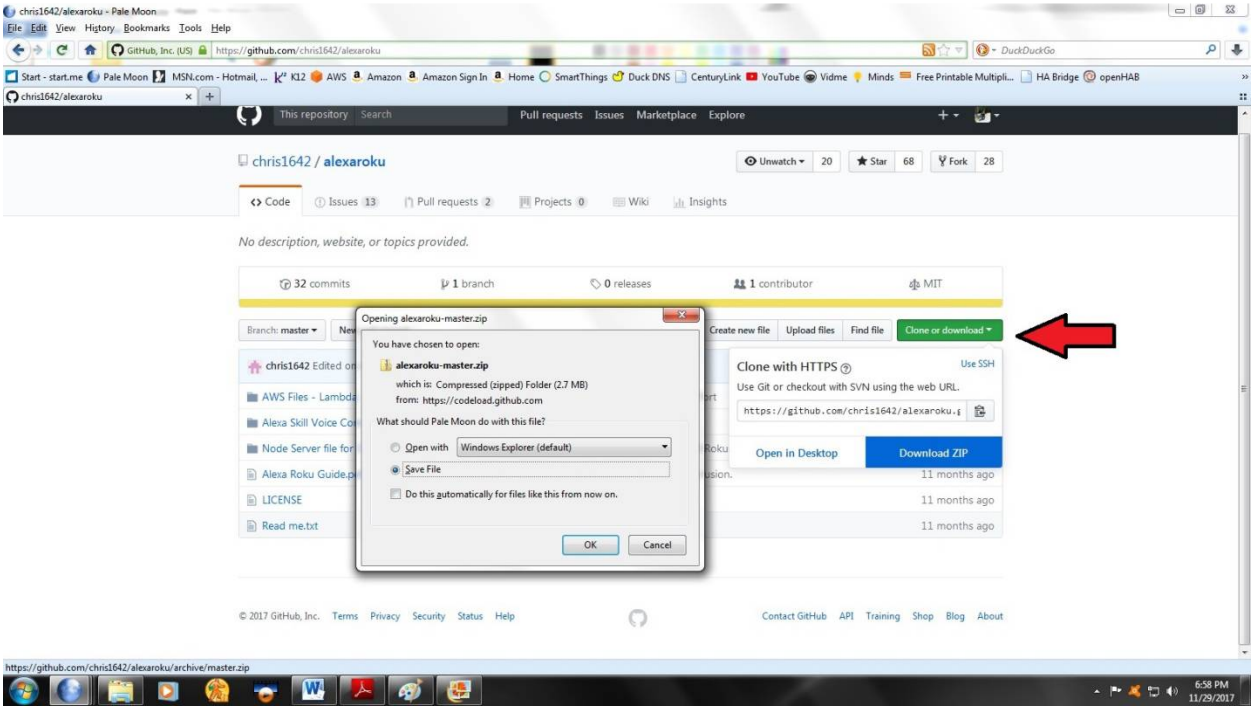
Part 1)

First from your computer download the files you will need later. You can find it at one of the following links.

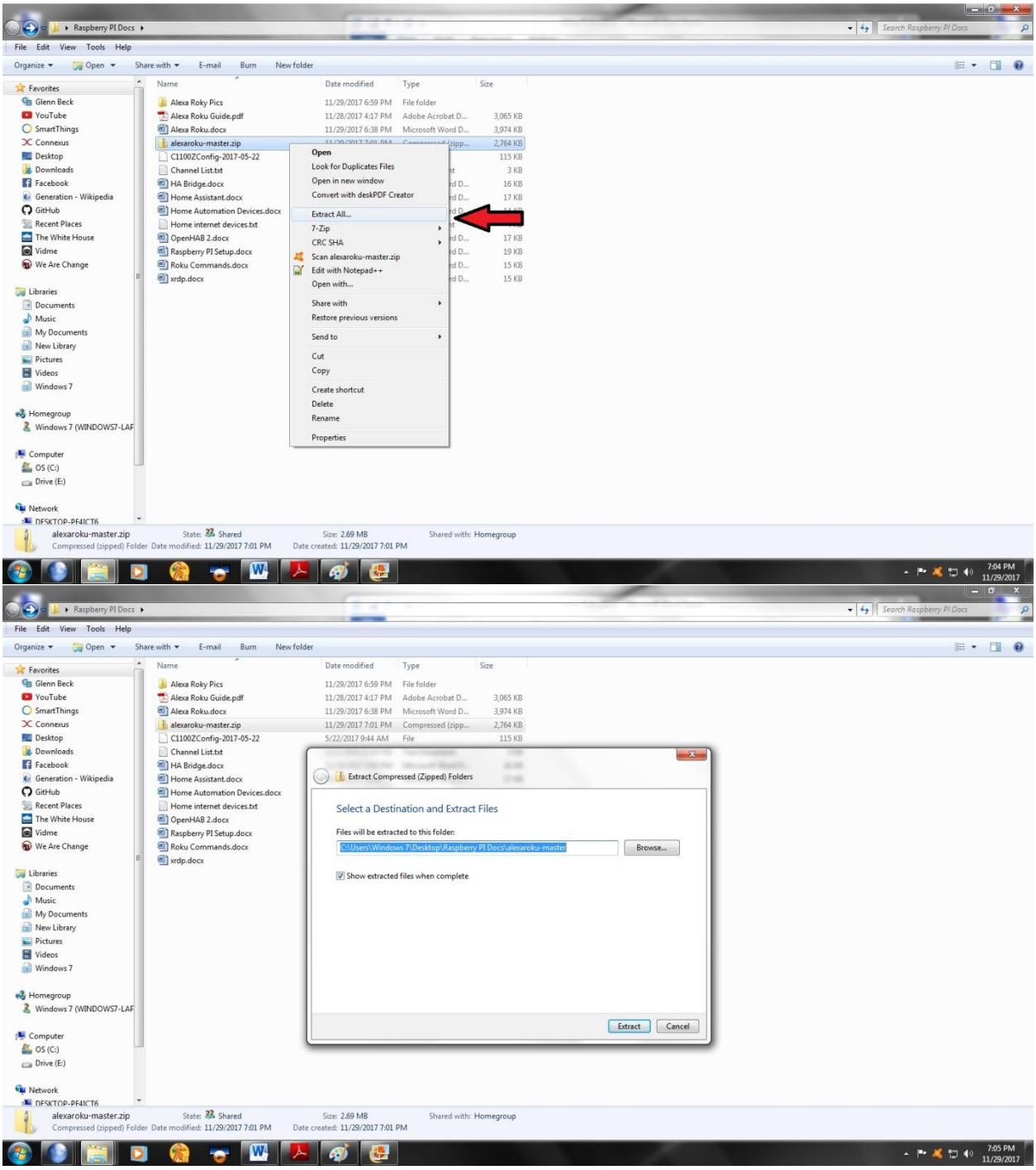
You can use the files created by Julian Hartline AKA julianh2o
https://github.com/julianh2o/RokuAlexaLambdaSkill

Or you can use the files created by Chris AKA chris1642
https://github.com/chris1642/alexaroku

I prefer the one by Chris. Click the “Clone or Download” button.



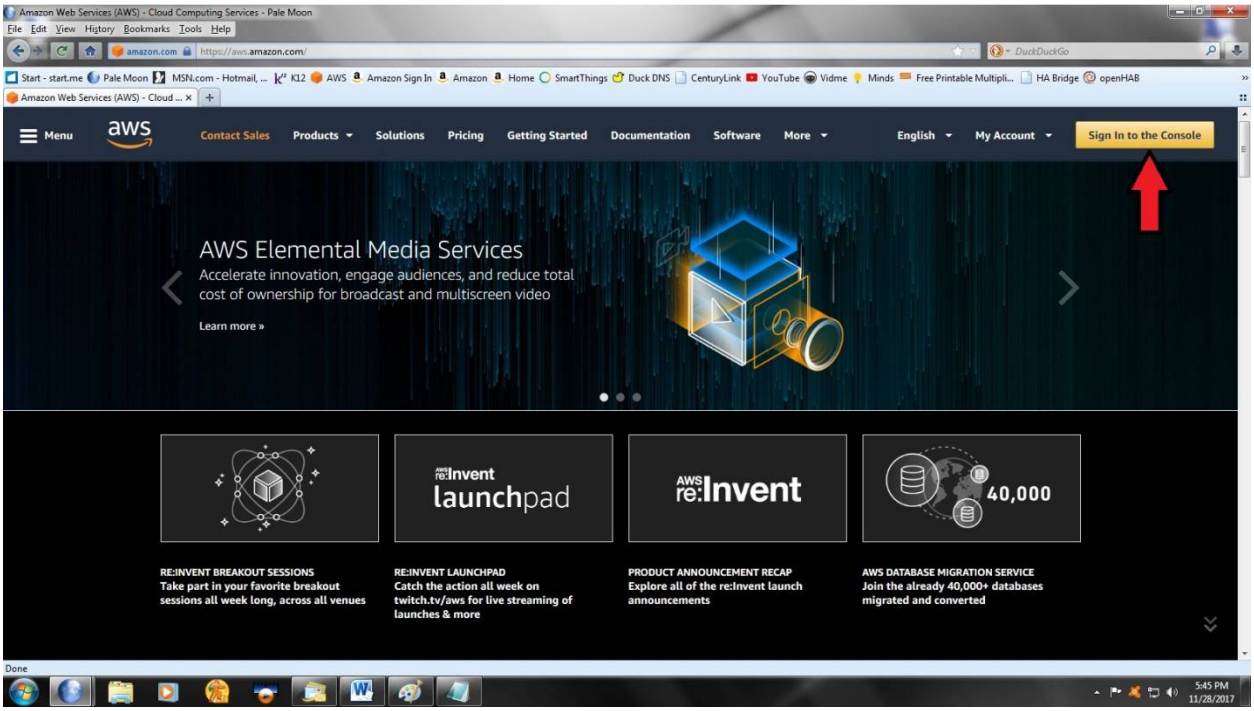
Save the file to your computer, but don't forget where you put it. Now go to where you downloaded it to, and unzip it.



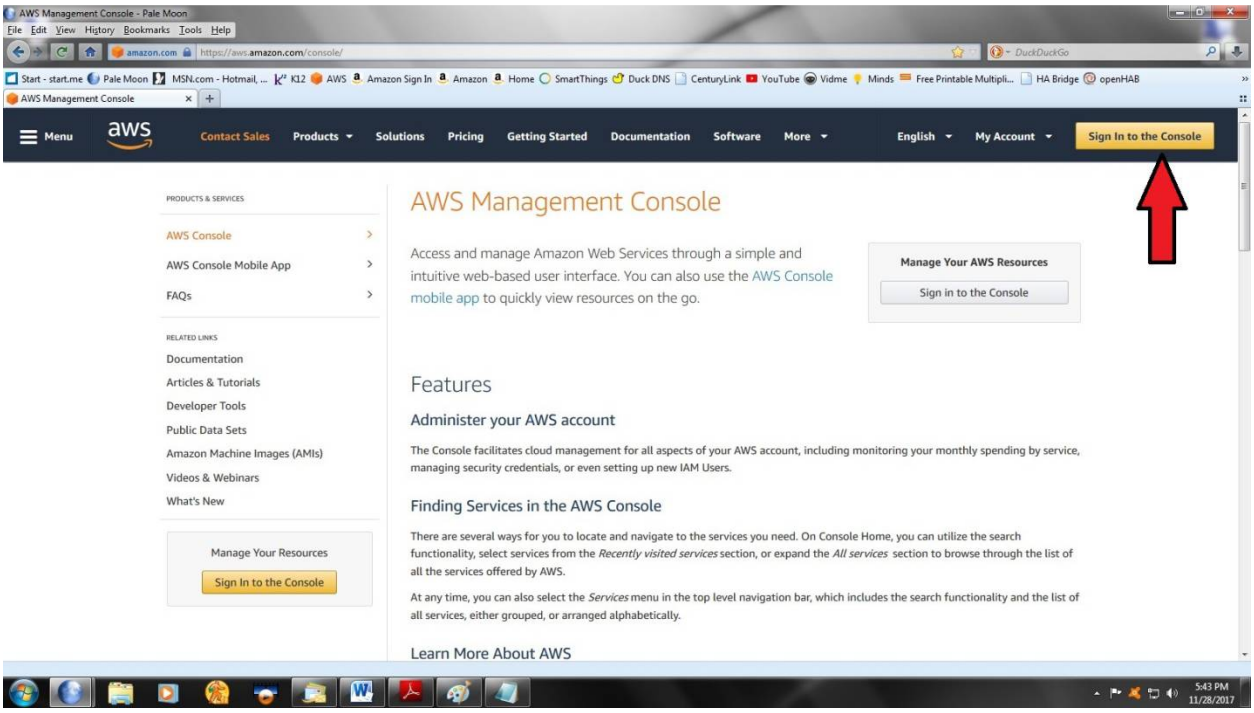
Don't forget where this folder is, you will need the files contained in it later.

Part 2) Setup an Amazon AWS Lambda account (free for our use)

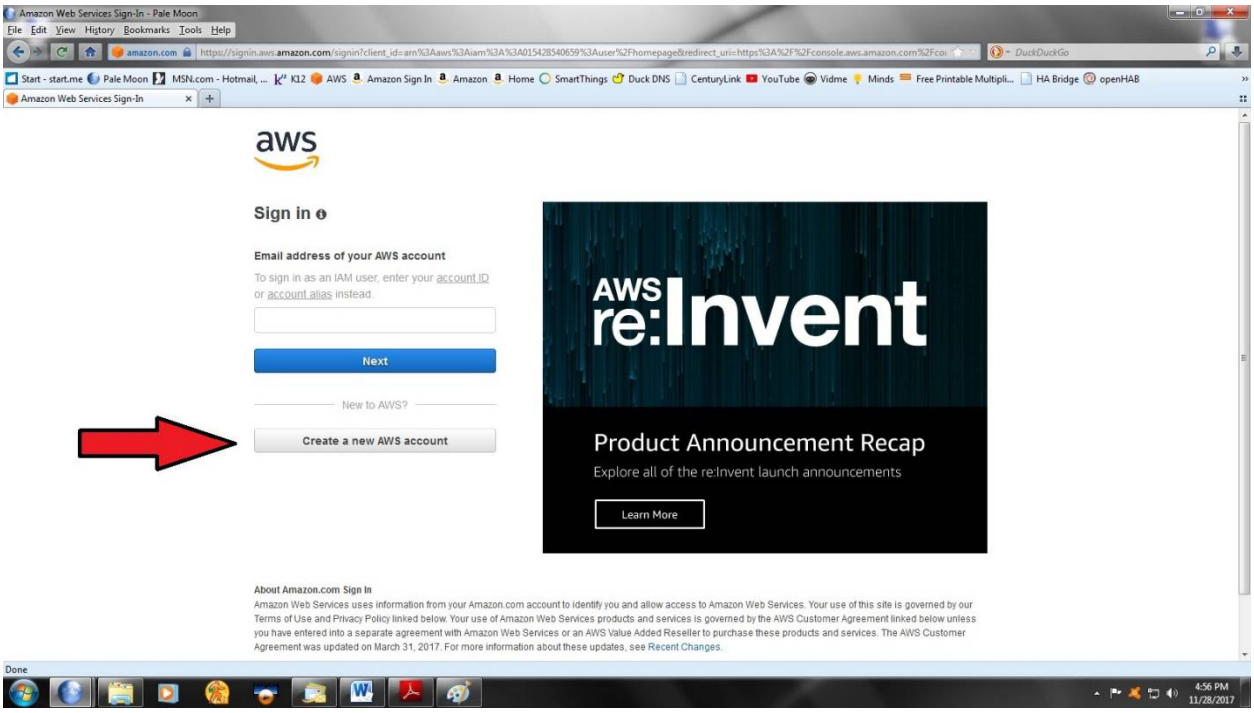
https://aws.amazon.com



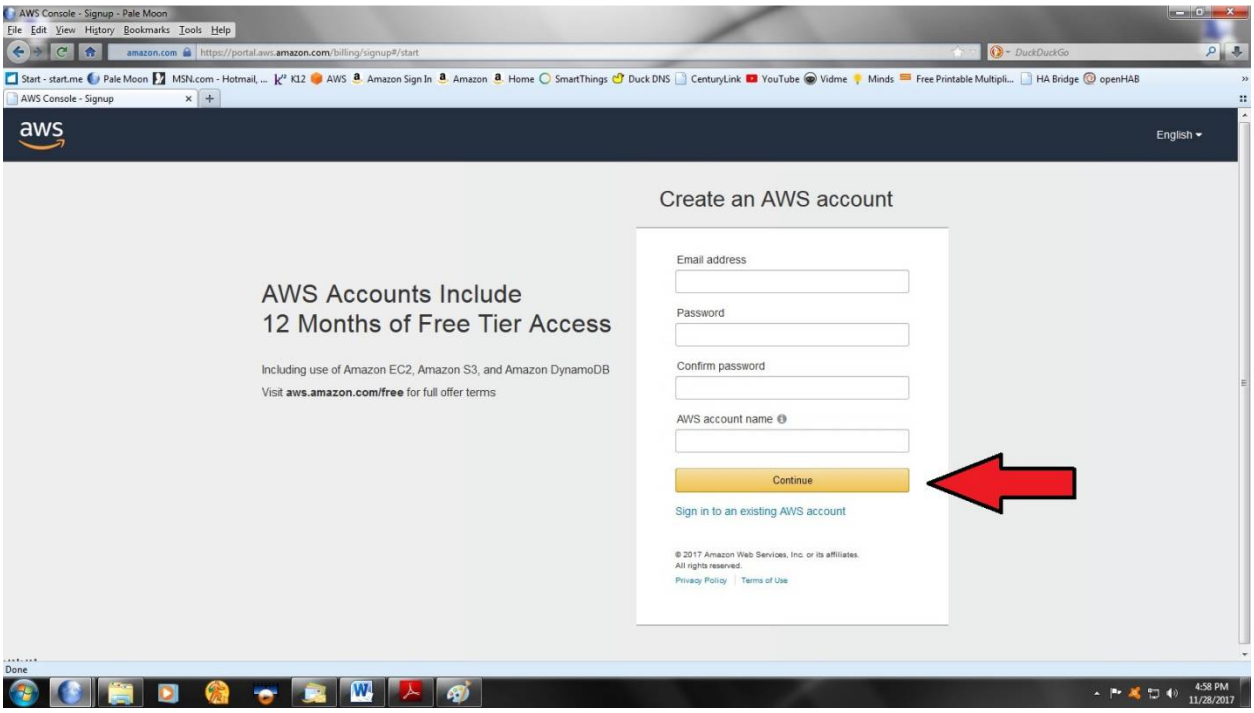
Click on the “Sign In to Console” button. (Upper right corner)



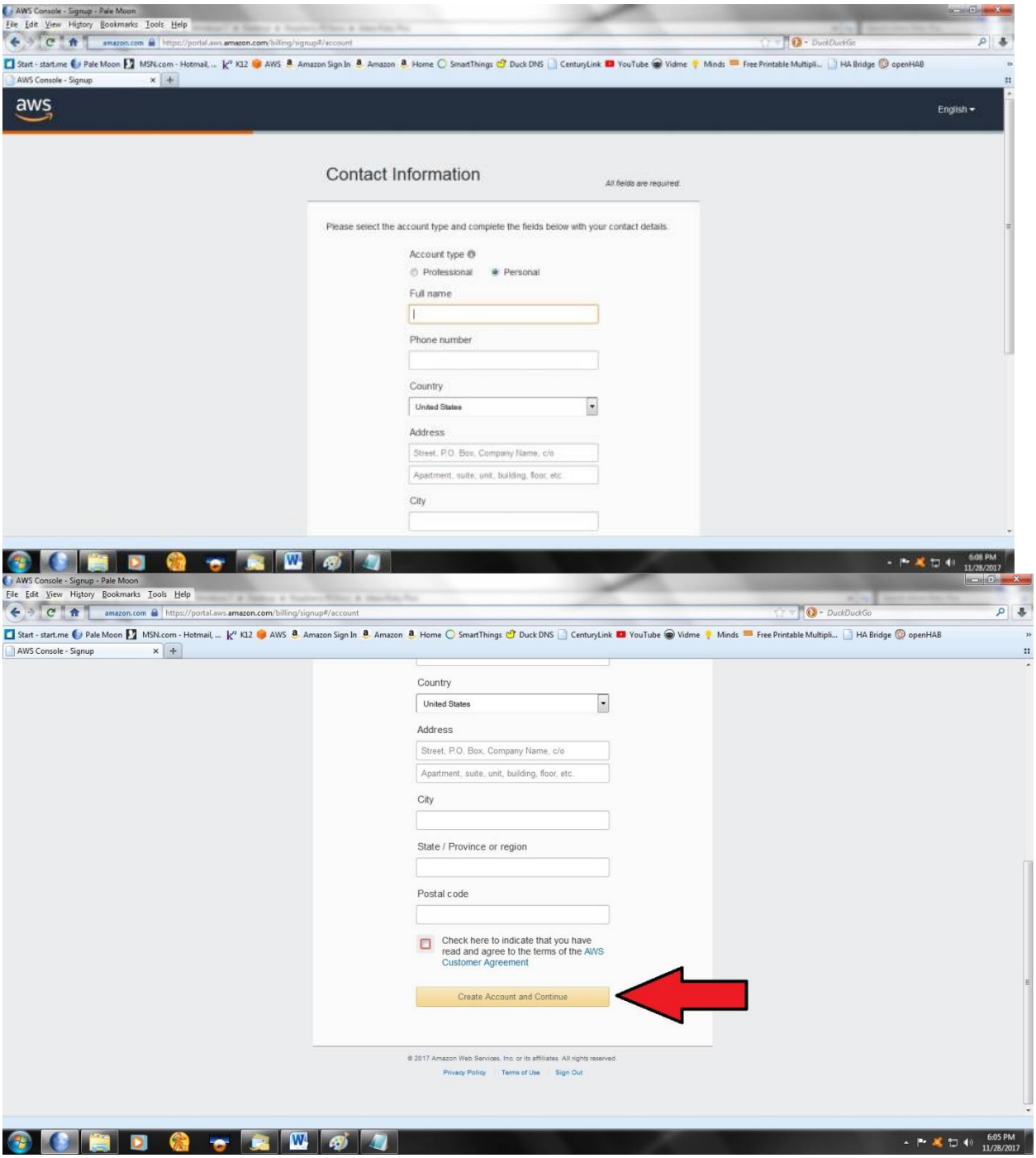
Click on the “Sign In to Console” Button again if it shows up. (Upper right corner)



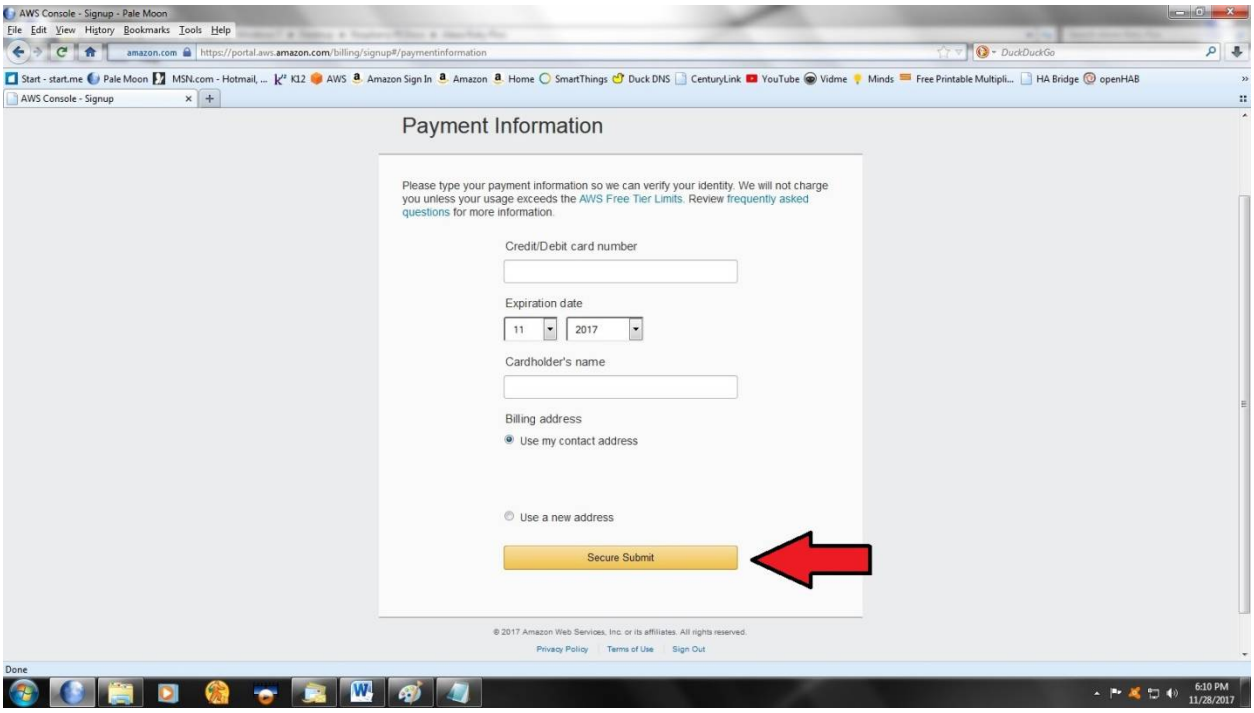
Click the “Create a new AWS account” button.



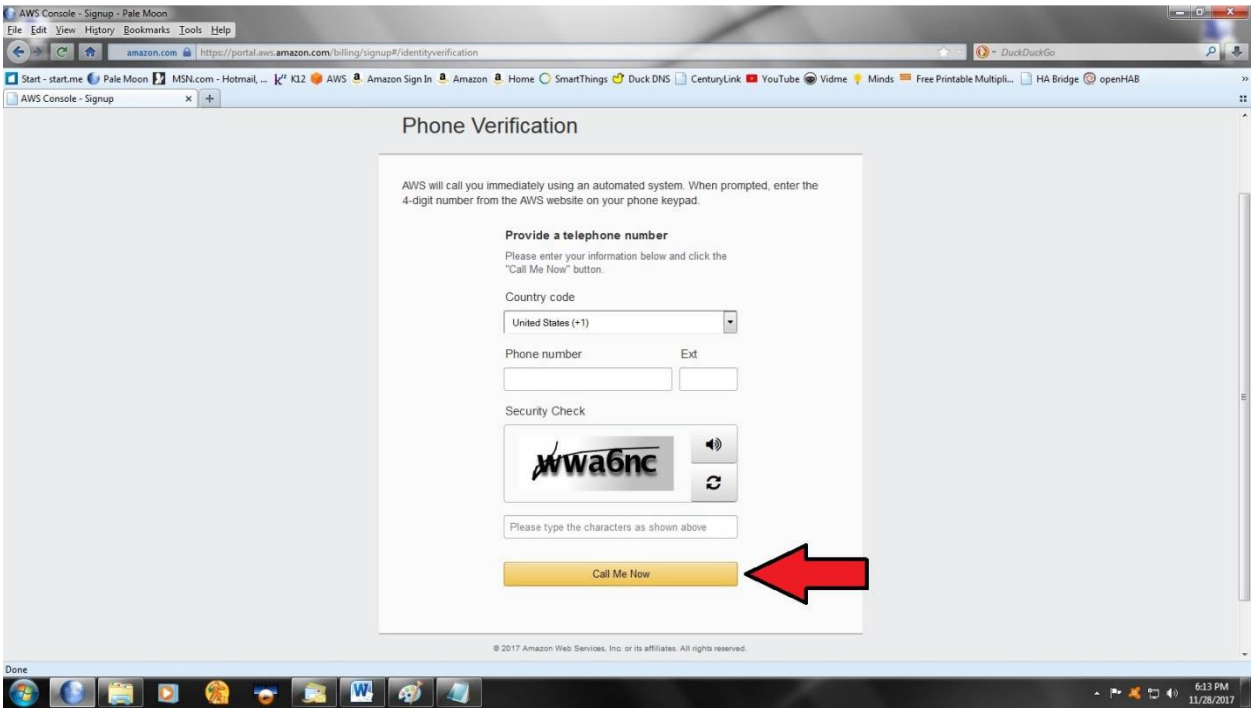
Enter you E-mail address, a password, and re-type the password. Next you can enter in an AWS account name, I believe this optional. Then click the “Continue” Button.



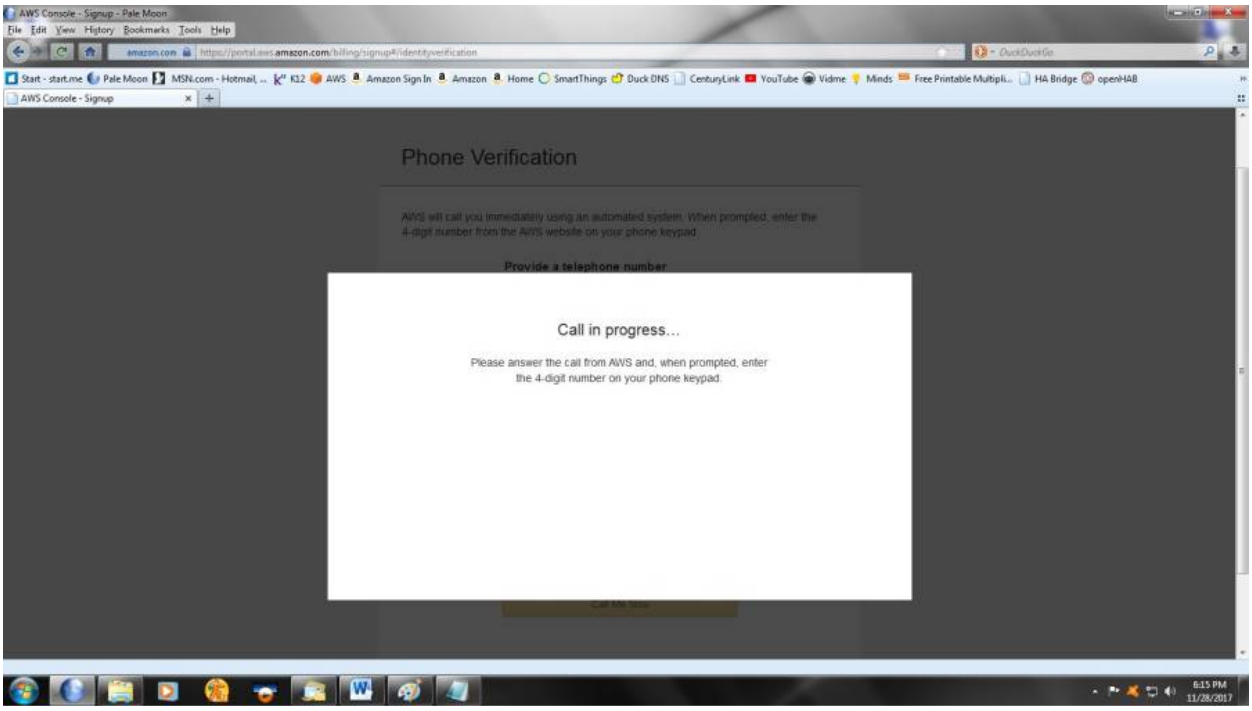
Next you will be asked for your Full name, Phone number, Country, Address, City, State, and postal code. Put a check in “check here to Indicate that you have read and agree to the term of the AWS Customer Agreement” Box and click the “Create Account and Continue” Button.



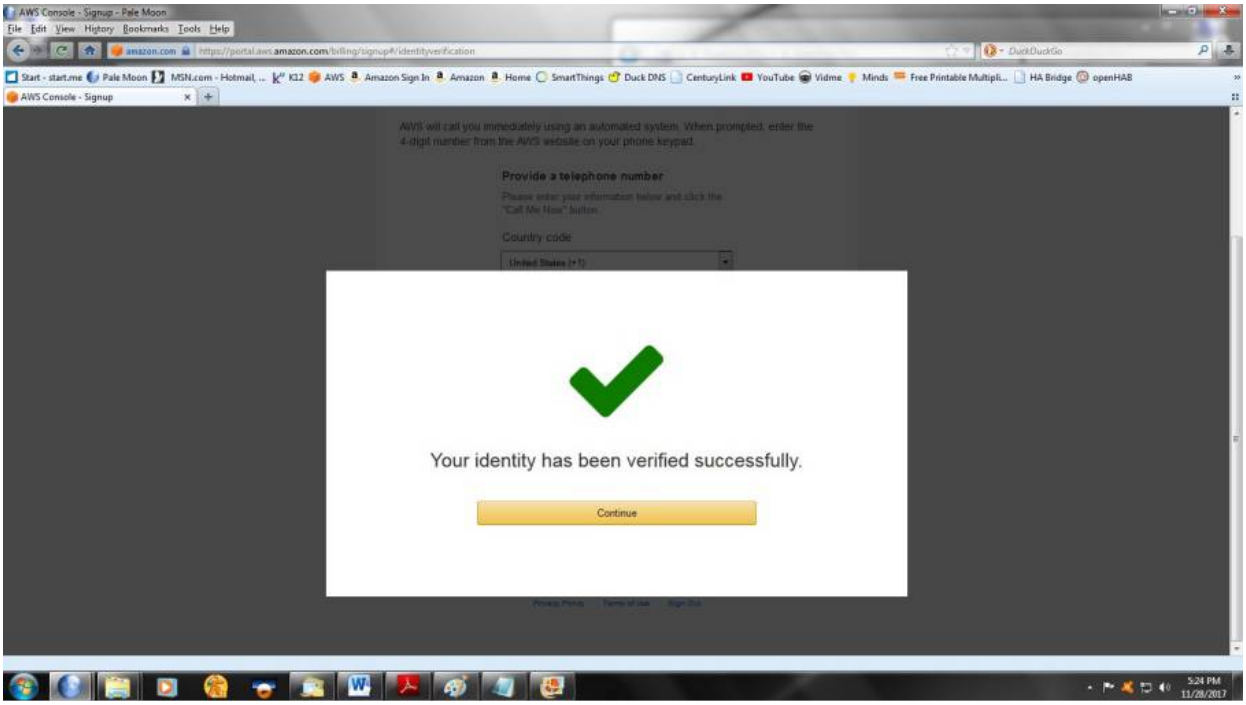
Next you will be asked for credit card information for verification. Click the “Secure Submit” at the button.



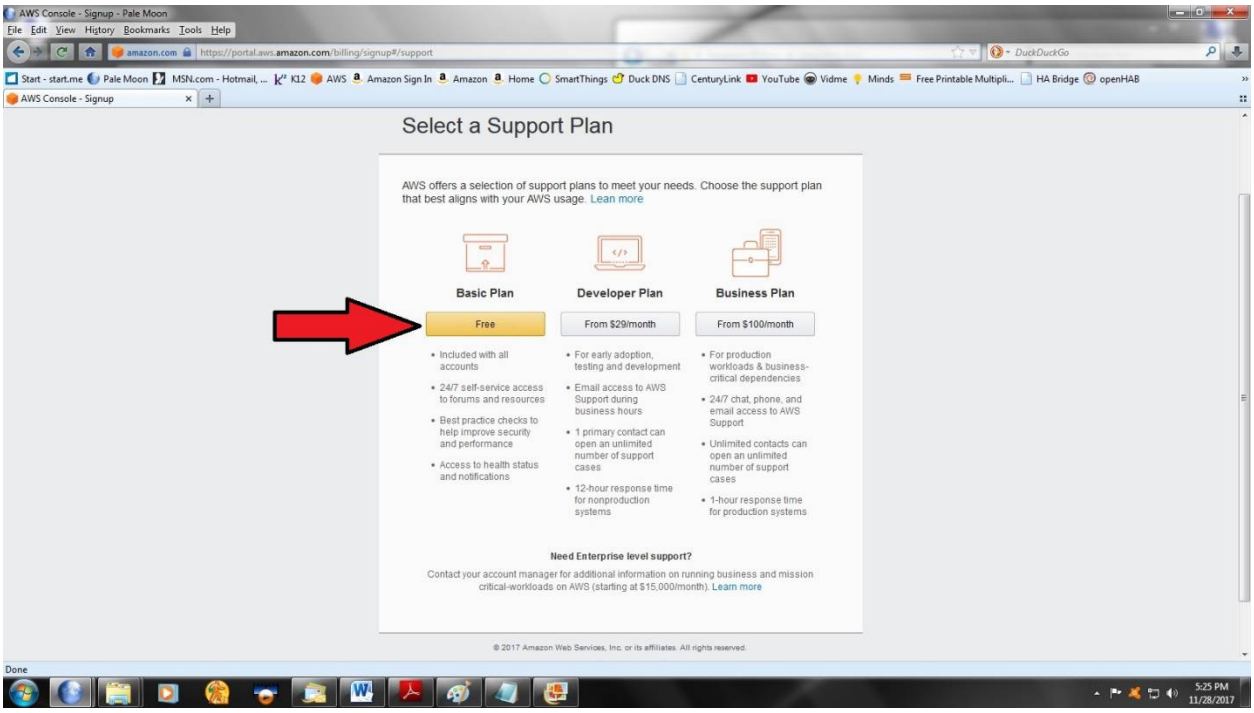
Next you will get a “Phone Verification” page. Enter your phone number And the Security Check, and click on the “Call Me Now” button.



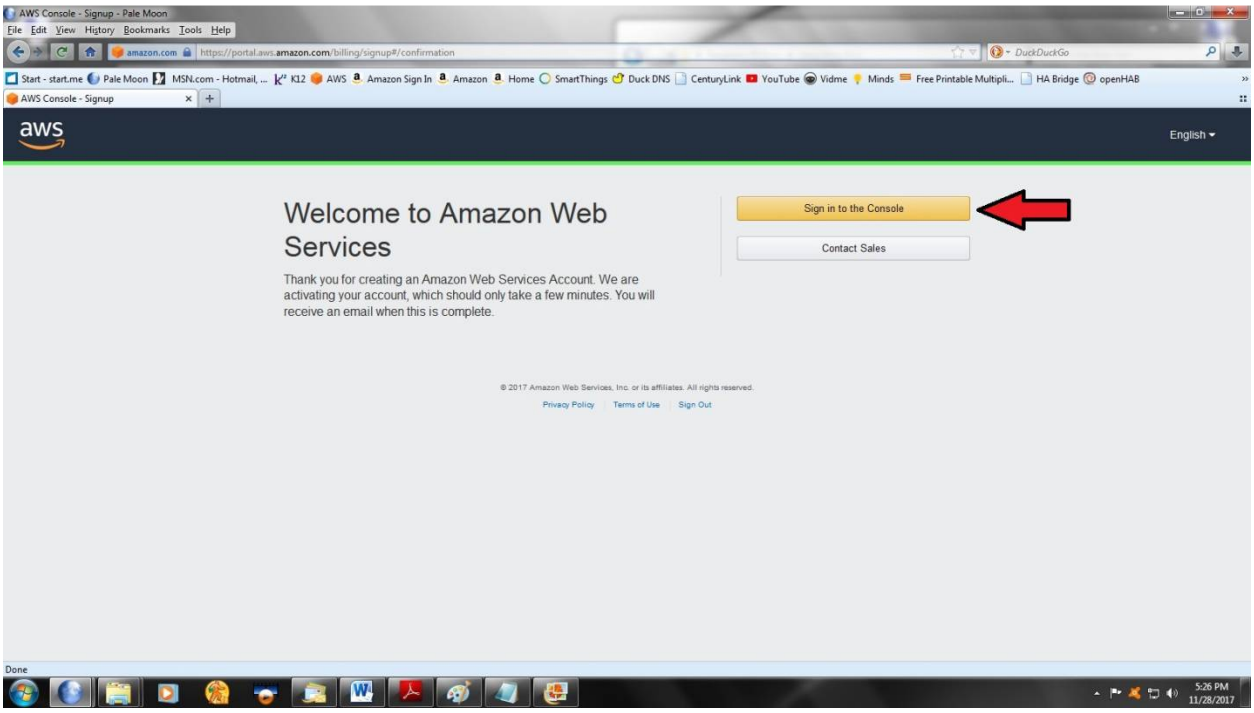
You will get a “Call in Progress” Popup with a four digit number.



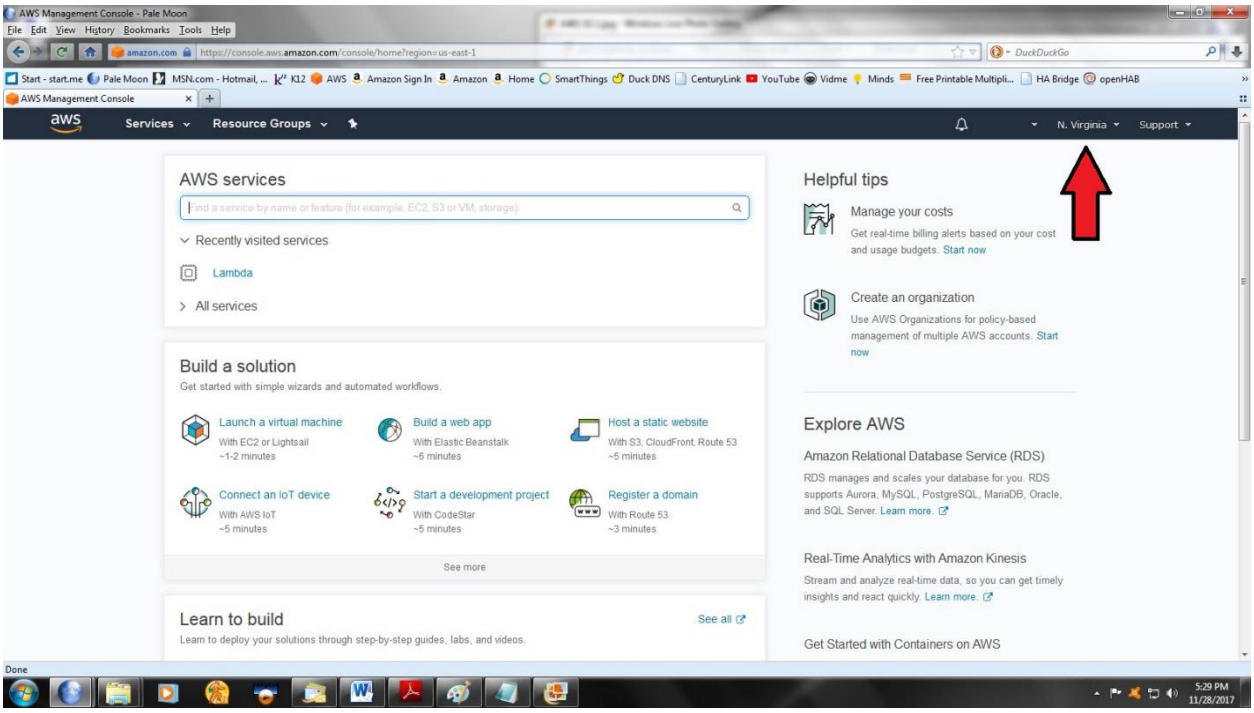
You will get a call. Once you give the four digit number you will be verified. Click “Continue” to go to the next page.



Next you will get a page asking you to select a support plan. Choose the “Basic Plan”

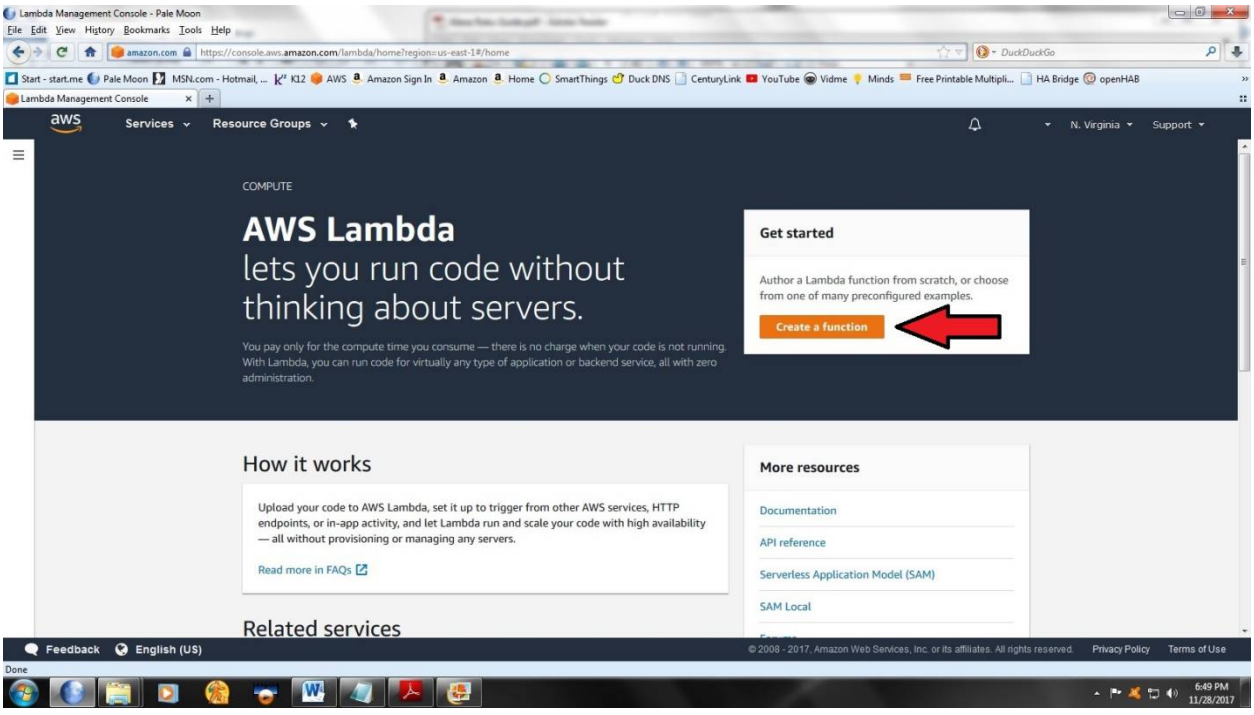


You will now get a “Welcome to Amazon Web Services” message. Click the “Sign in to the Console” Button.

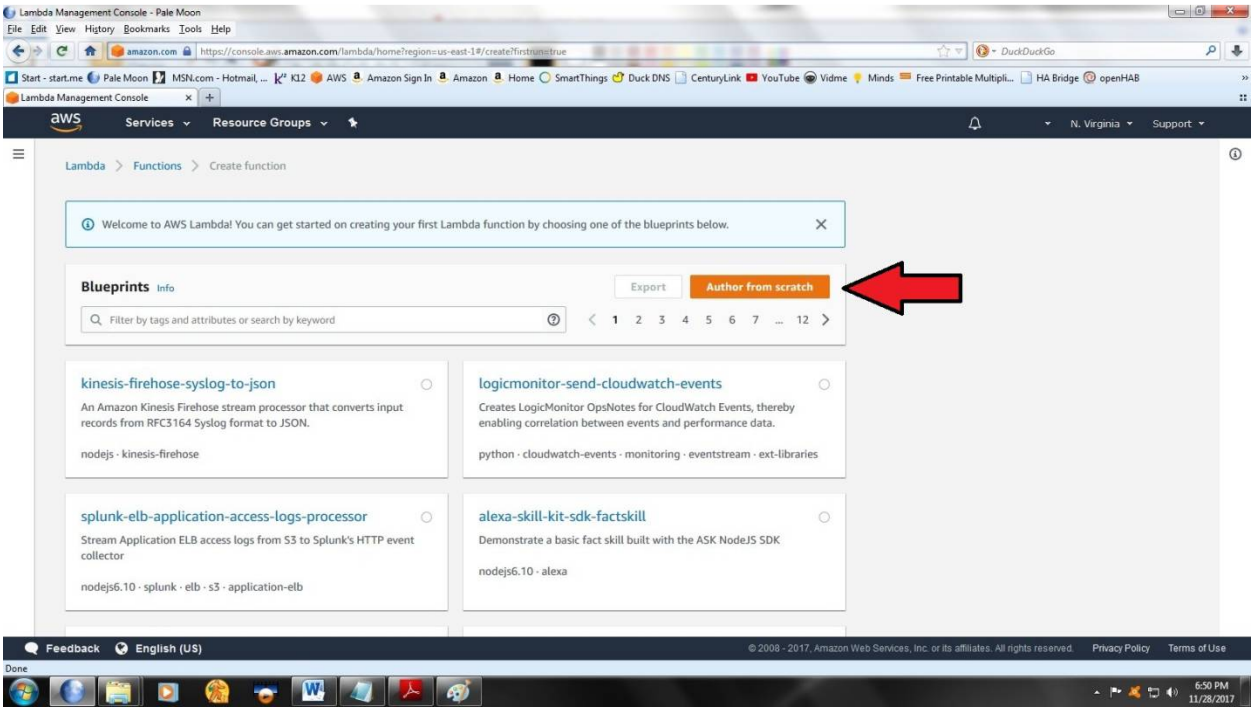


You will be presented with another page, and in the upper right, you will see, next to your name, a city (possibly Oregon) you need to change this to US East (N. Virginia) if it isn't already there.

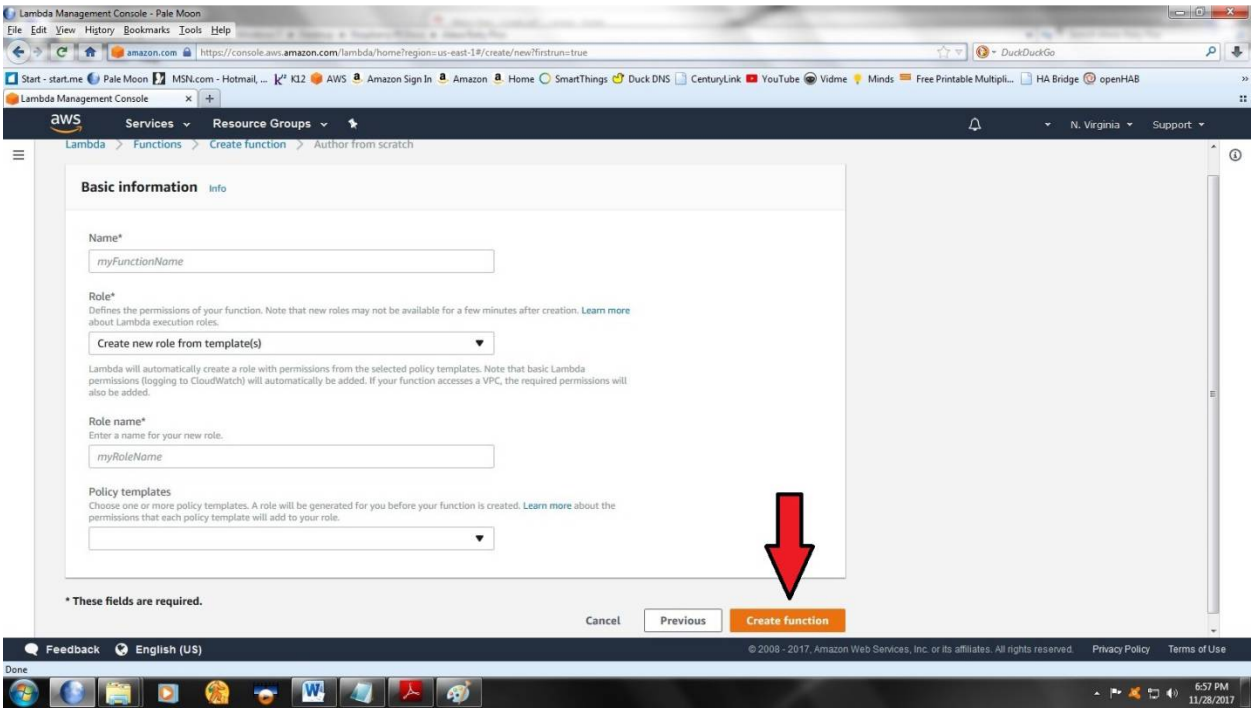
In the search bar, type Lambda and select the first choice.



When the next page comes up, click on the "Create a Function" button.



When the next page comes up, click on the “Author from scratch” button



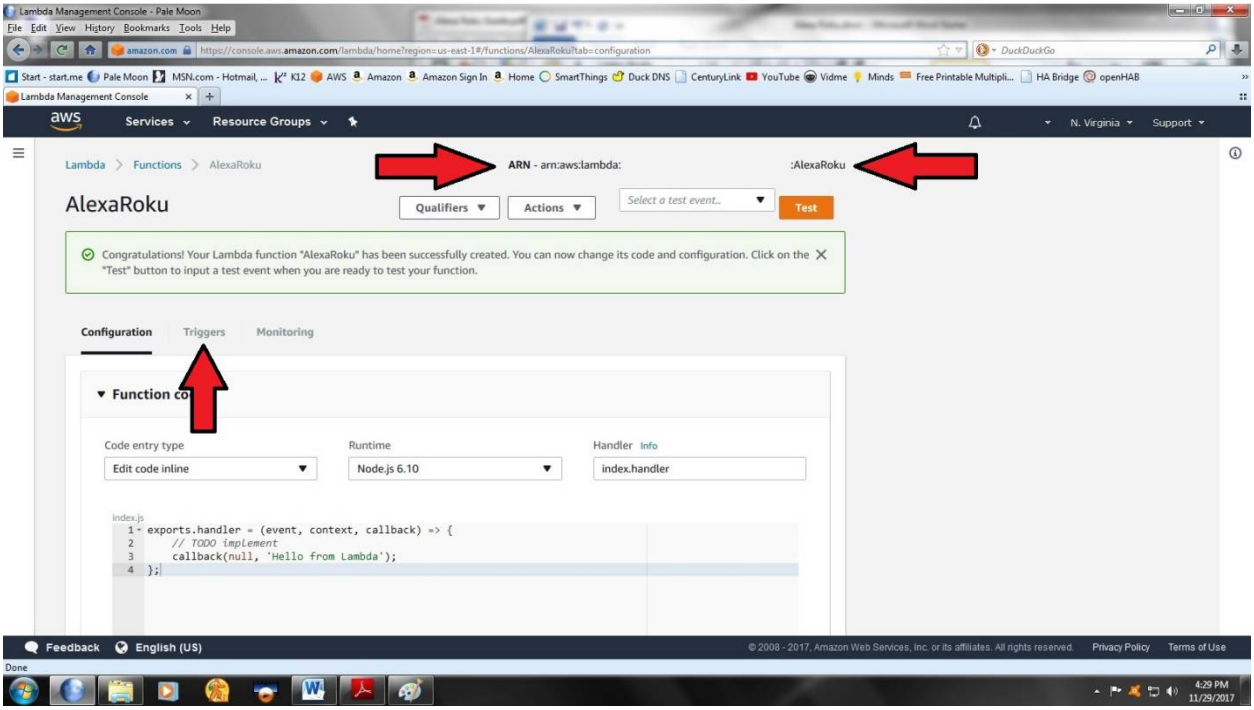
You will get a page called Basic information

Name = AlexaRoku

Role = Create a custom role
Role Name = AlexaRoku

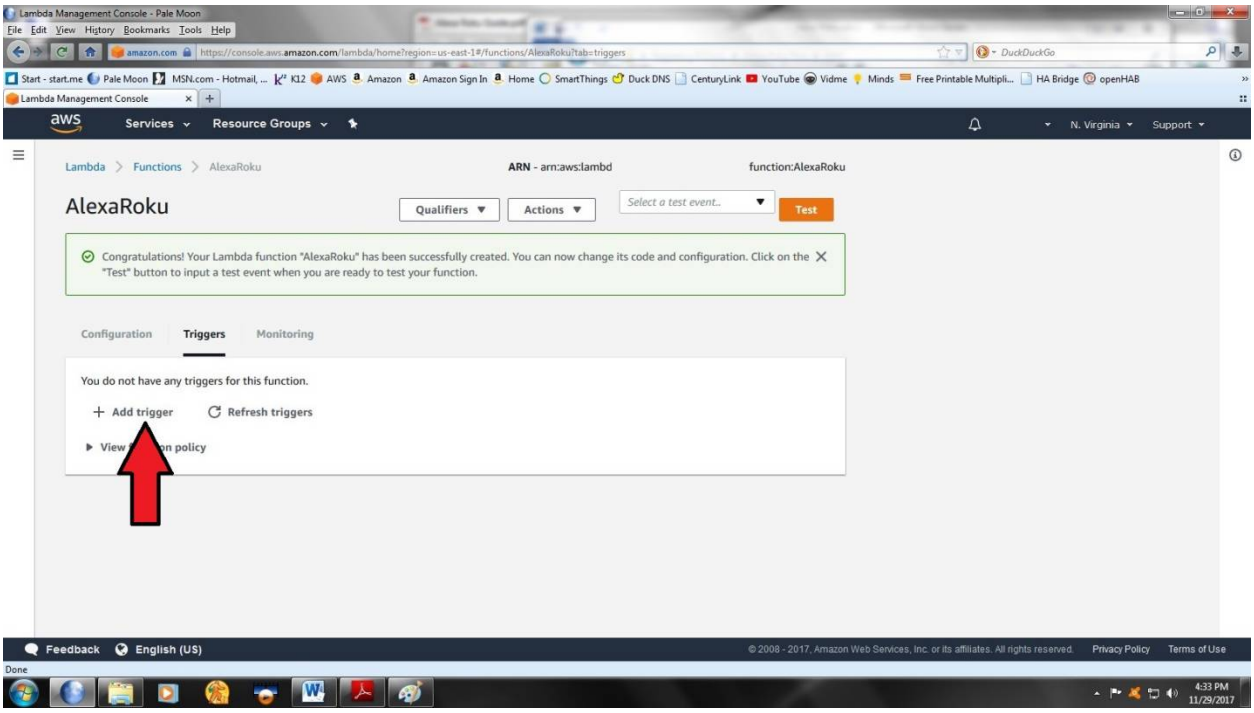
Existing role = lambda_basic_execution
Runtime = Node.js 4.3

Click on the “Create Function” button

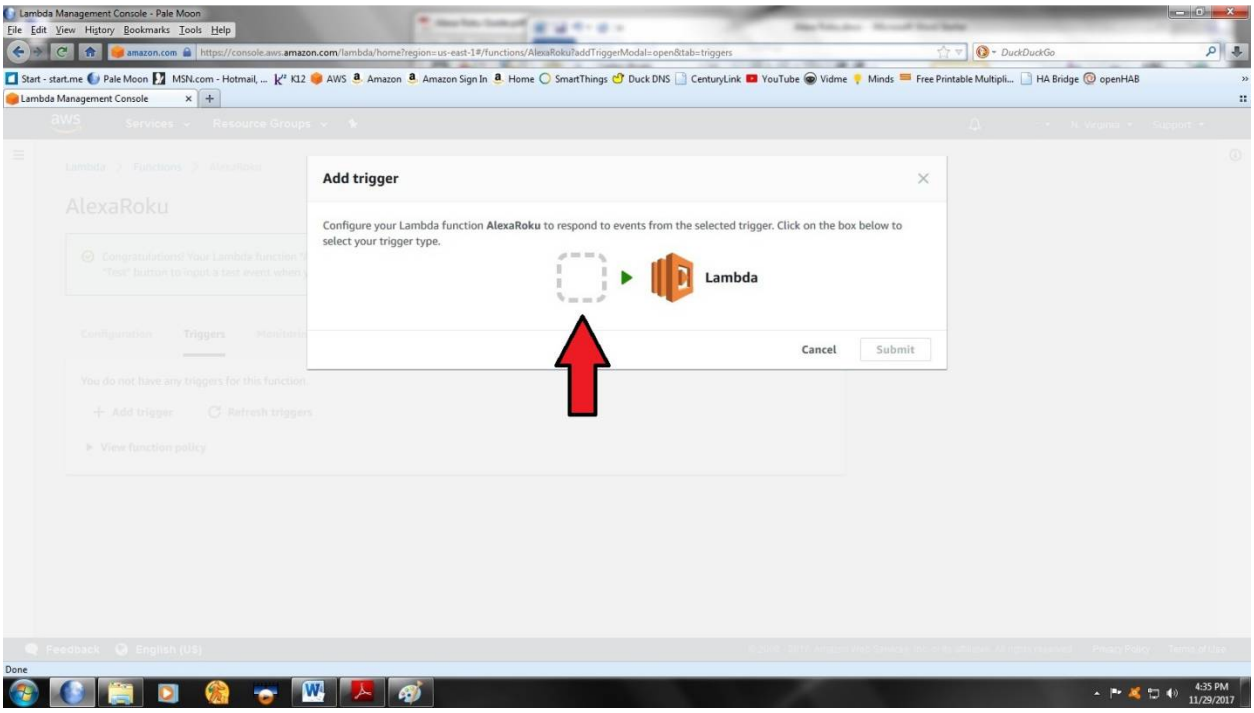


You will get a “Congratulations” message. At this point you will want to copy and paste the ARN in the upper right corner. You can paste this into a notepad document and just leave it open until you’re finished and, close it without saving it when you’re done. Or you can just leave this page up and copy it from the webpage when you need it. Make sure you highlight and copy the full ARN address, starting with the lowercase “arn” for example, “arn.aws.lambda…….function:AlexaRoku” and ending with the name of your function in the example “AlexaRoku”

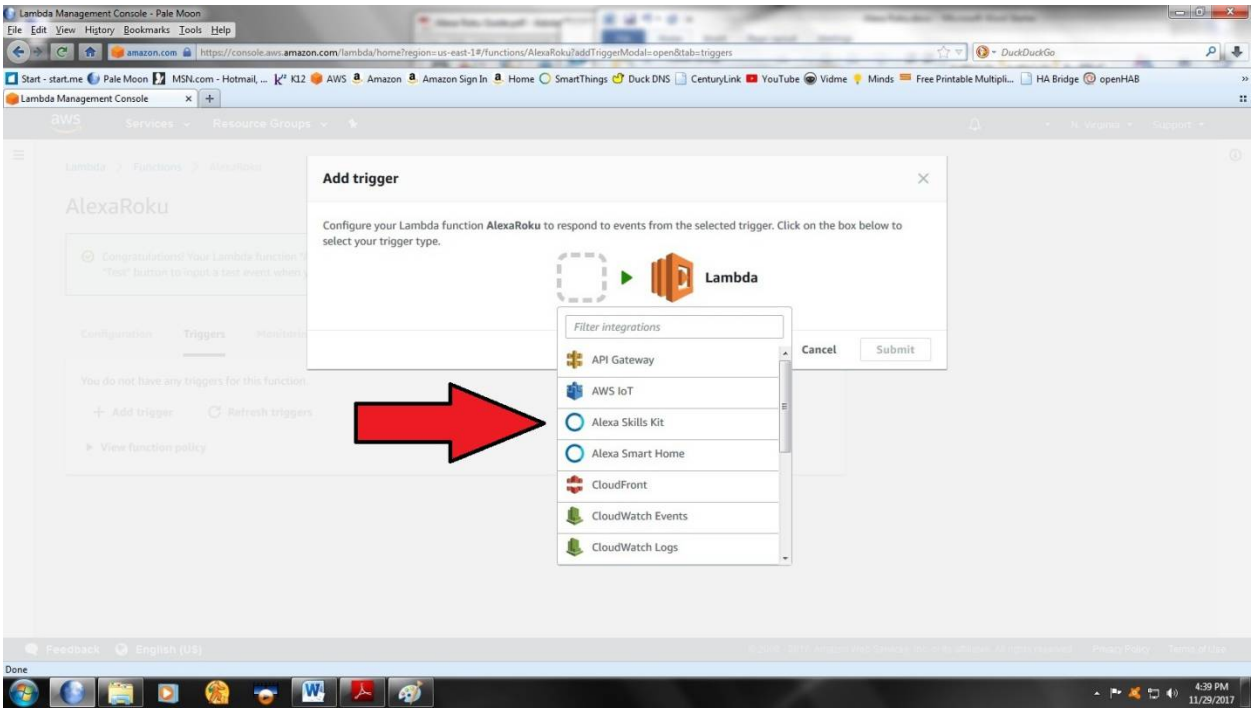
Click on “Triggers” located in between configuration and monitoring.



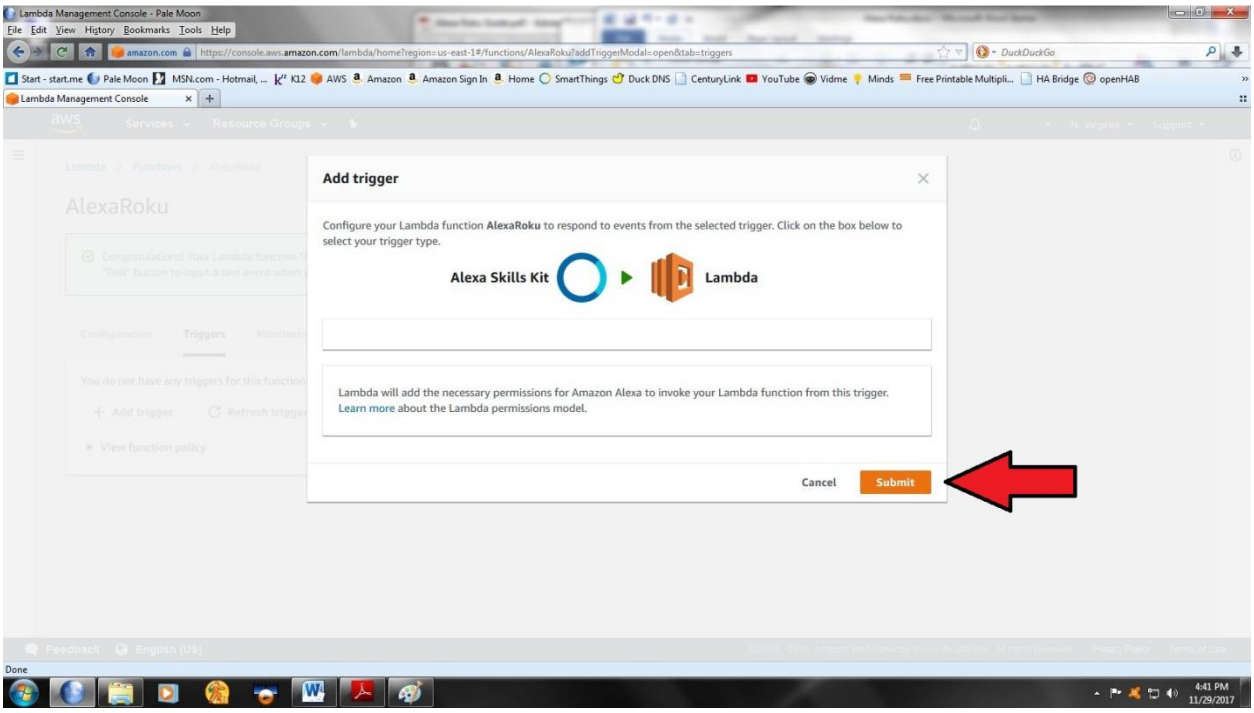
Now click on "+ Add trigger".



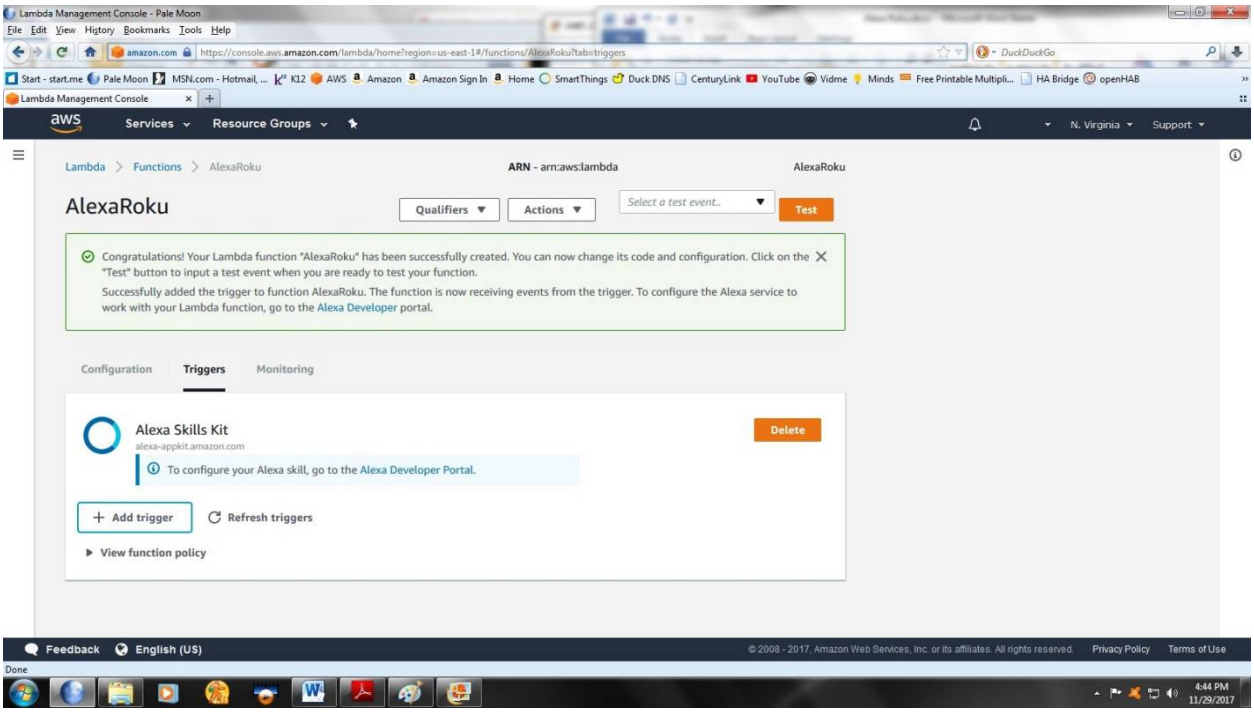
Click on the dotted box to the left of the Lambda icon, and select the "Alexa Skills Kit" from the list.



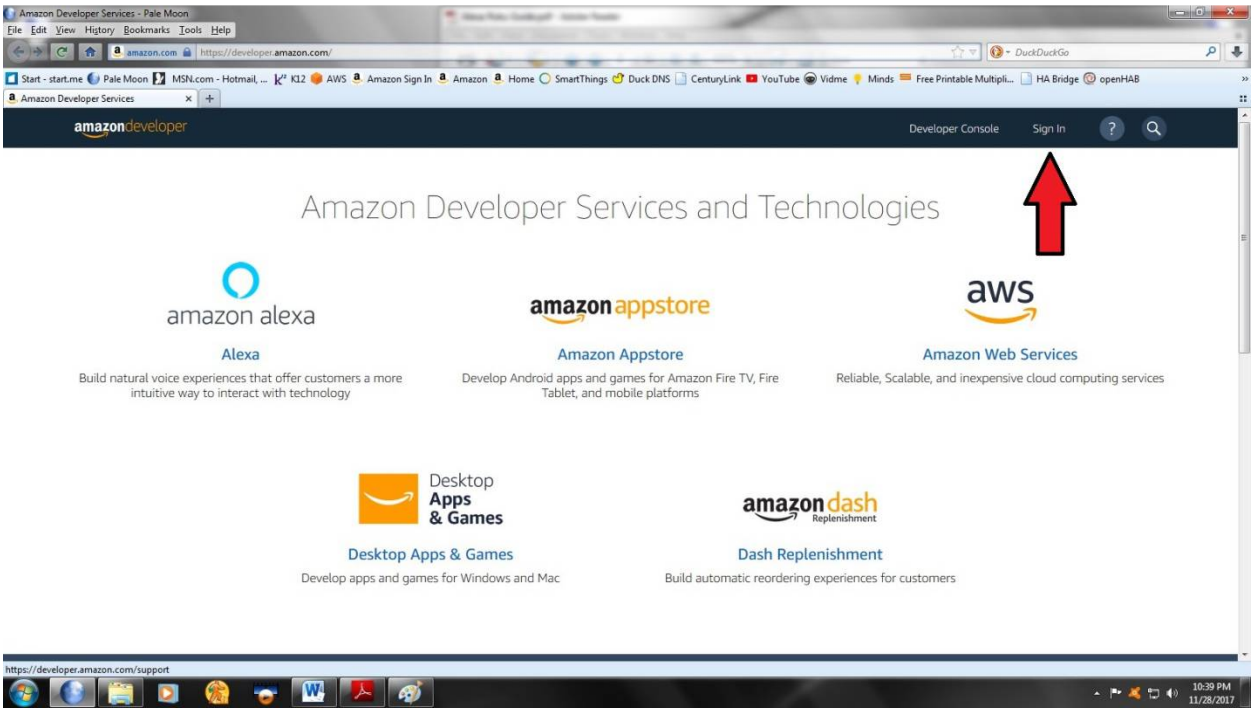
You should get a page like the one below.



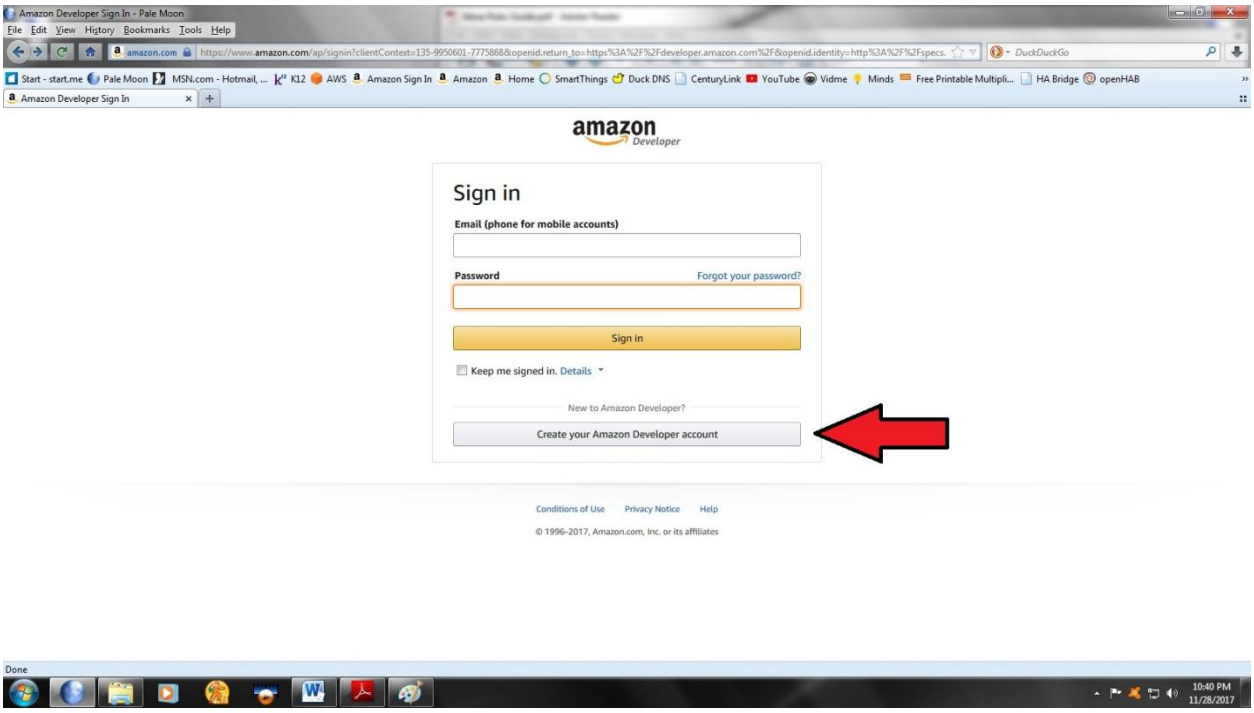
Next click the “Submit” button at the bottom, and you should get a page like the one below.



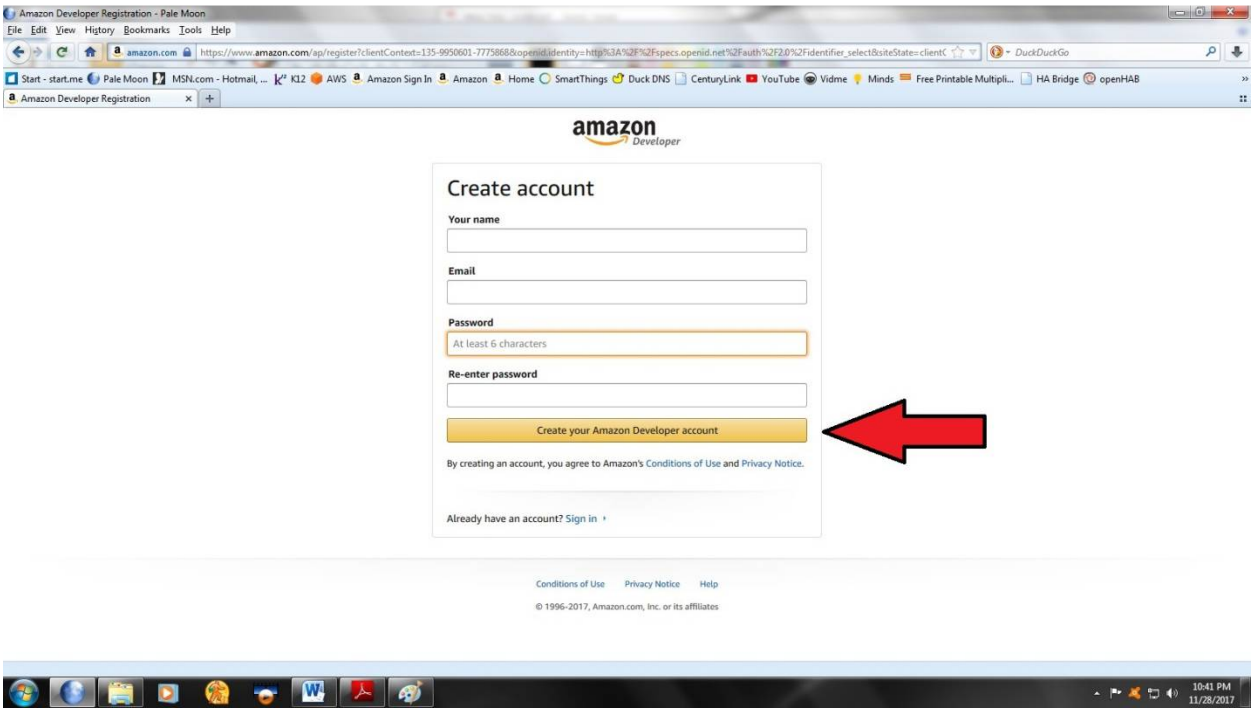
Part 3) Now it's time to set up an Amazon Developer Alexa skills account.
Go to http://developer.amazon.com



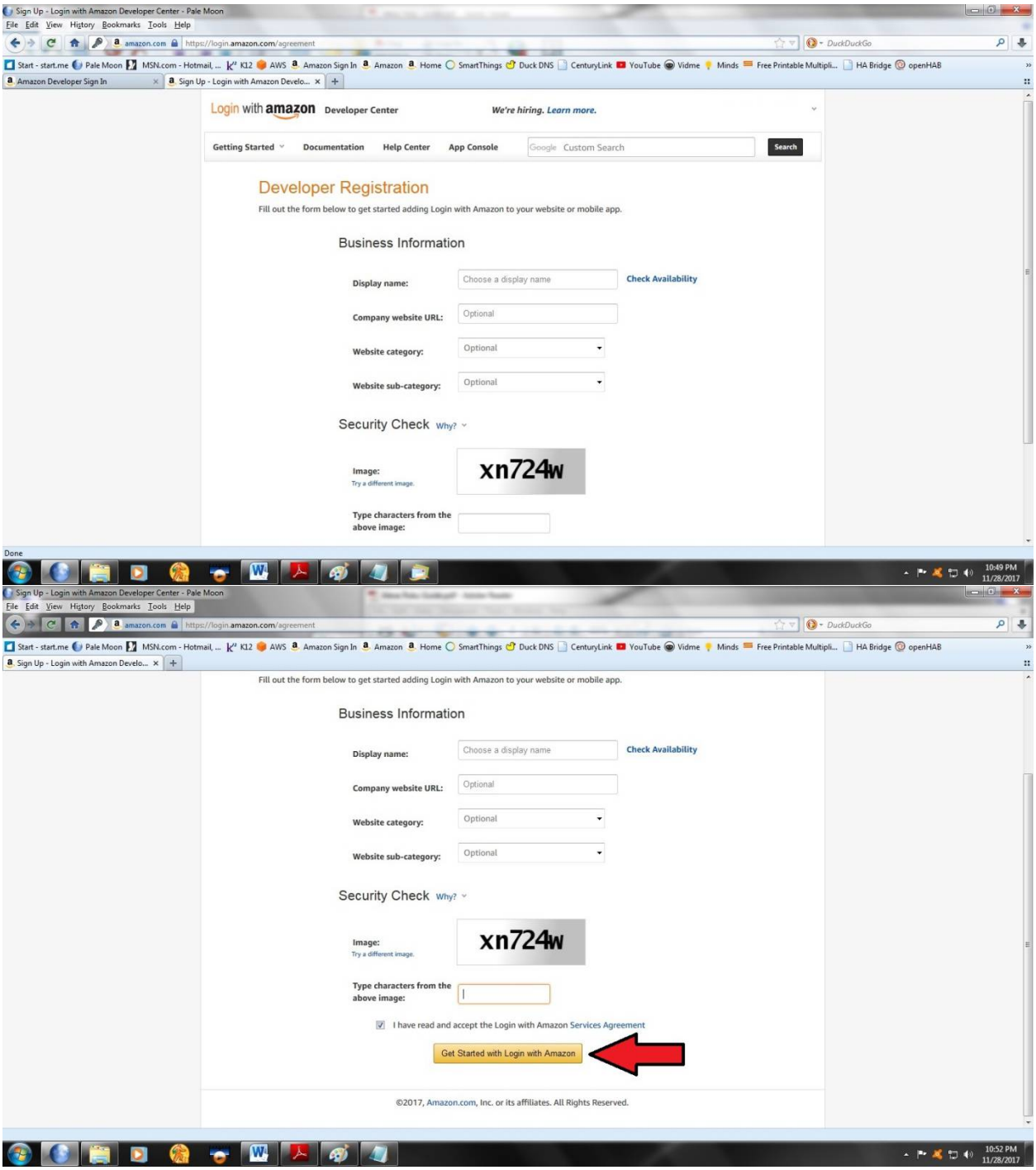
Click the "Sign In" link in the right corner.



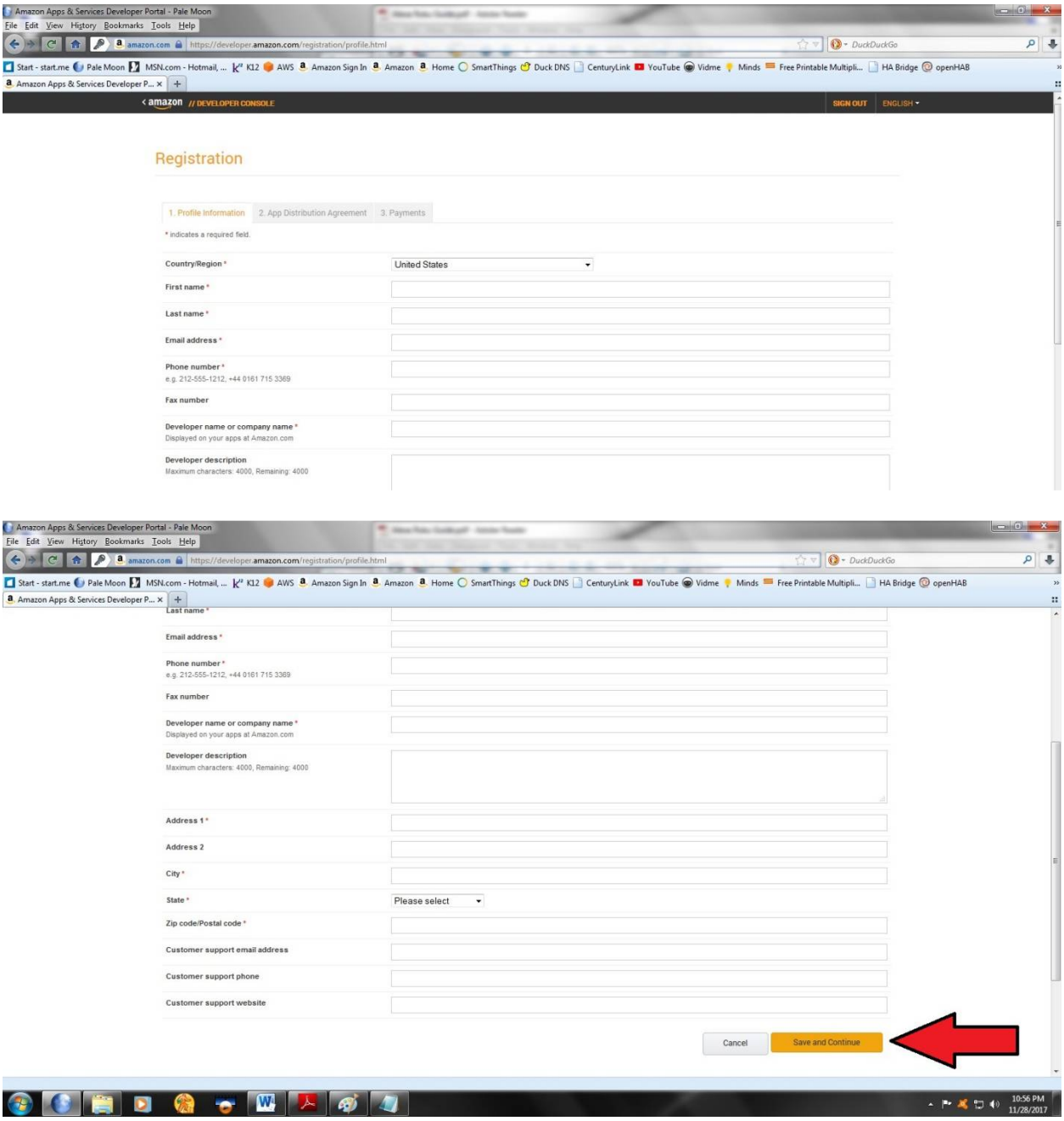
Click the “Create your Amazon Developer account” button at the bottom.



Add in your information and click the “Create your Amazon Developer account” button at the bottom.

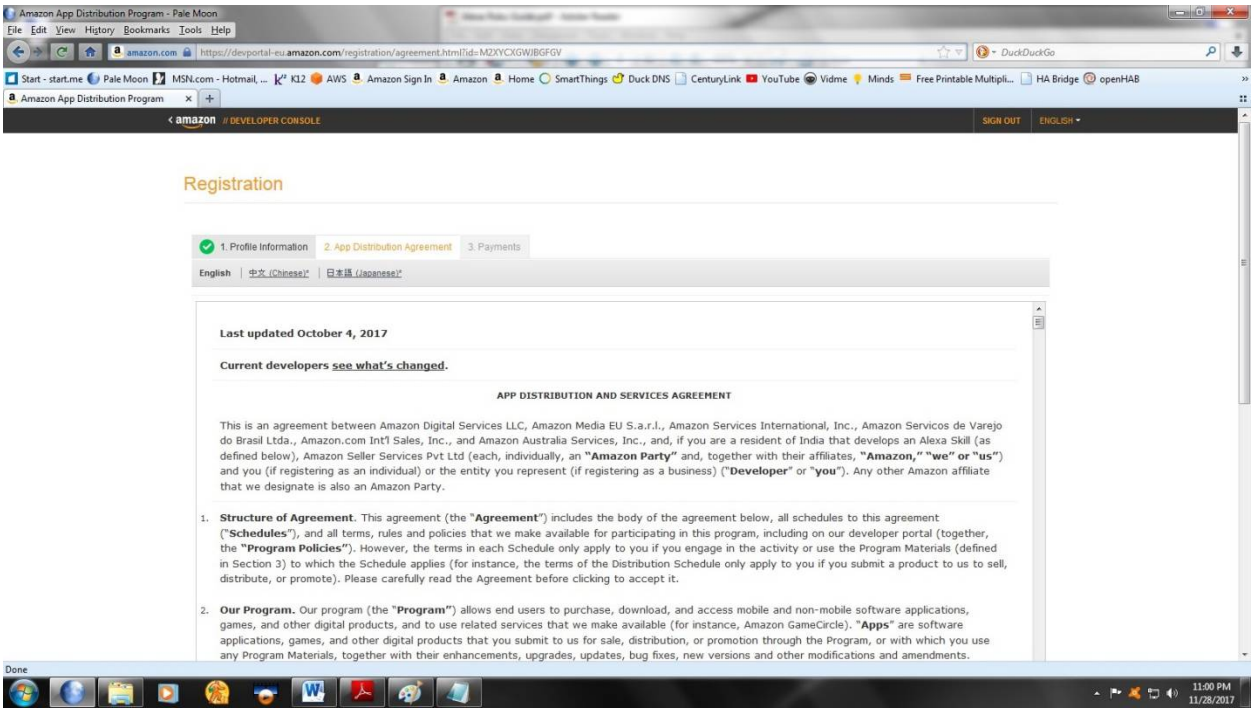


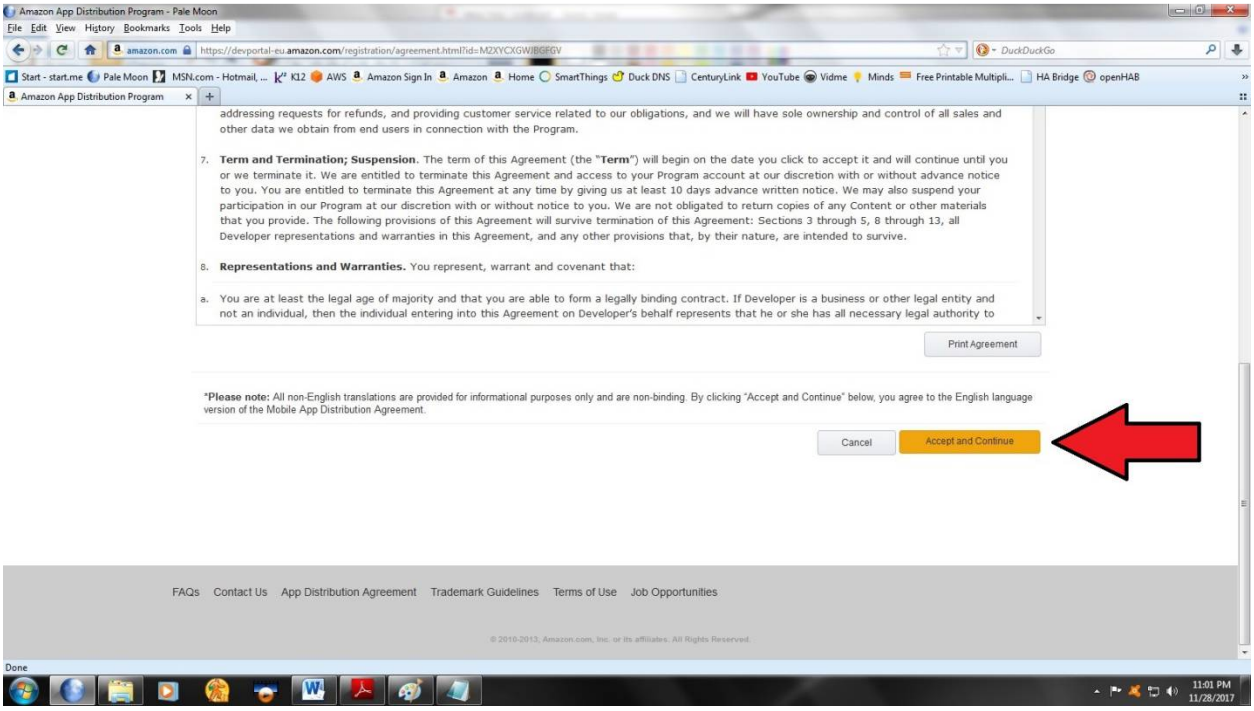
Fill in the “Developer Registration” page and click the “Get Started with Login with Amazon” Button at the bottom of the page. Make sure to type in the image that it gives you correctly and place a check in the space before “I have read and accept”.



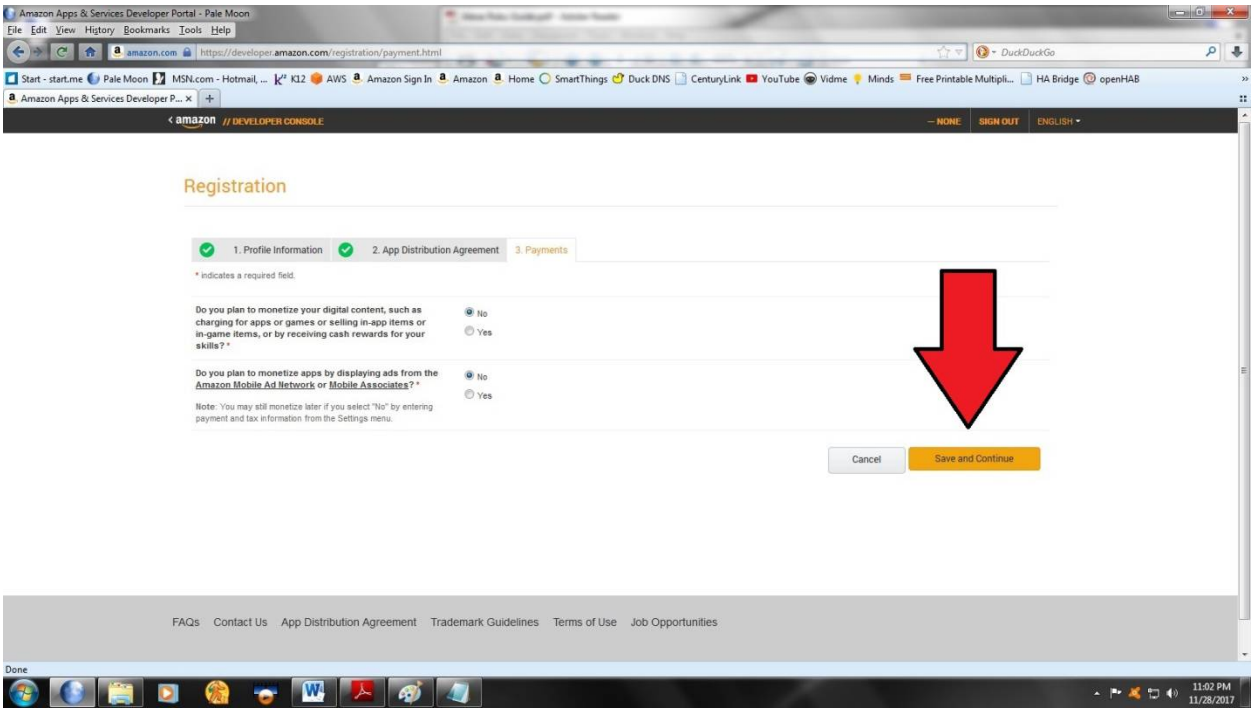
Next you might be taken to a “Registration” pages like the ones above, just fill them out and click the “Save and Continue” button at the bottom. Under company name just enter none.

You might be taken to a user agreement page like the one below. Just click the “Accept and continue” button at the bottom.

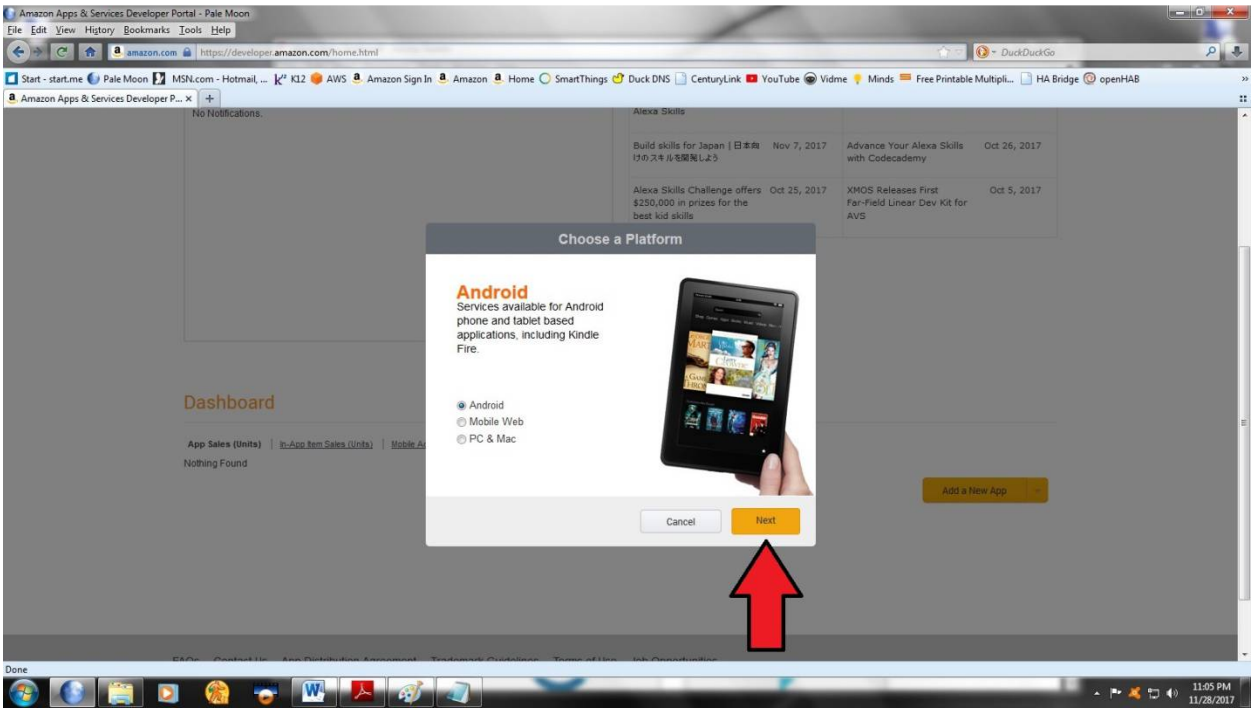




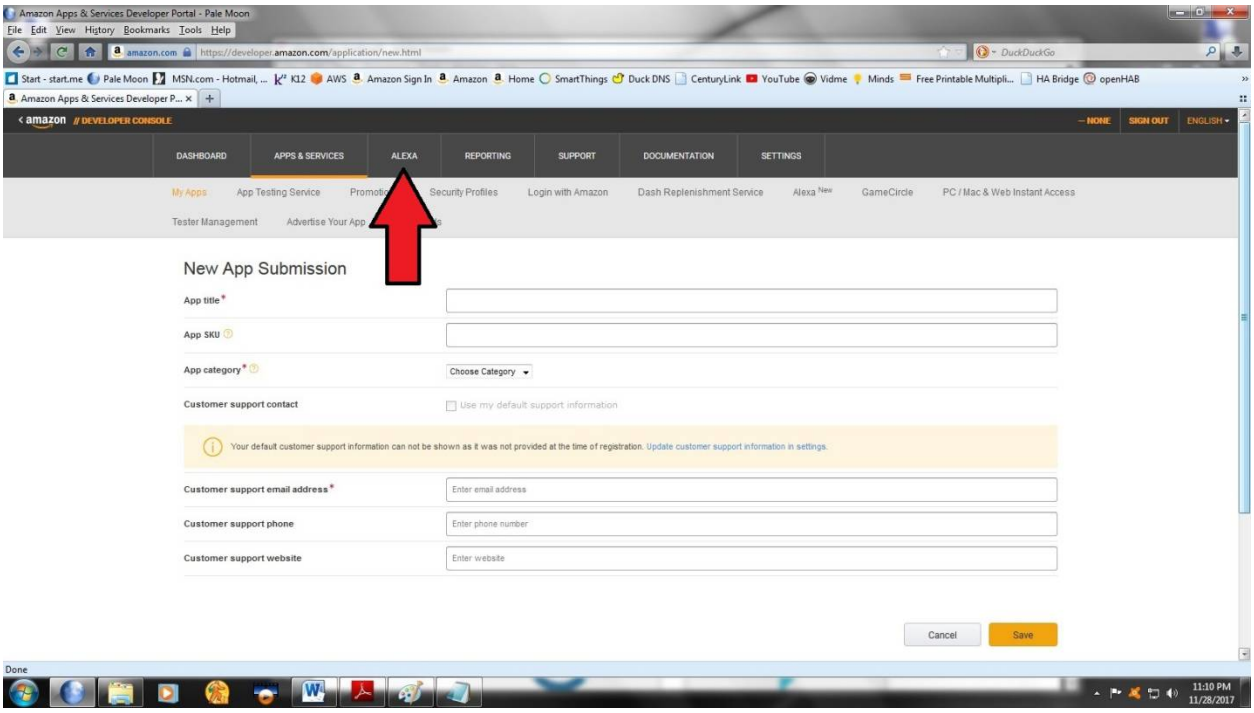
You should be taken to a page like the one below. Leave the selections as “No” and click the “Save and Continue” button at bottom right.



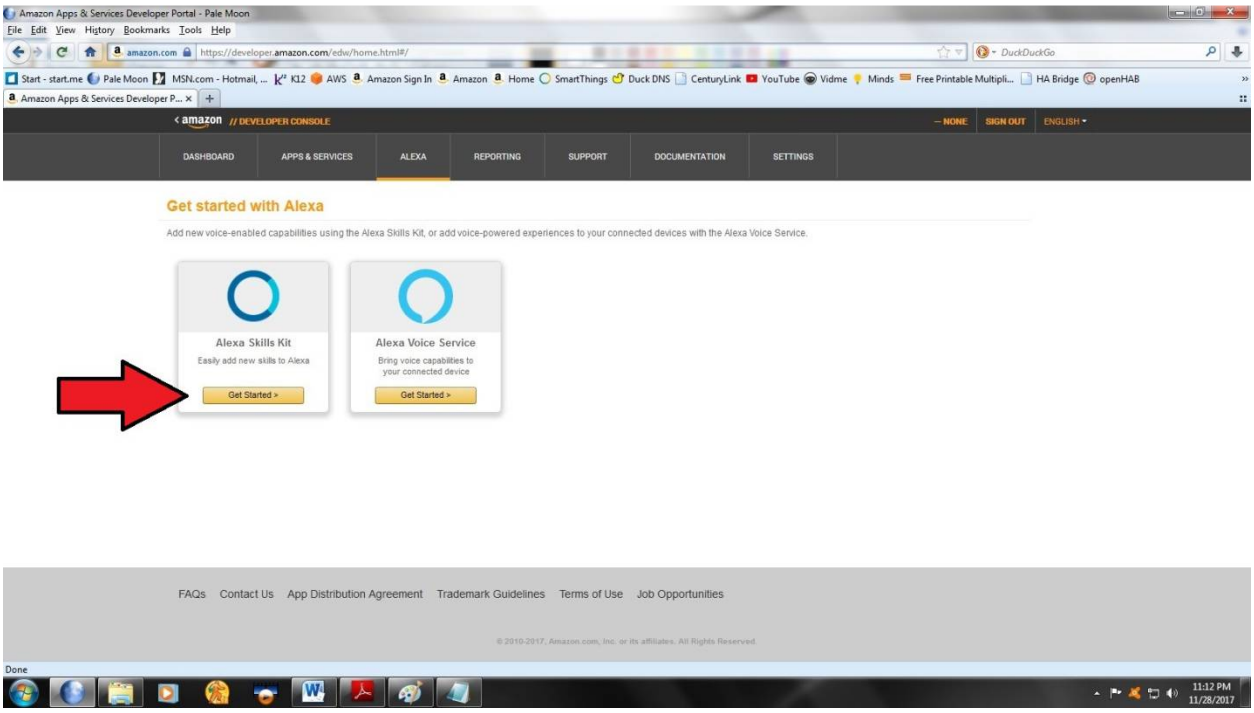
You might get a popup asking you to choose a Platform. I doesn't matter what you pick, just click the "Next" Button.



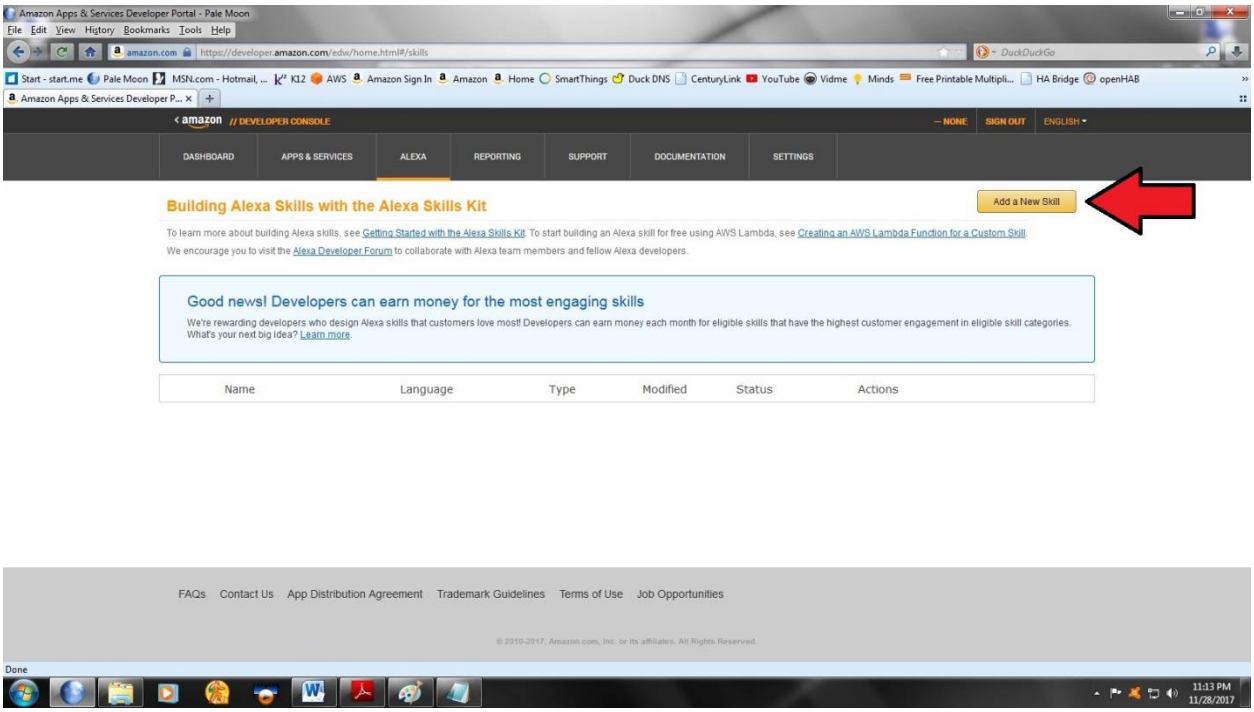
Next you might get a page that looks like the one below.



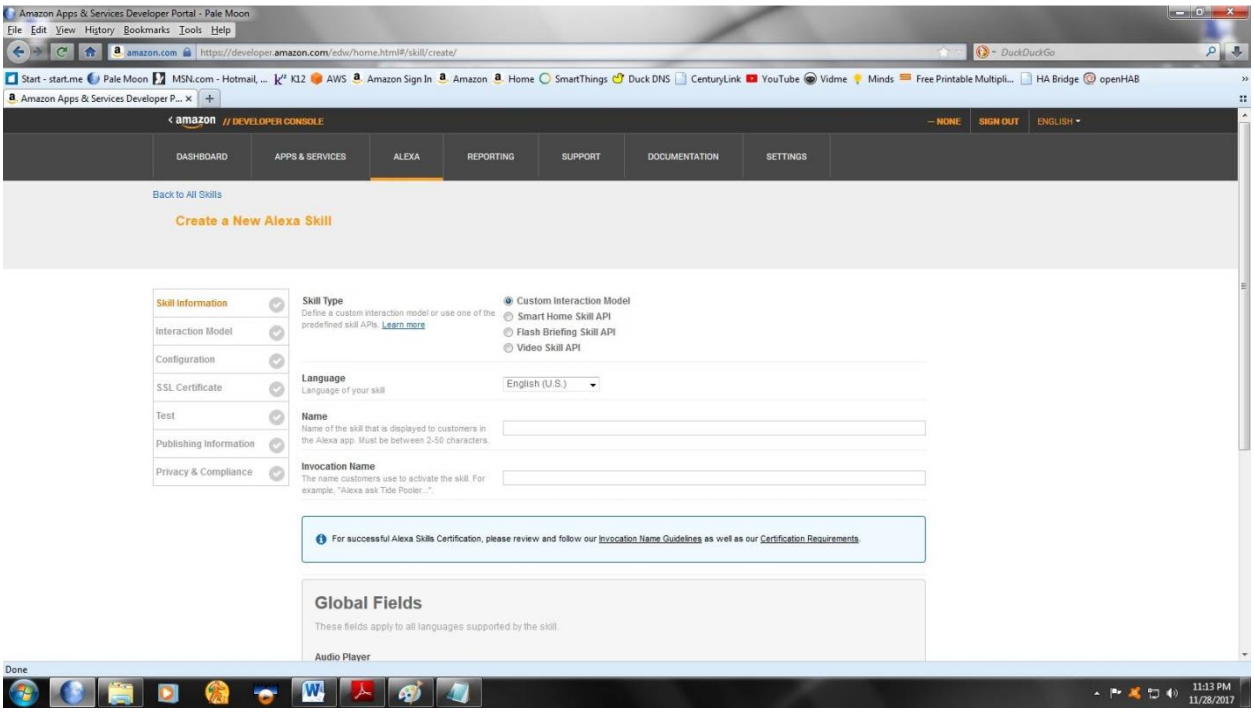
This is their home page for the developer account. Just choose “Alexa” at the top.

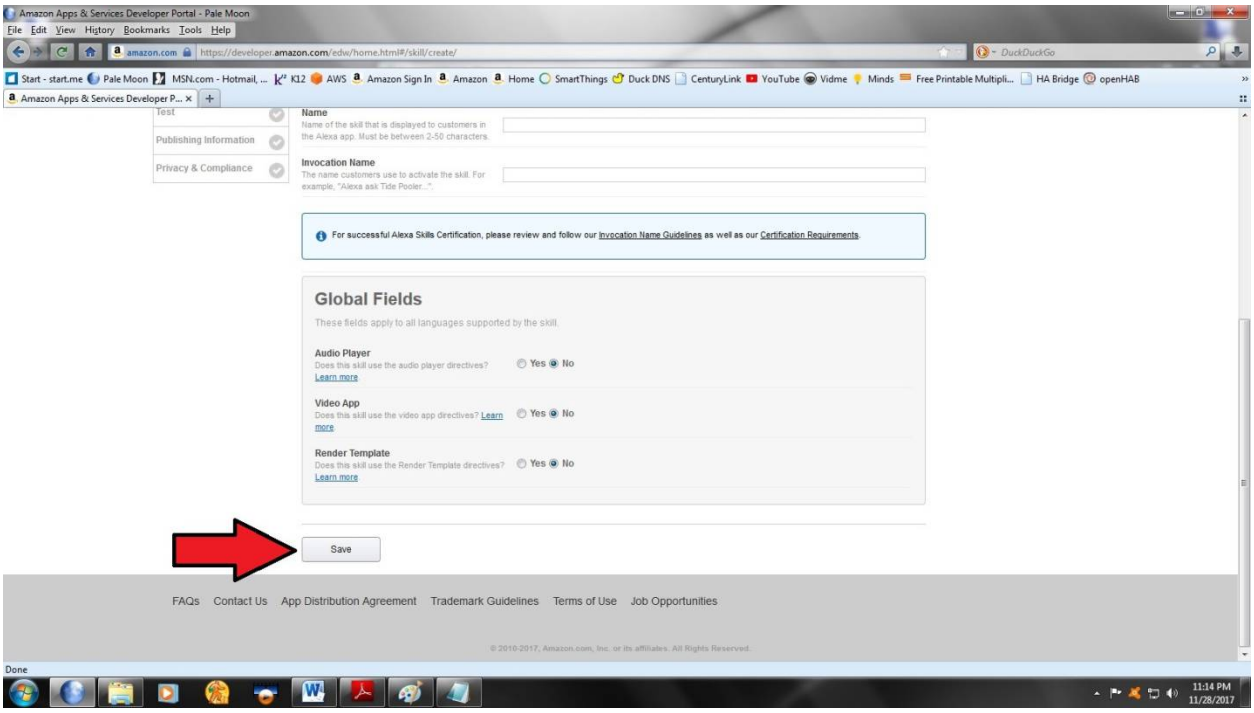


Select the Alexa Skill Kit and click on the “Get Started>” button.

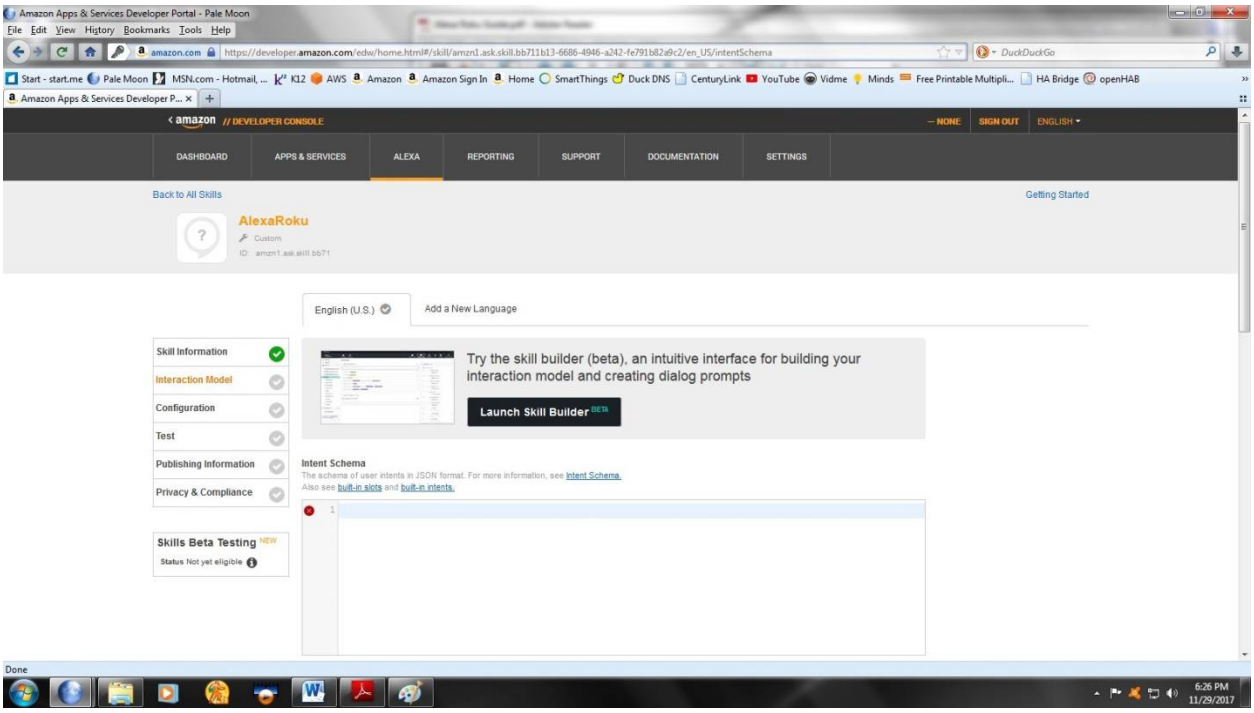


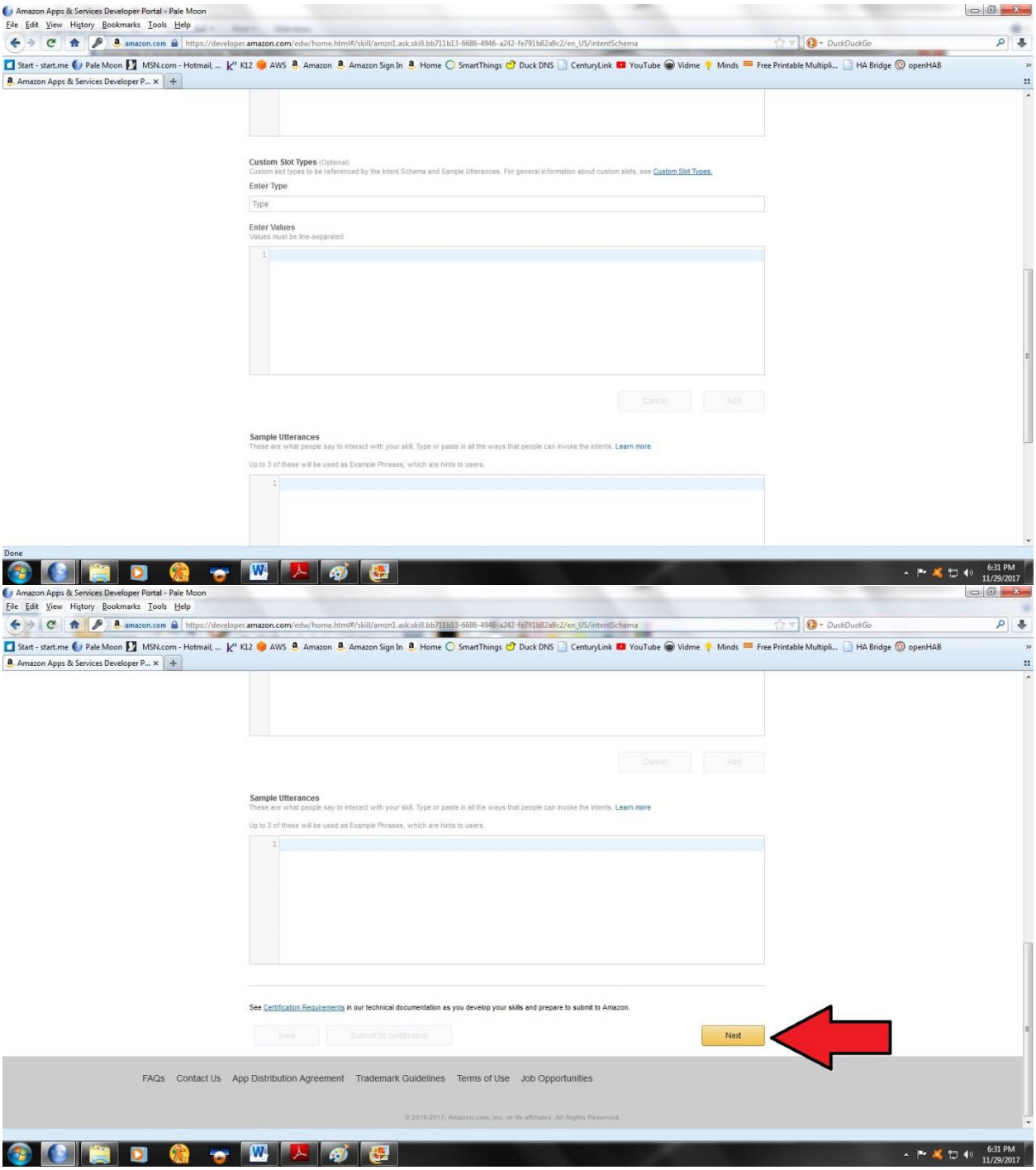
You should get a page that looks like the one above. Click the “Add a New Skill” Button.



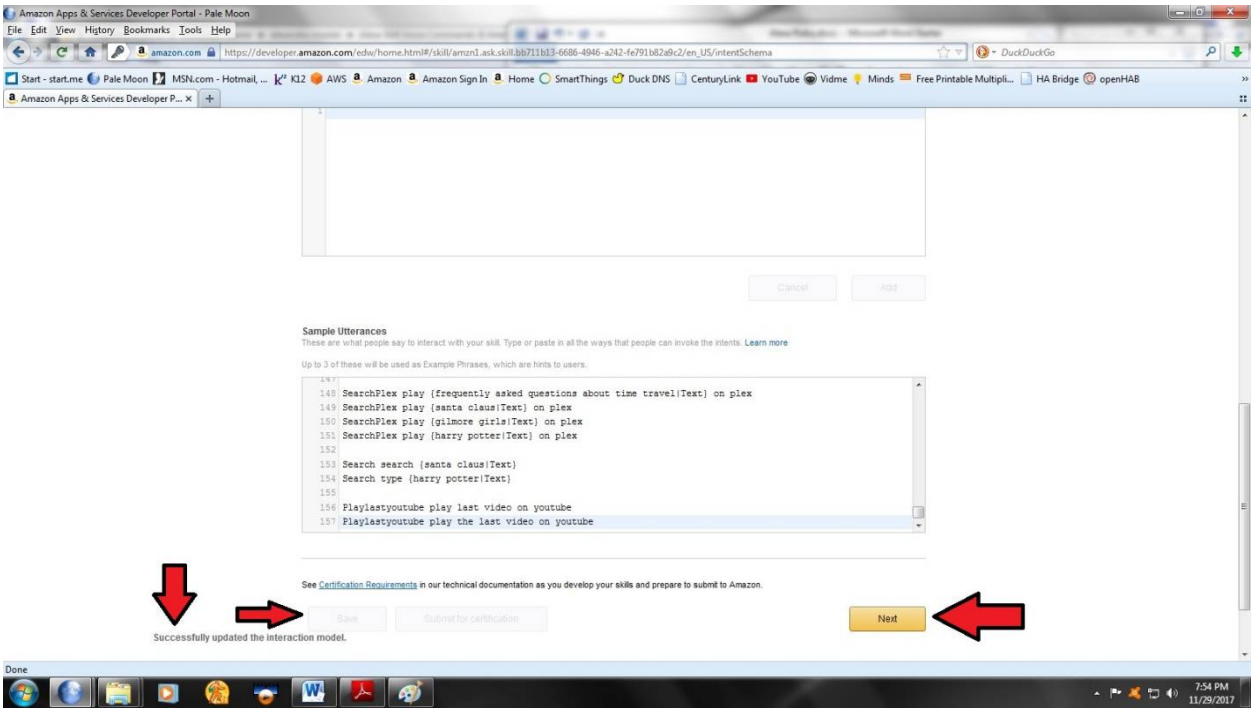


Once you click the “Add a New Skill” Button. You should get a page that resembles the ones depicted above. Leave the “Skill Type” the same “Custom Interaction Model” Select your language, and use the language that is set in your Amazon Echo, they have to match. Under name, just called it AlexaRoku the same as the lambda for consistency. For Invocation name use roku (All Lowercase), this can be changed to whatever you want. THIS IS THE WORD USED TO START THE SKILL (Alexa, Tell Roku to go home) Make sure you don’t use an Invocation name that is already used or you will have problems. Leave everything else the same, and choose the “save” button, and then the “Next” button at the bottom.

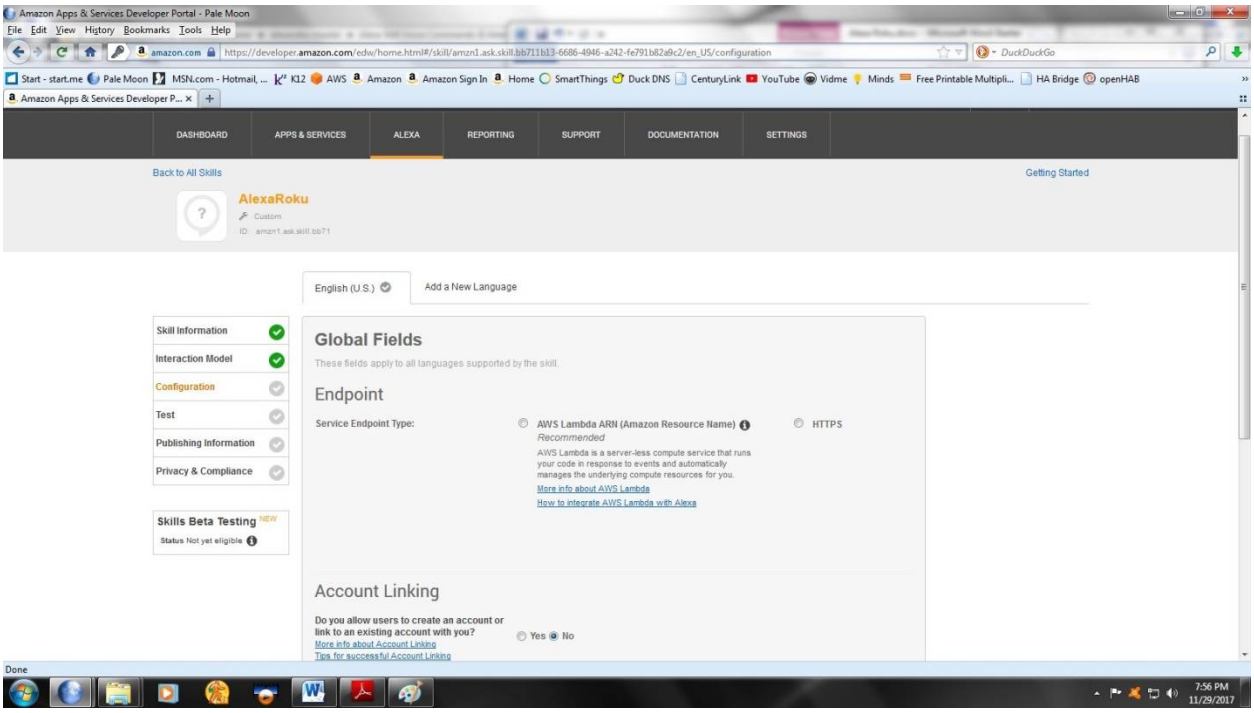

Amazon Apps & Services Developer Portal - Pale Moon
File Edit View History Bookmarks Tools Help
https://developer.amazon.com/edw/home.html#/skill/amzn1.ask.skill.bb711b13-6686-4946-a242-fe791b82a9c2/en_US/intentSchema
DuckDuckGo
Start - start.me Pale Moon MSN.com - Hotmail, ... K12 AWS Amazon Amazon Sign In Home SmartThings Duck DNS CenturyLink YouTube Vidme Minds Free Printable Multipli... HA Bridge openHAB
Amazon Apps & Services Developer P...
amazon // DEVELOPER CONSOLE
— NONE SIGN OUT ENGLISH
DASHBOARD APPS & SERVICES ALEXA REPORTING SUPPORT DOCUMENTATION SETTINGS
Back to All Skills
Getting Started
AlexaRoku
Custom
ID: amzn1.ask.skill.bb71
English (U.S.)
Add a New Language
Skill Information
Interaction Model
Configuration
Test
Publishing Information
Privacy & Compliance
Skills Beta Testing NEW
Status Not yet eligible
Try the skill builder (beta), an intuitive interface for building your interaction model and creating dialog prompts
Launch Skill Builder BETA
Intent Schema
The schema of user intents in JSON format. For more information, see Intent Schema.
Also see built-in slots and built-in intents.
1
Done
6:26 PM
11/29/2017



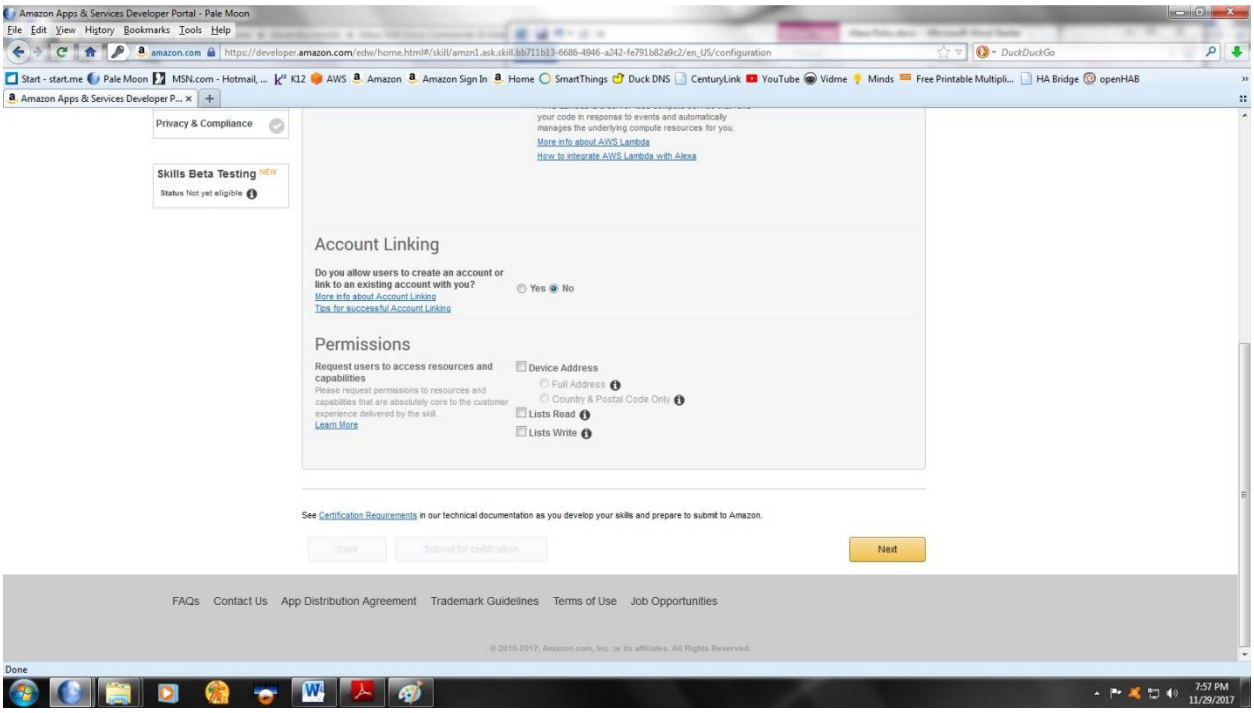
Once you have clicked the “Next” button you should get an “Interaction Model” page like the three above. Here you are asked for the ‘intent schema’, ‘Custom Slot Types’, and the ‘sample utterances’.



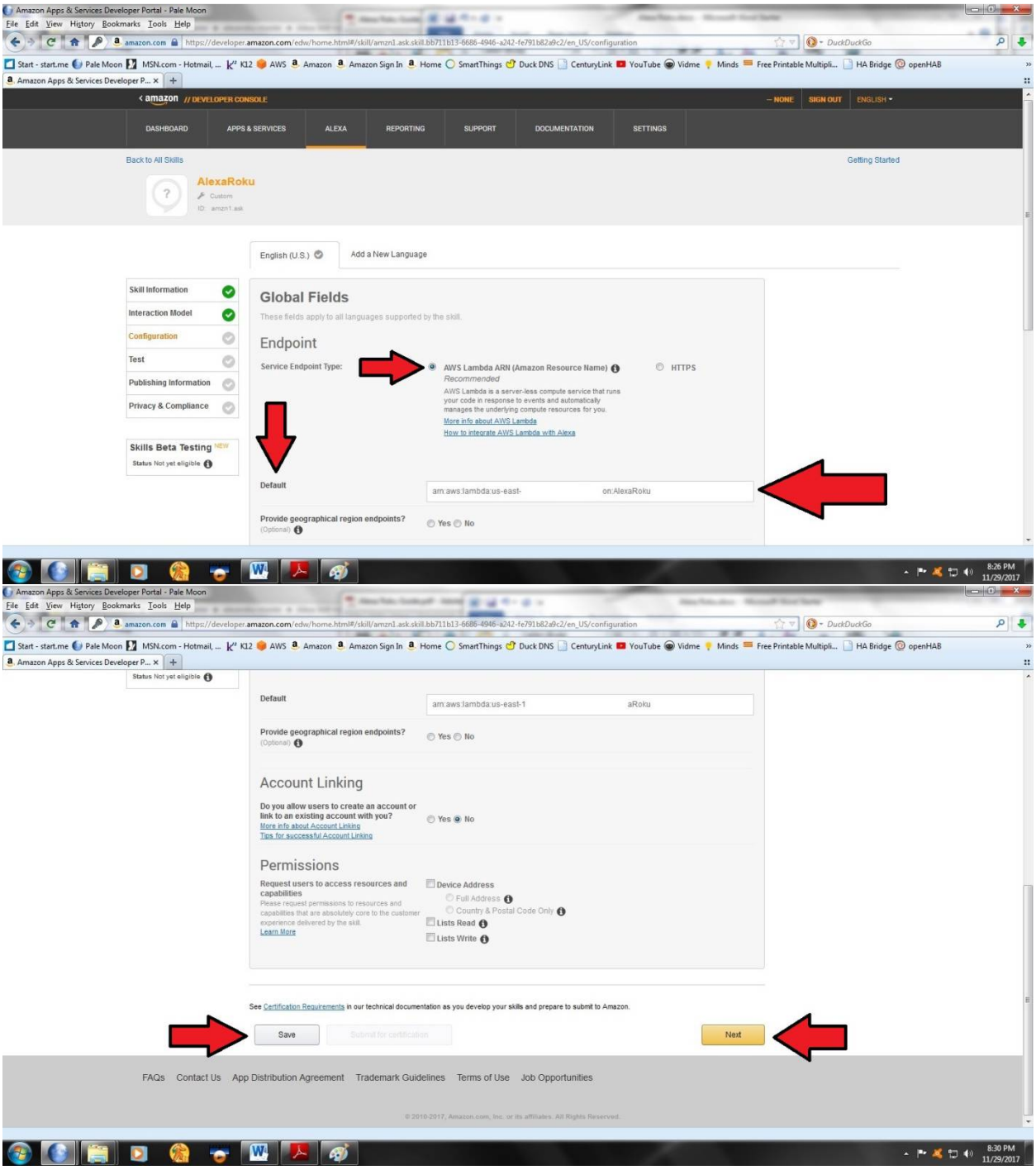
Go to the files you downloaded, the folder should be call “alexaroku-master”, if you downloaded the files from chris1642. Within that folder you will find another folder called “alexaroku-master” Inside that folder you will find a folder called “Alexa Skill Voice Commands & Intents”. Inside this folder you will find the files IntentSchema.txt, and SampleUtterances.txt. At this point open the ‘IntentSchema.txt’ file, it should open in Notepad. Copy its contents and paste it into the Developer webpage under Intent Schema. Do the same with the Sample Utterances file and paste it into the Sample Utterances part of Developer webpage, then click the “Save” button. Once done you will see a message at the bottom “Successfully updated the interaction model.” Now you can click the “Next” button at the bottom.



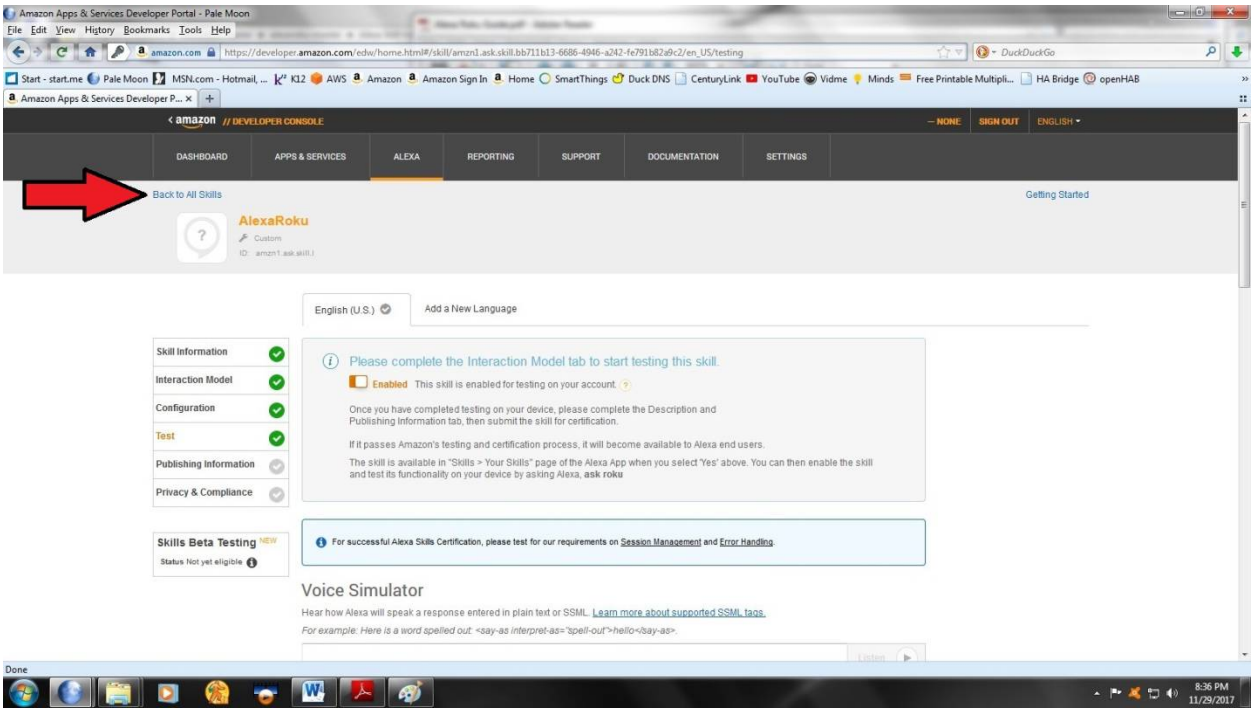
Next you will get a page called “Global Fields” At this point you will need the ARN that you copied earlier or you can open up a new browser and navigate back to your AWS configuration page if you haven’t left it open, and don’t forget to leave this page open.



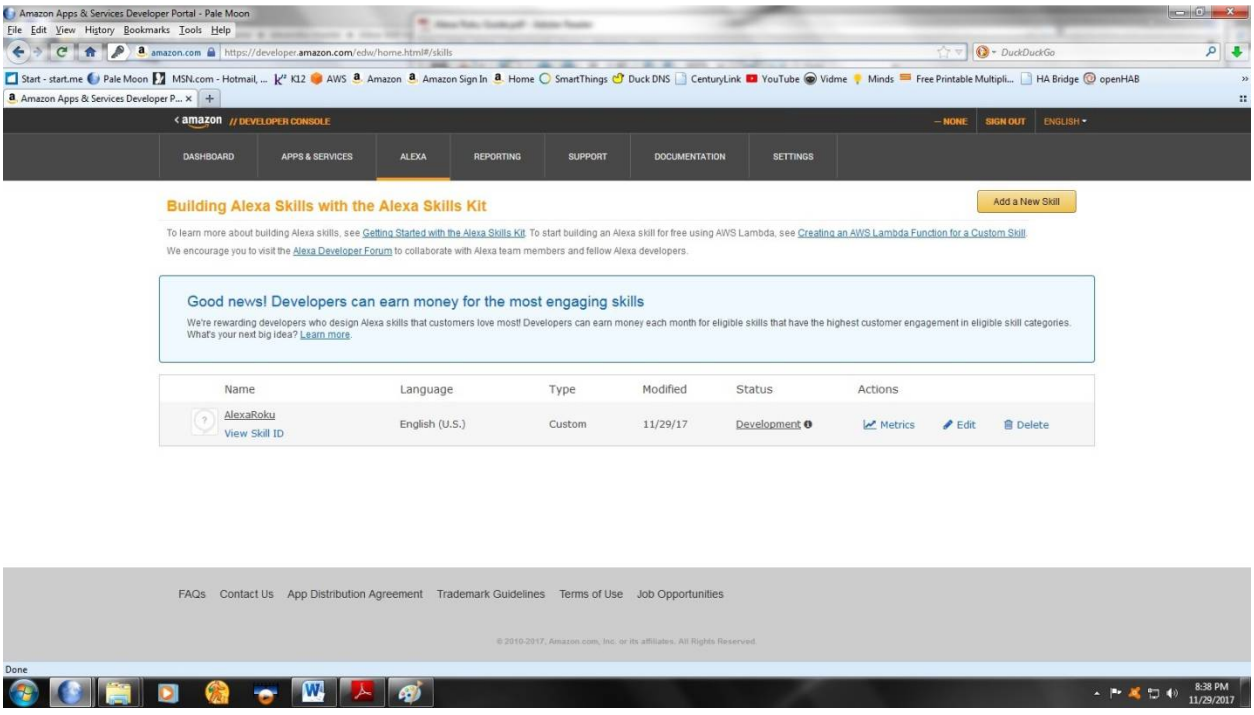
Once coped, head back to your previous developer page and select AWS Lambda ARN (Amazon Resource Name) for the Service Endpoint Type. Next paste your ARN into the “Default” line.



Leaving everything else alone click the “Save” button, and then the “Next” button.

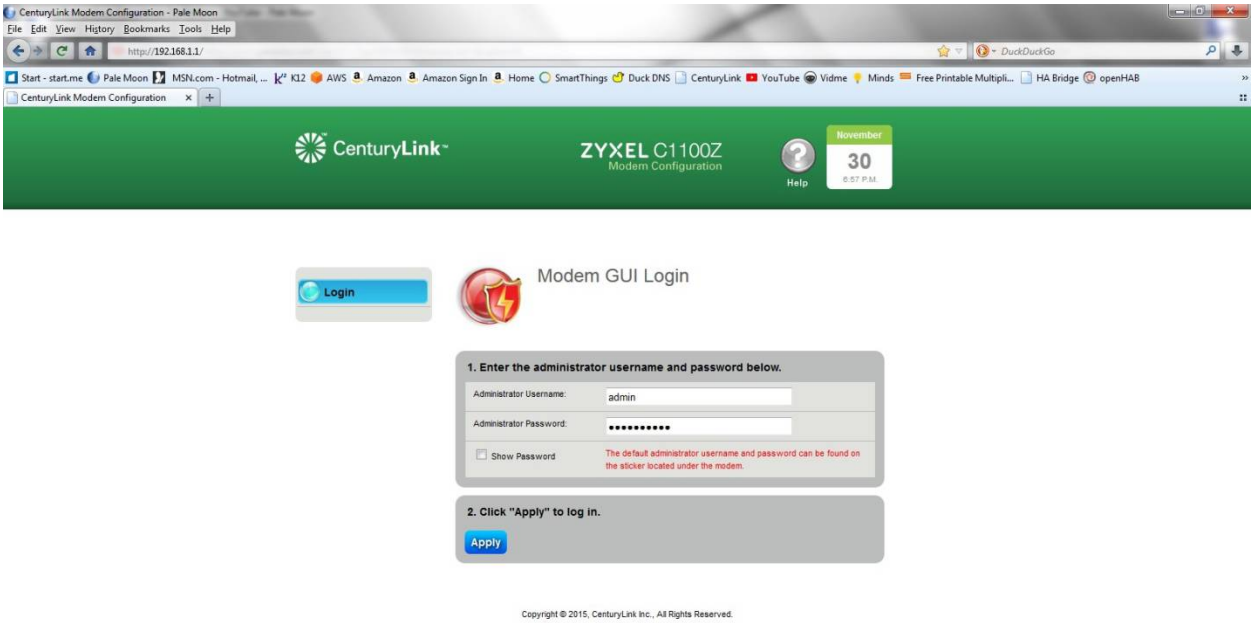


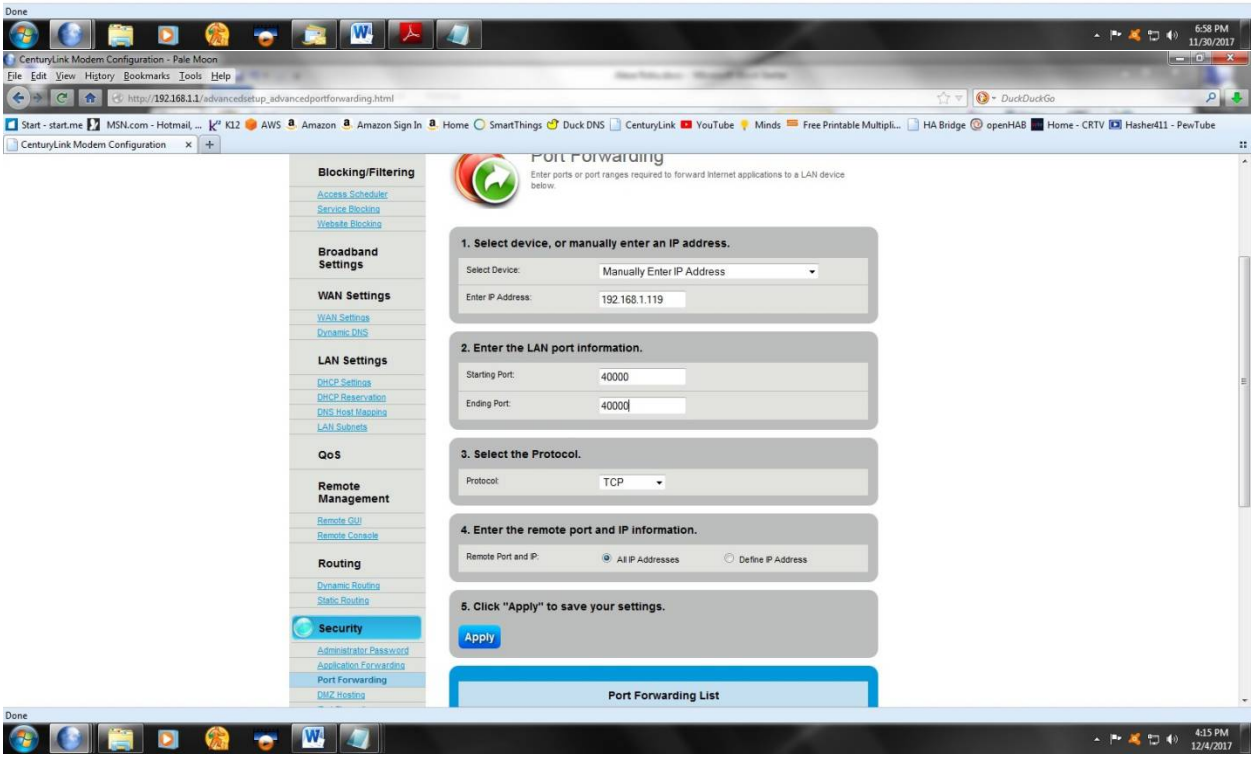
Once you reach this page you can just click on the “Back to All Skills” link at the top, and you should be taken to a page that resembles the one below.

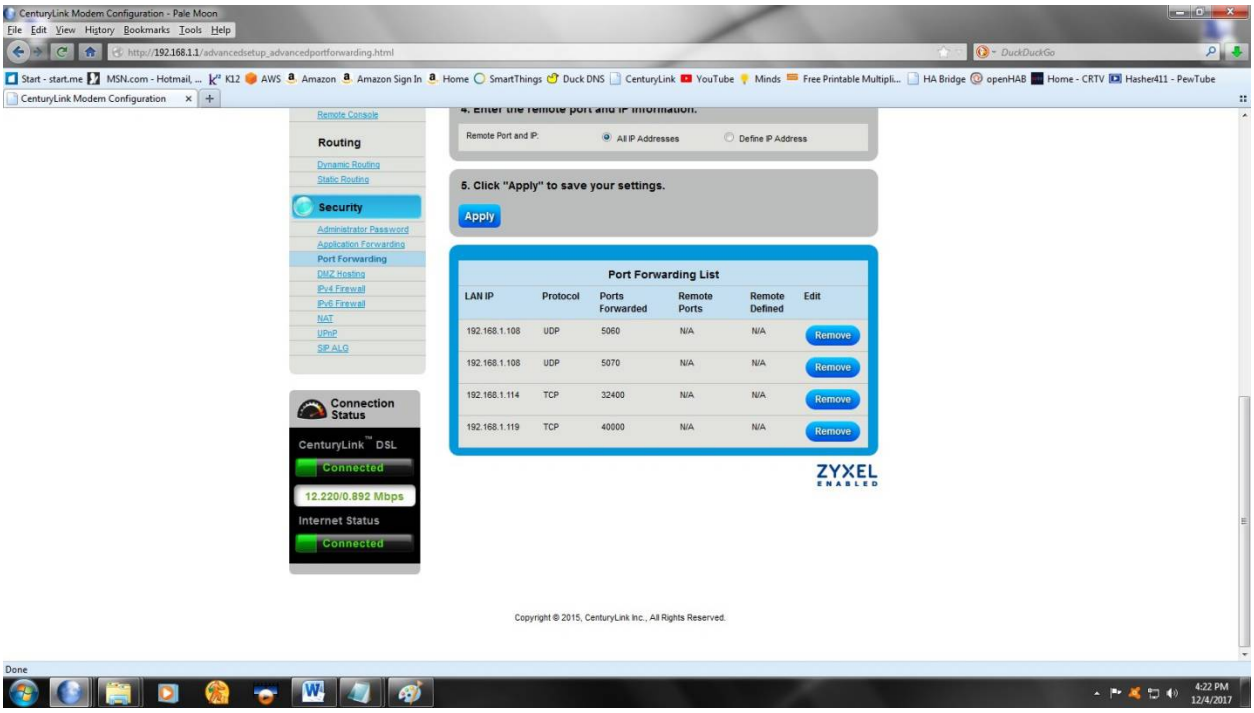


Part 4) Now it’s time to setup your router “DSL/Cable Modem”.

We are now going to set up port forwarding in your router “DSL/Cable Modem” so Alexa will be able to access the Node server we will be setting up on your Raspberry Pi later. Once setup, the node server on your Raspberry Pi will be able to send commands to your Roku. Your router “DSL/Cable Modem” more than likely will be different than mine, but this should give you an idea of what has to be done. Log into your router and navigate to the page that deals with port forwarding.

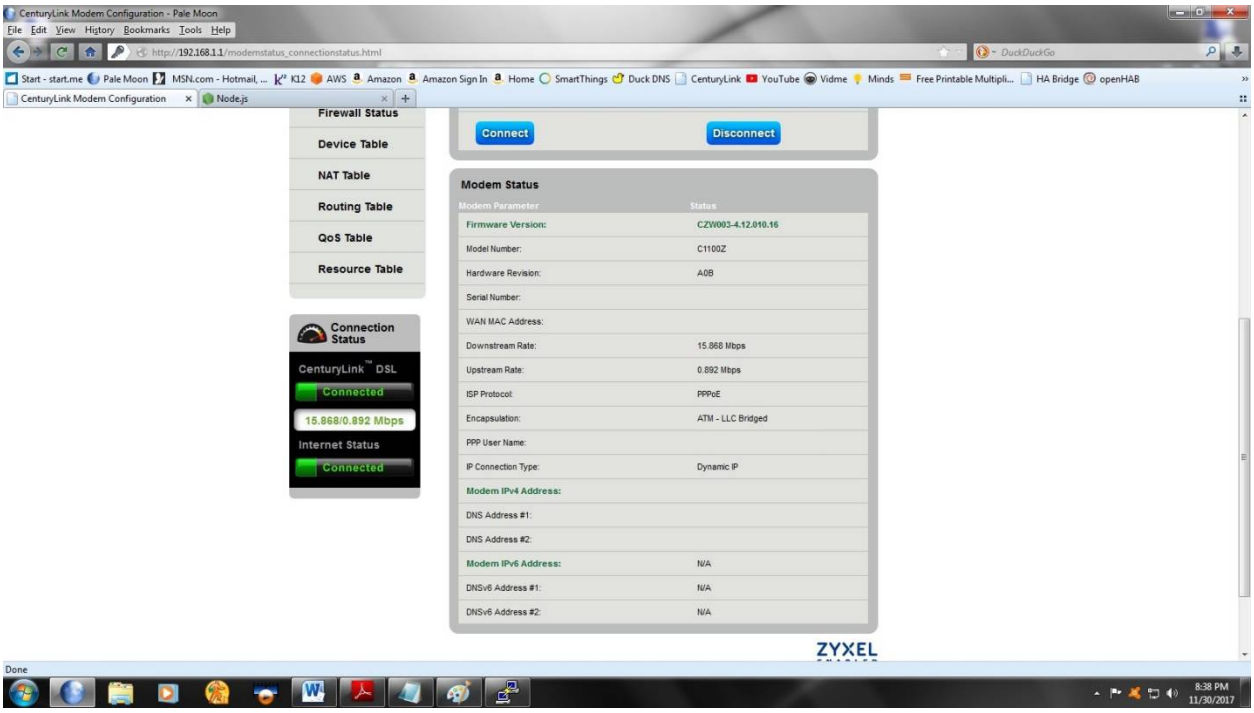






First enter the IP address for our Raspberry Pi into the IP Address field, I'm using 192.168.1.119. Then enter the port number into the "Starting" and "Ending Port" fields. Next select TCP for the Protocol. Lastly select "All IP Addresses" for Remote Port and IP then click the "Apply" button.

For our purpose we will use port number 40000. Port 40000 TCP/UDP is used for SafetyNET p – a real-time Industrial Ethernet protocol. If you would like to use a different one you can find a list of port numbers at this link. https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers
I'm not for sure but it sounds like you can pick any port number you want just so long as the TCP is listed next to it. Because there are so many ports it will be difficult for someone to guess what you are using. If your router "DSL/Cable Modem" requires the internal port number to be filled in, use the same port number as the external port number.

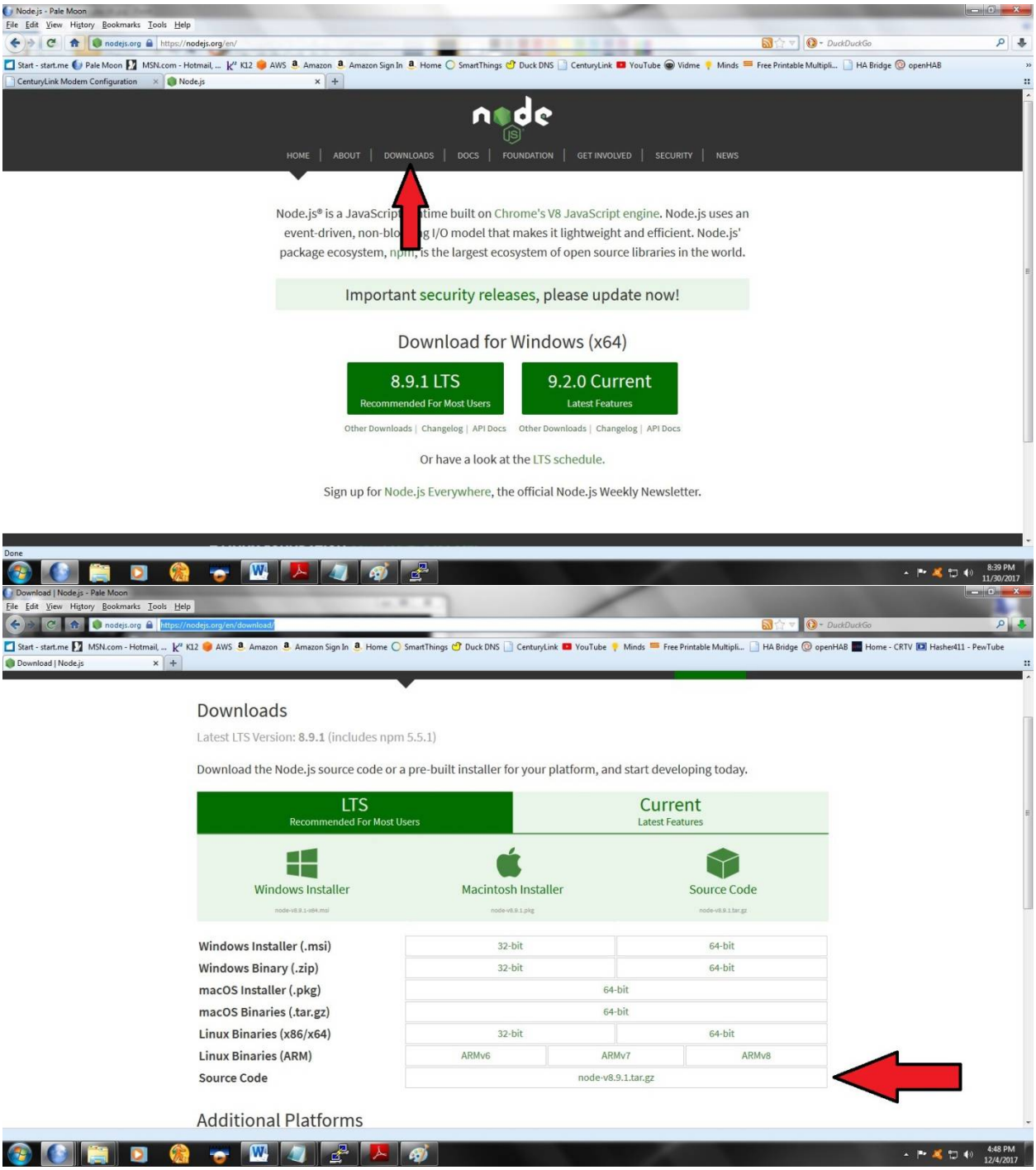


If your router “DSL/Cable Modem” is assigned a static public IP address your good to go, just write it down for use later, but if your ISP assigns a public IP address dynamically and your router reboots you will have to copy the new public IP address to the “serverinfo.js” file and, move it to the “Compressed (zipped) folder” that you will be creating later, and then upload it to the AWS “Configuration” page.

Part 5) Setting up your Raspberry Pi

Use Windows Explorer to move the folder “alexaroku-master” you downloaded to your Raspberry Pi ‘users’ folder.

The two files, “package” and “server” need to be moved to your Raspberry Pi ‘users’ folder.



You can go to https://nodejs.org/en/download/ to get the latest version, or you can log into your Raspberry Pi using Putty, and use the following to install it.

curl -sLS https://apt.adafruit.com/add | sudo bash
sudo apt-get install node
node -v

That's it! To check Node.js is properly installed and you have the right version, run the command node -v

Now using Windows Explorer go to you Raspberry Pi and right click on the 'server.js' file and choose "Edit with Notepad++". Once open Change the number 1234 to the port number you're using. Then change the line var rokuAddress = null; to var rokuAddress = "http://YOUR_ROKU_IP_HERE:8060/";

Once done save, and close the file and navigate to the folder "AWS Files – Lambda" inside the "alexaroku-master" folder that you moved to your Raspberry Pi and open it, and then right click on the file "serverinfo.js" and choose "Edit with Notepad++", Once opened change the IP address to the public one you found in your router "DSL/Cable Modem", and change the 1234 beneath it to the port number you are using, then save and, close the file.

In the "AWS Files – Lambda" folder located in the "alexaroku-master" folder that you copied to your Raspberry Pi, Right click the "index.js" file and choose "Edit with Notepad++". Now change the APP_ID to the APP_ID found on the https://developer.amazon.com website. To get there sign in, click "Alexa" at the top, and then the "Get Started" under the "Alexa Skills Kit". You should see the skill you created "AlexaRoku" at the start. Once you click on "AlexaRoku" you will be taken to a page where you will find the application Id. You will need to copy this ID and paste it in the "index.js" file.

In the first line of the "index.js" file, next to var APP_ID = you need to paste your Application ID. Make sure to leave the quotation marks, and also no spaces before or after the beginning 'a' and the last number in the ID.

In that same "AWS Files – Lambda" folder, in the raspberry Pi, right click anywhere in that folder except for on the files, and click "New" from the menu and select "Compressed (zipped) folder" from the list. A new zip folder will appear, now move all three of the files (serverinfo.js, index.js and, AlexaSkill.js) into that new zip folder. This will only copy them into it and, not actually move them there.

Now open that newly created folder to verify they are all inside. If all three (serverinfo.js, index.js and, AlexaSkill.js) are in that newly created zip folder, we are ready to upload the folder to our AWS account. Go to https://aws.amazon.com and sign in to console. Once there look for "Lambda" and then select "AlexaRoku". You will now be taken to the "Configuration" page. Under "Function Code" you will see "Code entry type" in the drop down list choose "Upload a .ZIP file" then click the upload button, and navigate to the new zip folded we just created in the "AWS Files - Lambda" folder. Now click the "Save" button at the top, NOT the "Save and test".

If you have more than one Roku, unplug all but the one you're setting this up for.

Now open "Remote Desktop Connection" and login to your Raspberry Pi. Once logged in open a terminal and type "npm install" and "node server.js" Now say to you Amazon Echo or Dot "Alexa, tell Roku to go home" if it responds "going home" and the Roku go's to the main menu on the Roku you're done. If for some reason it's not working, chances are the port forwarding isn't setup correctly in your router "DSL/Cable Modem".

Part 6) Setting up "Node Forever"

Install Node Forever. It must be installed globally. Copy the commands below and enter them into you Raspberry Pi using Putty.

sudo npm install forever --global

forever start /home/pi/server.js
Using Windows Explorer , login to your pi and click on the folder “Home” and navigate to the folder “etc” and open the file rc.local with Notepad++.
vi /etc/rc.local
Change file, add “forever start /home/pi/server.js” before the line “exit 0” then save and close Notepad++.

If you are using forever programmatically you should install forever-monitor.
cd /home/pi
sudo npm install forever-monitor
npm test

To stop Node Forever type “forever stop server.js”

If you made it this far and everything is working … you are done, and It’s time to fix a stiff drink, and give yourself a pat on the back!

Remember if your ISP assigns a public IP address dynamically, and your router reboots you will have to copy the new public IP address to the “serverinfo.js” file and, move it to the “Compressed (zipped) folder” that you created, and upload it to the AWS “Configuration” page. This why I recommend you plug your router “DSL/Cable Modem” into a power backup!

Sources:

Instructional PDF and Links:

https://github.com/chris1642/alexaroku/blob/master/Alexa%20Roku%20Guide.pdf

https://github.com/chris1642/alexaroku

https://github.com/julianh2o/RokuAlexaLambdaSkill

http://reflowster.com/blog/2015/07/21/rokuvoicecontrol.html

https://github.com/MrEggsalad/Echo-Roku-Voice-Control

https://www.youtube.com/watch?v=P4mT5Tbx_KE

https://www.npmjs.com/package/forever-monitor