Tutorial 0 - Getting Started with AWS

Version 0.10
Obtaining a User Account

Objective

The purpose of this tutorial is to describe how to establish AWS account(s) for supporting work in TCSS 562.

For the course, please create either a personal AWS account using your UW NET ID email* to obtain instructor provided credits, or the AWS Educate program to create an AWS account with education credits provided directly by Amazon Web Services (AWS). An AWS account will be required to provide cloud computing resources for tutorials and the Term Project.

Use of a Linux environment is strongly recommended for AWS access.

For Windows 10 users, there is an Ubuntu "App" that can be installed onto Windows 10 directly. This provides an Ubuntu Linux environment without the use of Oracle Virtualbox. Alternatively, Windows users can install Oracle Virtual Box to create virtual machines under Windows 10, and then install an Ubuntu 20.04 virtual machine.

Windows 10 Ubuntu "App" instructions:
https://msdn.microsoft.com/en-us/commandline/wsl/install_guide

Windows Oracle Virtual Box & Ubuntu VM instructions:
There are a number of blogs and YouTube videos that walk through installing Oracle VirtualBox on Windows 10, and how to then install Ubuntu 20.04 LTS on Virtual Box. Search using google.com or video.google.com to find blogs and/or videos to help.

Oracle VirtualBox can be downloaded from:
https://www.virtualbox.org/wiki/Downloads

** - use of UW NET ID email is not required for non-AWS Educate option.*

Task 1 – Creating an AWS account

If you do not presently have an AWS account, as of Fall 2021 there are two options to create an account to then receive cloud computing credits.

Option #1 – Create a Standard AWS Account (RECOMMENDED)

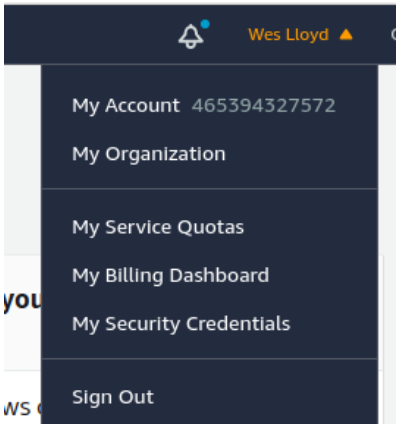
The best option is to create a standard AWS account using your UW email address. This option requires providing a credit card as a backup if the account runs out of

cloud computing credits. For this option navigate to the website (**https://aws.amazon.com/**) and click the "Create Account" button:

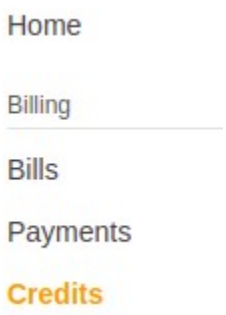
Complete the registration following all instructions.
Once the account is created, contact the instructor by email to request a credit coupon code. Use **"AWS CREDIT REQUEST"** as the email subject.
Please include your the email address that you've used to create the AWS account in the email to identify the account.

The instructor will email a credit code which can be used to provide AWS Cloud Credits.

To enter the credit code, in the upper-right hand corner, select your name, and "My Billing Dashboard":



On the left-hand side select "Credits":



You'll find a place to Reedem Credits by entering the credit code. Please monitor **Credits** using this screen, as well as **Bills** to monitor your AWS usage. Please do not leave resources running when they are not actively used (e.g. VMs, etc.) to prevent accidental exhaustion of AWS credits.

Option #2 – Create an AWS Educate Starter Account

[UNDER REVISION]

As of August 2021, support for the creation of new AWS Educate Starter Accounts through the AWS Educate Portal has been disabled. This section will be updated when possible with further detail regarding availability of AWS Educate Starter Accounts or any similar alternative.

AWS Educate provides “Starter Accounts” without requiring the use of a credit card. Initially, Starter Accounts provide either a $50 or $100 credit. As of Fall 2020, it appears that students can request additional credits through the user interface 1-time for $20 which is good for 10 additional days (not verified). It is unclear if credits can be extended beyond this. Once all credits are exhausted, this account will be limited to AWS Free Tier resources:

https://aws.amazon.com/free/

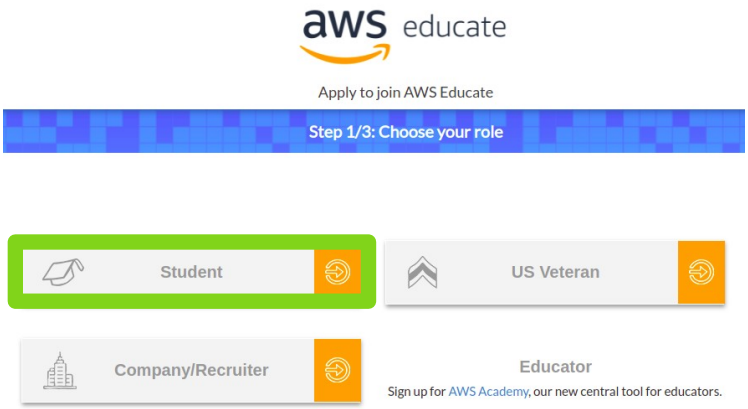
Before applying, please note your UW email ID has up to ~3 domain name variants that can be used to apply to create a secondary or replacement account. If cloud credits are exhausted on an account with the original email ID, it is possible to apply again with an alternate email with an “.edu” domain.

UW “.edu” domains include: “uw.edu”, “u.washington.edu”, and “washington.edu”. Occasionally AWS Educate applications are denied because of an issue with an email address. In some cases, reapplying using an alternate email ID has been sufficient to resolve the issue.

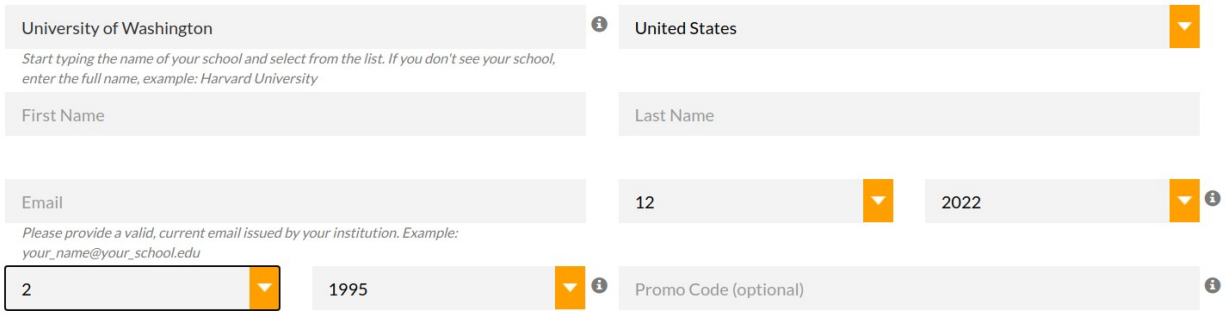
Go to **https://www.awseducate.com/** to register.

Click on the button to Join AWS Educate:

Apply for an account as a Student:



Next, populate the form:



Click continue. You'll be presented with a general liability/release form to read and agree to. Once accepting, you'll receive a request to verify your email address. Once your email is verified, you should receive a second email with the title "AWS Educate Application Approved". If you do not receive this email, you may follow-up with the instructor.

AWS Educate provides a controller-user experience and allows you to access AWS services through a "FIXED" user interface which locks down certain features. This user interface is provided by Vocareum, a third party provider. On the Vocareum UI, there will be a button to access the AWS console:

If you already have an AWS account created on your own, not using a UW email, then it should be possible to create a ***new*** account by applying for the AWS Educate using your UW email. It may be necessary to use an alternate domain name: "uw.edu", "u.washington.edu", and "washington.edu".

Here are the account limitations for starter accounts as of May 2021:
https://awseducate-starter-account-services.s3.amazonaws.com/AWS_Educate_Starter_Account_Services_Supported.pdf

A key limitation is that spot instances are **not** supported.
Spot instances are low-cost virtual machines which can be accessed for about ~ 1/3 or even 1/4 the cost of full priced VMs. (*discussed in tutorial #3)*

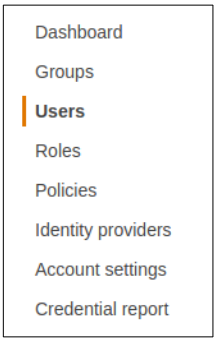
Task 2 – Obtaining Account Credentials

Once having access to AWS, create AWS account credentials to work with virtual machines on EC2, if you have not already done so. Credentials are required to access virtual machines by remote shell (SSH), and also to use the AWS command line interface, and programming APIs.

If not using an AWS Educate starter account: from the AWS services drop-down list, search for "IAM", which stands for Identity Access Management. This is under the "Security" group of service, select it:

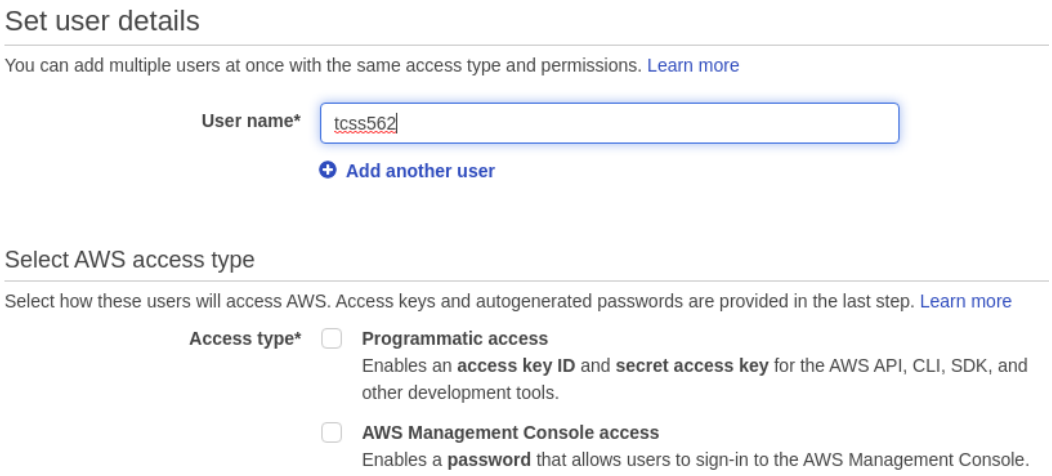
Optionally, IAM can be accessed by clicking on your name in the upper-right hand corner, and selecting "My Security Credentials".

Once in the IAM dashboard, on the left hand-side select "Users":



You may need to press "Add user", if there are no users.
If there are users, select your user.

For creating a new users, provide a user account name. Here I am using "tcss562" as an example:



Be sure to select the “Programmatic access” checkbox.
If this is the default account “AWS Management Console access” may already be checked. If it is not checked, check it, and follow instructions to configure a password.

Then click the “Next: Permissions” button…

For simplicity, you can simply select the button:

Using the search box, search, find, and select using the checkbox the following policy:

* AmazonEC2FullAccess

If you plan to use this user account to explore additional Amazon’s services, then admin access can be added (not required):

* AdministratorAccess

This will allow you, via the CLI, to explore and do just about everything with this AWS account.

Now click the “Next: Review” button, and then select “Create user”.

You'll now see a screen with an Access key ID (grayed out below), and a Secret access key. You can copy both the Access key, and the secret access key to a safe place, or alternatively, click the "Download .csv" button to download a file containing this information.

Once you've downloaded these keys, be sure to **never** publish these key values in a source code repository such as github where your account credentials could be exposed. **Protect these keys as if they were your credit card or wallet!**

If using an AWS Educate starter account: Obtain account credentials for your AWS Educate starter account by using the Vocareum user interface as below in your web browser. Click the **blue button** labeled **"Account Details":**

Press the **"Account Details"** button
to obtain credentials for an AWS Educate account:

This should provide access to the account credentials including an ***access key*** and a ***secret key***. Copy these and store in a safe and secure place.

Task 3 – Install and Configure the AWS Command Line Interface (CLI)

On your Ubuntu machine, after obtaining your access key and secret key, install the AWS command line interface:

```
sudo apt install awscli
```

After installing, configure the CLI to use your credentials using “aws configure”.
Provide your access key and secret key from Task 2.
Specify “us-east-2” (Ohio) as the default region.
Leave the default output as none. Most output will be returned in JSON format.

```
$ aws configure
AWS Access Key ID [None]: XXXXXXXXXXXXXXXXXXX
AWS Secret Access Key [None]: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Default region name [None]: us-east-2
Default output format [None]:
```

Check the version of the AWS CLI that’s been installed:

```
$ aws --version
aws-cli/1.18.69 Python/3.8.10 Linux/5.11.0-37-generic botocore/1.16.19
```

Now try inspecting the available AWS CLI commands:

$ aws help

Now try lists the default Virtual Private Clouds (VPCs) that are preconfigured in your account to provide networking for virtual machines:

$ aws ec2 describe-vpcs

Once launching a virtual machine in Tutorial #3, you can describe running virtual machines with the command:

$ aws ec2 describe-instances

Document History:
v.10 Initial version