

# Practical Worksheet 1

## AWS Accounts and Log In

Search and open Identity Access Management

The screenshot shows the AWS IAM 'My security credentials' page. The left sidebar is titled 'Identity and Access Management (IAM)' and includes links for Dashboard, Access management, User groups, Users, Roles, Policies, Identity providers, Account settings, Access reports, Access analyzer, Archive rules, Analyzers, Settings, Credential report, Organization activity, and Service control policies (SCPs). A search bar at the bottom of the sidebar says 'Search IAM'. The main content area is titled 'My security credentials' and contains 'Account details' with fields for User name (23344153@student.uwa.edu.au), User ARN (arn:aws:iam::523265914192:user/23344153@student.uwa.edu.au), AWS account ID (523265914192), and Account canonical user ID (e899a06030e20f8e9945922db62a14112f50d6a6d19721ca733875beb9e50f3c). Below this are tabs for 'AWS IAM credentials' (selected), 'AWS CodeCommit credentials', and 'Amazon MCS credentials'. A section for 'Password for console access' includes a 'Change password' button. Another section for 'Access keys for CLI, SDK, & API access' shows a table with one row: Access key ID (AKIAXTVIUGVPOXCNPV), Status (Active), Created (2022-08-02 11:19 UTC+0800), Last used (2022-08-02 11:32 UTC+0800), and Actions (Make inactive | Delete). The top right corner shows the user's email (23344153@student.uwa.edu.au) and account ID (523265914192).

## Virtual Box and Ubuntu VM

Download and install the appropriate version of VirtualBox

The screenshot shows the Oracle VM VirtualBox Manager interface. The top menu bar has icons for close, minimize, and maximize. The toolbar includes 'Tools' (with a wrench icon), 'Preferences' (with a gear icon), 'Import' (with a yellow arrow icon), 'Export' (with a blue arrow icon), 'New' (with a blue starburst icon), and 'Add' (with a green plus icon). The main window is titled 'Welcome to VirtualBox!' and contains text explaining the application's features: 'The left part of application window contains global tools and lists all virtual machines and virtual machine groups on your computer. You can import, add and create new VMs using corresponding toolbar buttons. You can popup a tools of currently selected element using corresponding element button.' It also says 'You can press the ⌘? key to get instant help, or visit [www.virtualbox.org](http://www.virtualbox.org) for more information and latest news.' To the right of the text is a cartoon illustration of a penguin holding a toolbox.

Download Ubuntu 20.04 LTS iso

 ubuntu-20.0...op-amd64.iso

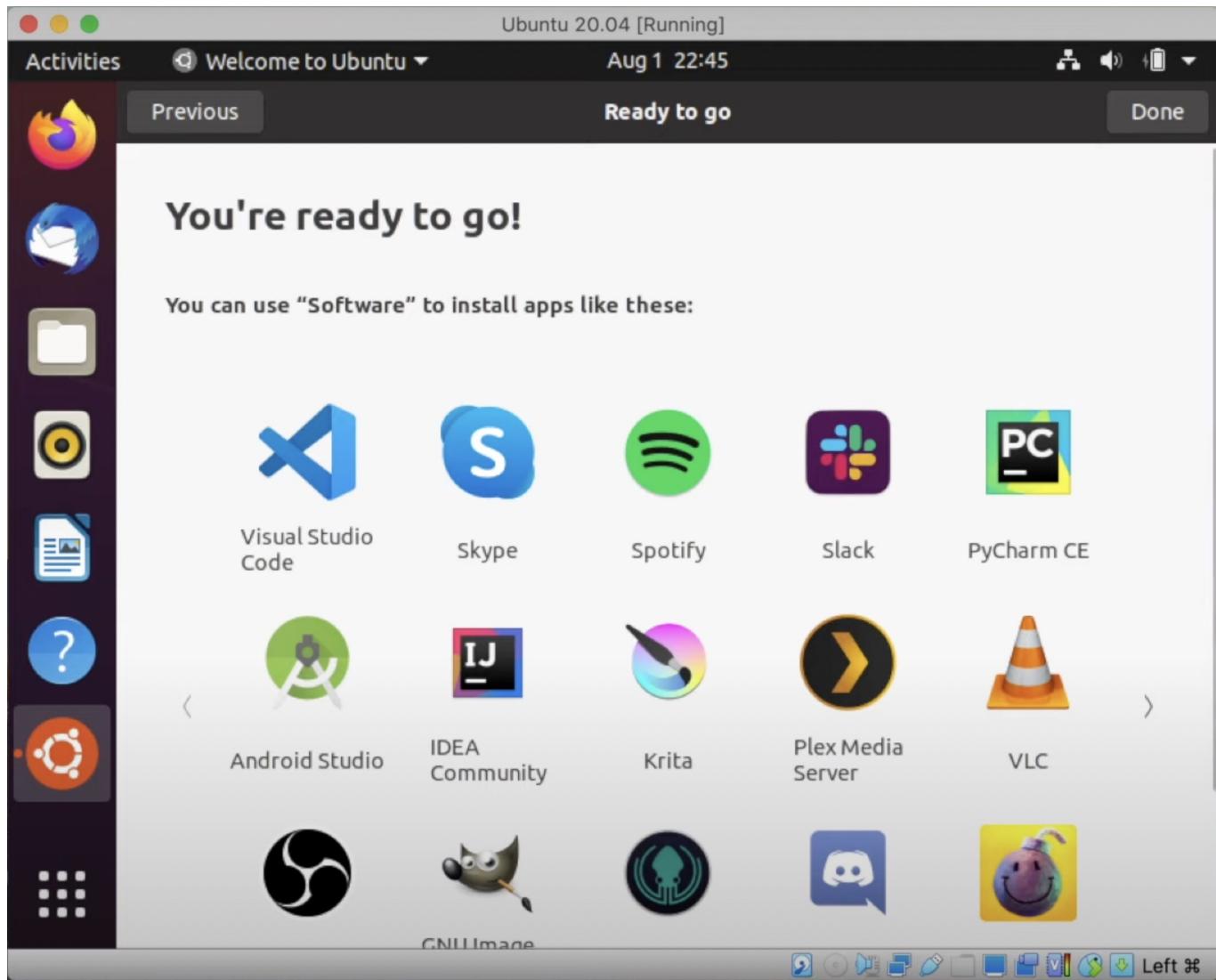


## **ubuntu-20.04-desktop-amd64.iso**

ISO Disk Image - 2.72 GB

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Setup VM



## AWSCLI, Boto and Python 3.8.x

Install Python 3.8.x

```
(venv) >_ Labs/lab1 $ python -V
Python 3.8.9
```

Install awscli

```
(venv) >_ Labs/lab1 $ curl "https://awscli.amazonaws.com/AWSCLIV2.pkg" -o "AWSCLIV2.pkg"
% Total    % Received % Xferd  Average Speed   Time   Time   Time  Current
          Dload  Upload   Total Spent  Left Speed
100 28.0M  100 28.0M    0      0  8452k    0:00:03  0:00:03 --:--:-- 8467k
(venv) >_ Labs/lab1 $ sudo installer -pkg AWSCLIV2.pkg -target /
Password:
installer: Package name is AWS Command Line Interface
installer: Installing at base path /
installer: The install was successful.
(venv) >_ Labs/lab1 $ aws configure
AWS Access Key ID [None]: AKIAXTVIUGVIPOXCN0P
AWS Secret Access Key [None]: f/QIaXWQ0fZDDksqM3HwPZRKN0sdzfv2BZxQe/g9
Default region name [None]: ap-southeast-2
Default output format [None]: json
```

## Install boto3

```
(venv) >_ Labs/lab1 $ pip install boto3
Collecting boto3
  Downloading boto3-1.24.43-py3-none-any.whl (132 kB)
    132.5/132.5 kB 3.6 MB/s eta 0:00:00
Collecting s3transfer<0.7.0,>=0.6.0
  Downloading s3transfer-0.6.0-py3-none-any.whl (79 kB)
    79.6/79.6 kB 2.7 MB/s eta 0:00:00
Collecting botocore<1.28.0,>=1.27.43
  Downloading botocore-1.27.43-py3-none-any.whl (9.0 MB)
    9.0/9.0 MB 7.0 MB/s eta 0:00:00
Collecting jmespath<2.0.0,>=0.7.1
  Downloading jmespath-1.0.1-py3-none-any.whl (20 kB)
Collecting urllib3<1.27,>=1.25.4
  Downloading urllib3-1.26.11-py3-none-any.whl (139 kB)
    139.9/139.9 kB 4.3 MB/s eta 0:00:00
Collecting python-dateutil<3.0.0,>=2.1
  Using cached python_dateutil-2.8.2-py2.py3-none-any.whl (247 kB)
Collecting six>=1.5
  Using cached six-1.16.0-py2.py3-none-any.whl (11 kB)
Installing collected packages: urllib3, six, jmespath, python-dateutil, botocore, s3transfer, boto3
Successfully installed boto3-1.24.43 botocore-1.27.43 jmespath-1.0.1 python-dateutil-2.8.2 s3transfer-0.6.0 six-1.16.0 urllib3-1.26.11
```

## Exploring and testing the environment

Test the aws environment by running

```
(venv) >_ Labs/lab1 $ aws ec2 describe-regions --output table
```

DescribeRegions		
Regions		
Endpoint	OptInStatus	RegionName
ec2.eu-north-1.amazonaws.com	opt-in-not-required	eu-north-1
ec2.ap-south-1.amazonaws.com	opt-in-not-required	ap-south-1
ec2.eu-west-3.amazonaws.com	opt-in-not-required	eu-west-3
ec2.eu-west-2.amazonaws.com	opt-in-not-required	eu-west-2
ec2.eu-west-1.amazonaws.com	opt-in-not-required	eu-west-1
ec2.ap-northeast-3.amazonaws.com	opt-in-not-required	ap-northeast-3
ec2.ap-northeast-2.amazonaws.com	opt-in-not-required	ap-northeast-2
ec2.ap-northeast-1.amazonaws.com	opt-in-not-required	ap-northeast-1
ec2.sa-east-1.amazonaws.com	opt-in-not-required	sa-east-1
ec2.ca-central-1.amazonaws.com	opt-in-not-required	ca-central-1
ec2.ap-southeast-1.amazonaws.com	opt-in-not-required	ap-southeast-1
ec2.ap-southeast-2.amazonaws.com	opt-in-not-required	ap-southeast-2
ec2.eu-central-1.amazonaws.com	opt-in-not-required	eu-central-1
ec2.us-east-1.amazonaws.com	opt-in-not-required	us-east-1
ec2.us-east-2.amazonaws.com	opt-in-not-required	us-east-2
ec2.us-west-1.amazonaws.com	opt-in-not-required	us-west-1
ec2.us-west-2.amazonaws.com	opt-in-not-required	us-west-2

Test the python environment

```
(venv) >_ Labs/lab1 $ python
Python 3.8.9 (default, May 17 2022, 12:55:41)
[Clang 13.1.6 (clang-1316.0.21.2.5)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>> import boto3
>>> ec2 = boto3.client('ec2')
>>> response = ec2.describe_regions()
>>> print(response)
{'Regions': [{('Endpoint': 'ec2.eu-north-1.amazonaws.com', 'RegionName': 'eu-north-1', 'OptInStatus': 'opt-in-not-required'), {'Endpoint': 'ec2.ap-south-1.amazonaws.com', 'RegionName': 'ap-south-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.eu-west-3.amazonaws.com', 'RegionName': 'eu-west-3', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.eu-west-2.amazonaws.com', 'RegionName': 'eu-west-2', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.eu-west-1.amazonaws.com', 'RegionName': 'eu-west-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.ap-north-east-3.amazonaws.com', 'RegionName': 'ap-northeast-3', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.ap-northeast-2.amazonaws.com', 'RegionName': 'ap-northeast-2', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.ap-northeast-1.amazonaws.com', 'RegionName': 'ap-northeast-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.sa-east-1.amazonaws.com', 'RegionName': 'sa-east-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.ap-southeast-1.amazonaws.com', 'RegionName': 'ap-southeast-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.ap-southeast-2.amazonaws.com', 'RegionName': 'ap-southeast-2', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.eu-central-1.amazonaws.com', 'RegionName': 'eu-central-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.us-east-1.amazonaws.com', 'RegionName': 'us-east-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.us-east-2.amazonaws.com', 'RegionName': 'us-east-2', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.us-west-1.amazonaws.com', 'RegionName': 'us-west-1', 'OptInStatus': 'opt-in-not-required'}, {'Endpoint': 'ec2.us-west-2.amazonaws.com', 'RegionName': 'us-west-2', 'OptInStatus': 'opt-in-not-required'}], 'ResponseMetadata': {'RequestId': '19e1d308-b00b-46f0-b1c3-ae41fcc06efe', 'HTTPStatusCode': 200, 'HTTPHeaders': {'x-amzn-requestid': '19e1d308-b00b-46f0-b1c3-ae41fcc06efe', 'cache-control': 'no-cache, no-store', 'strict-transport-security': 'max-age=31536000; includeSubDomains', 'vary': 'accept-encoding', 'content-type': 'text/xml;charset=UTF-8', 'content-length': '3875', 'date': 'Tue, 02 Aug 2022 11:28:14 GMT', 'server': 'AmazonEC2'}, 'RetryAttempts': 0}}
```

Put this code into a python file and tabulate the print to have 2 columns with Endpoint and RegionName

```
'''lab1.py'''
import boto3
import pandas

ec2 = boto3.client('ec2')
response = ec2.describe_regions()
df = pandas.DataFrame(response['Regions'])
print(df.drop('OptInStatus', axis=1).to_string(index=False))
```

Running `lab1.py`.

```
(venv) >_ Labs/lab1 $ python lab1.py
```

	Endpoint	RegionName
	ec2.eu-north-1.amazonaws.com	eu-north-1
	ec2.ap-south-1.amazonaws.com	ap-south-1
	ec2.eu-west-3.amazonaws.com	eu-west-3
	ec2.eu-west-2.amazonaws.com	eu-west-2
	ec2.eu-west-1.amazonaws.com	eu-west-1
	ec2.ap-northeast-3.amazonaws.com	ap-northeast-3
	ec2.ap-northeast-2.amazonaws.com	ap-northeast-2
	ec2.ap-northeast-1.amazonaws.com	ap-northeast-1
	ec2.sa-east-1.amazonaws.com	sa-east-1
	ec2.ca-central-1.amazonaws.com	ca-central-1
	ec2.ap-southeast-1.amazonaws.com	ap-southeast-1
	ec2.ap-southeast-2.amazonaws.com	ap-southeast-2
	ec2.eu-central-1.amazonaws.com	eu-central-1
	ec2.us-east-1.amazonaws.com	us-east-1
	ec2.us-east-2.amazonaws.com	us-east-2
	ec2.us-west-1.amazonaws.com	us-west-1
	ec2.us-west-2.amazonaws.com	us-west-2