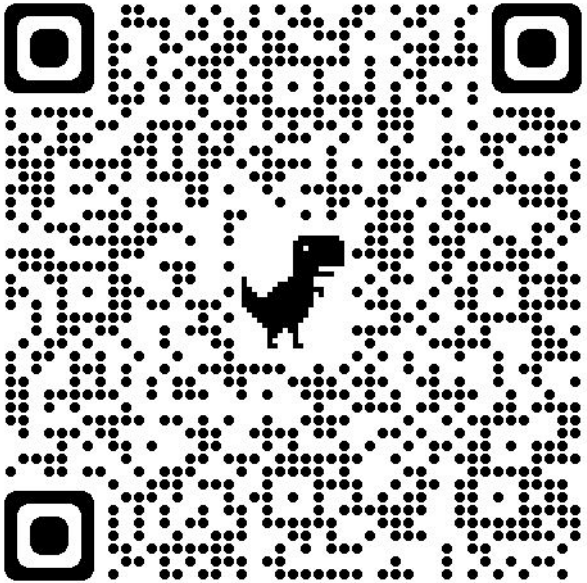
SESSION 1
-
AZURE FUNDAMENTALS

Introduction to Cloud technologies
& AZ-900 certification preparation

Installation

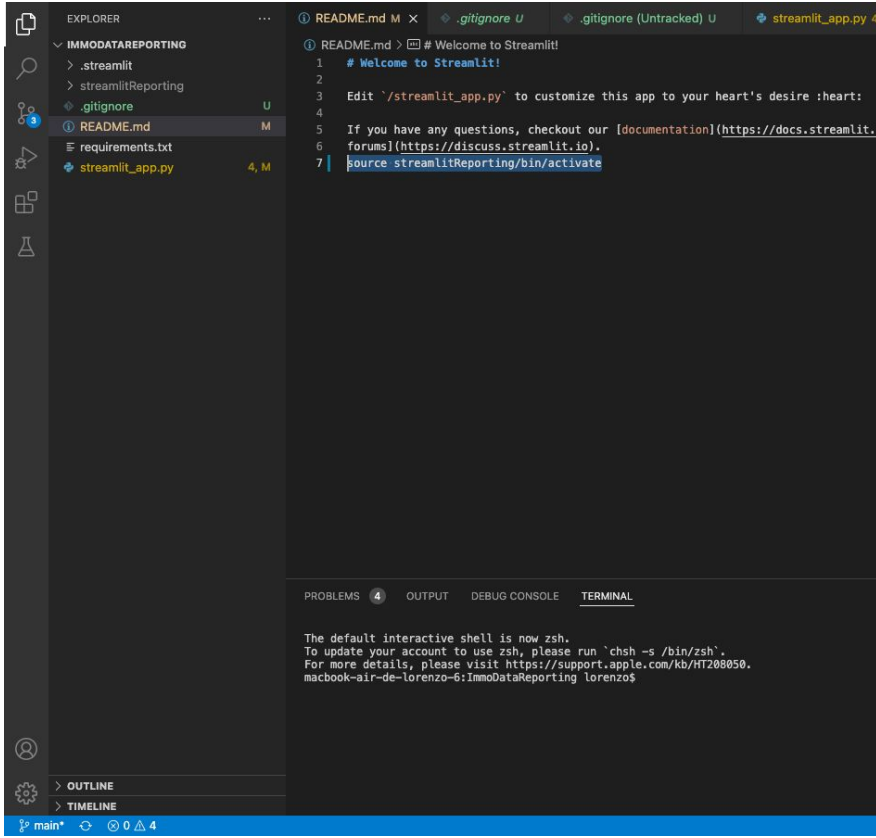
Environment setup

https://steven-vcnt.github.io/Steven-Vcnt/BSB%20Courses/0.installation/



INSTALL VISUAL STUDIO CODE

Visual Studio Code is an IDE developed by Microsoft which aims you to program in different languages like Python.

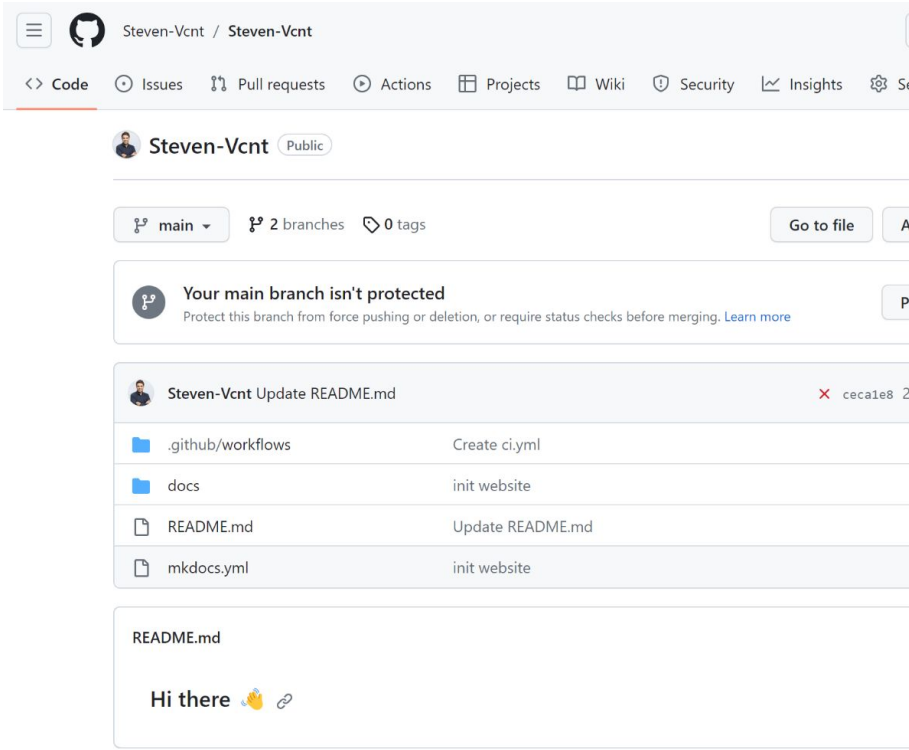


[Visual Studio Code – Code Editor | Microsoft Azure]

CREATE YOUR GITHUB ACCOUNT

GitHub is a platform for software development and version control using Git, allowing developers to store and manage their code.

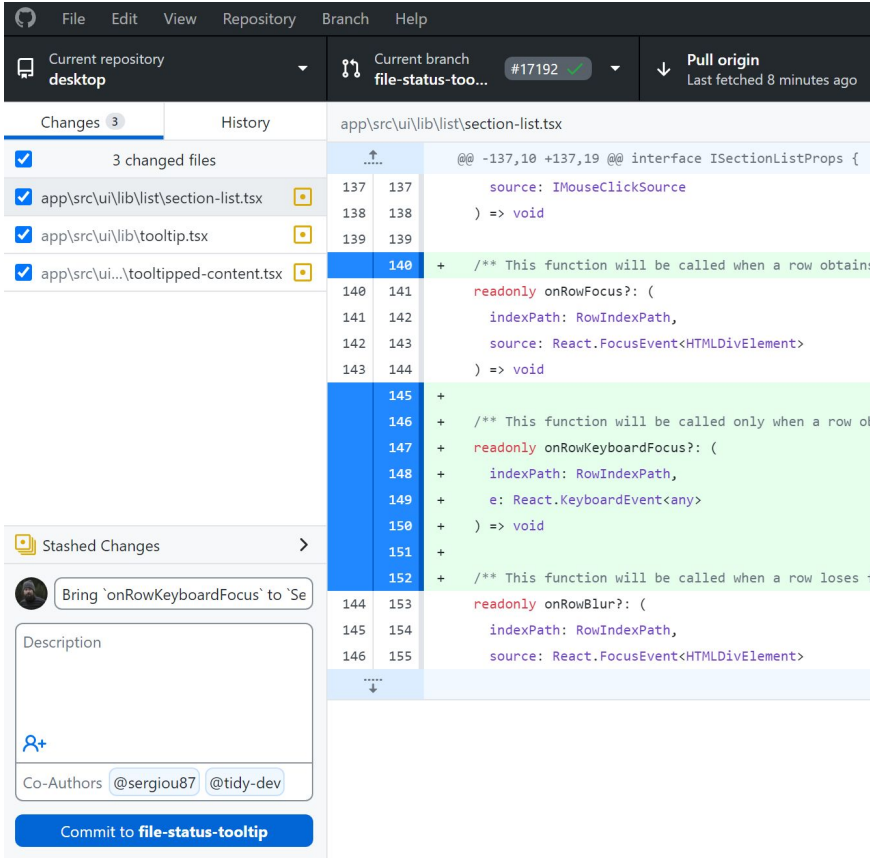
[GitHub]



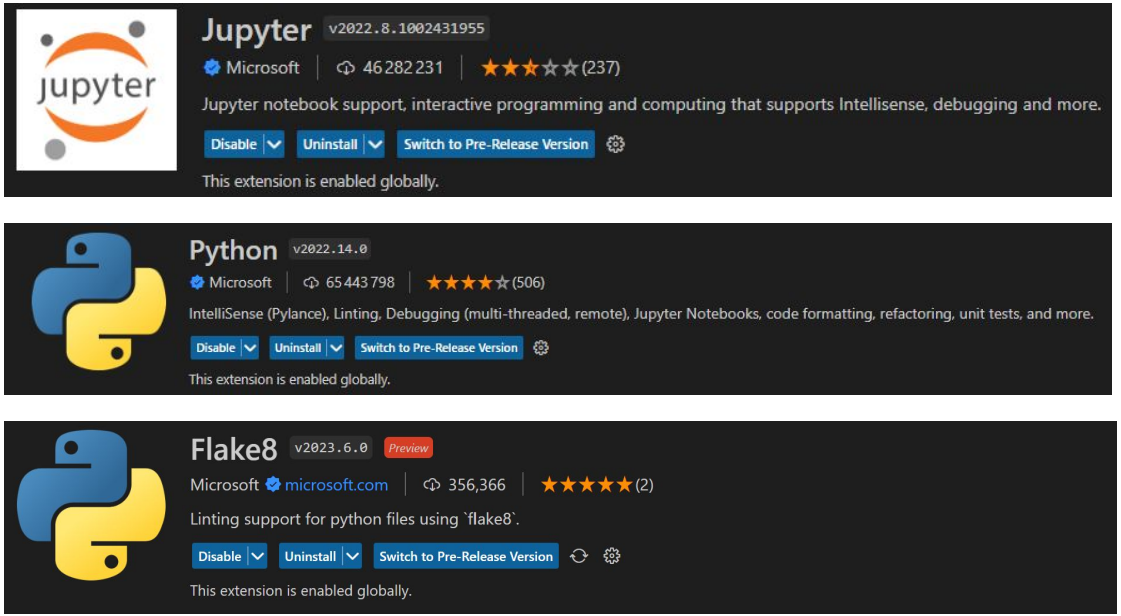
INSTALL GITHUB DESKTOP

GitHub Desktop aims to facilitate the use of Github and manage easily your repositories, commits, branches.

[GitHub Desktop]



VISUAL STUDIO CODE EXTENSION



Introduction

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PROFESSIONAL EXPERIENCES

Digital Marketing intern
Akor Consulting
2018

Data Engineer
PwC Luxembourg
06.2020 - 03.2022

Data Engineer
Société Générale
03.2022 - Now

THE DIFFERENT DATA ROLES

Data Analyst
In charge of building dashboards and analysis

ML Engineer
In charge of building machine learning pipelines

Data Engineer
In charge of developing Big data ETL data pipelines and data acquisition

BI Engineer
In charge of Data Warehouse, views, reports (Low Code ETL development)

Data Scientist
In charge of building predictions models and getting data insights

Data Architect
In charge of choosing and improving the data infrastructure

DataOps Engineer
In charge of data change management (CI/CD, Devops, release)

Azure Certification introduction - AZ 900

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AZ 900 Azure Fundamentals

2 AZ-900 certifications Sessions

Azure Fundamentals Courses via Microsoft Learn

AZ-900 Labs

AZ 900 Certification

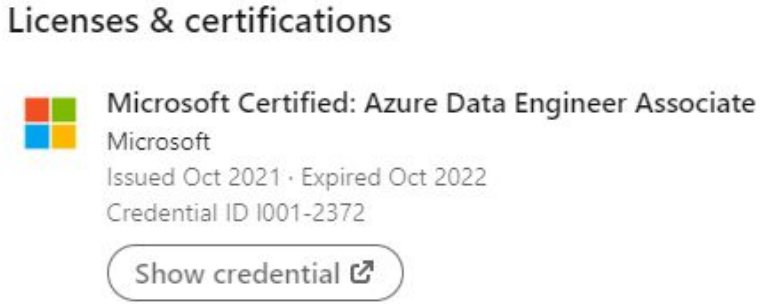
Skills measured

Demonstrating your knowledge of cloud concepts, models, and services and showing your expertise in Azure.

AZ-900 Domain Area	Weight
Describe cloud concepts	25-30%
Describe Azure architecture and services	35-40%
Describe Azure management and governance	30-35%

Benefits of azure certifications

- Showcase that you understand the fundamentals of Azure (LinkedIn, Resume)
- Official Certification from Azure
- Certification is worth 100$
- Once passed, you can renew for free your certification and stay updated on changes and new technologies

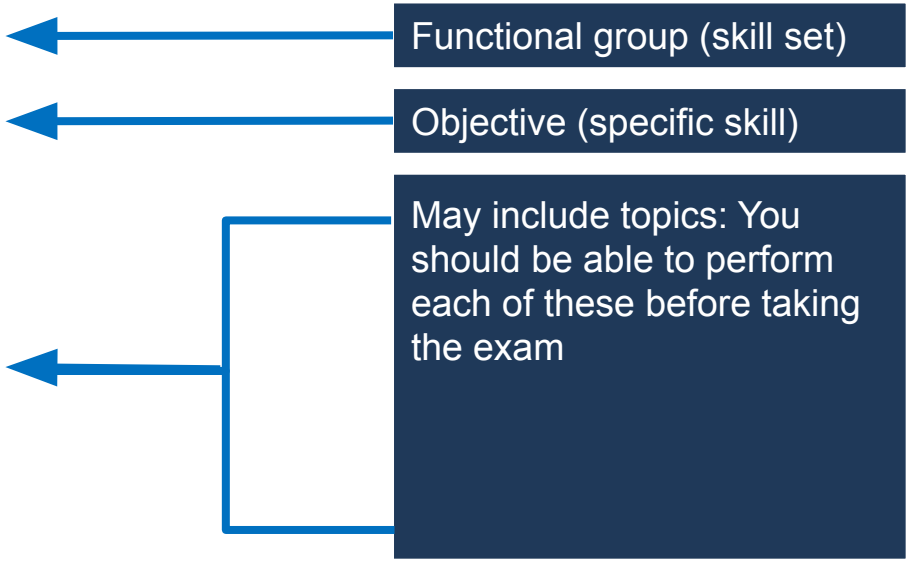


How to read the exam study guide

Describe cloud concepts (25–30%)

Describe cloud computing

- Define cloud computing
- Describe the shared responsibility model
- Define cloud models, including public, private, and hybrid
- Identify appropriate use cases for each cloud model
- Describe the consumption-based model
- Compare cloud pricing models



Exam basics

How to pass the exam?

- Scores are reported on a scale of 1 to 1000.
- You need a passing score of 700 or greater
- 700 may not equal 70% of the points

How much time?

- 65 minutes: 45 minutes to answer questions and 20 minutes for miscellaneous

How many questions?

- 35 to 50 questions
- Questions may be worth more than 1 point depending on the difficulty of the question
- Go with your gut and don't overthink
- Answer all the questions as there is no penalty for guessing
- You can mark items for review and take another look, some questions cannot be revisited

What type of question?

- It is more than just multiple-choice questions
  - Build list
  - Hot area
  - Active screen
  - Drag and drop

Answer every question!

Question example

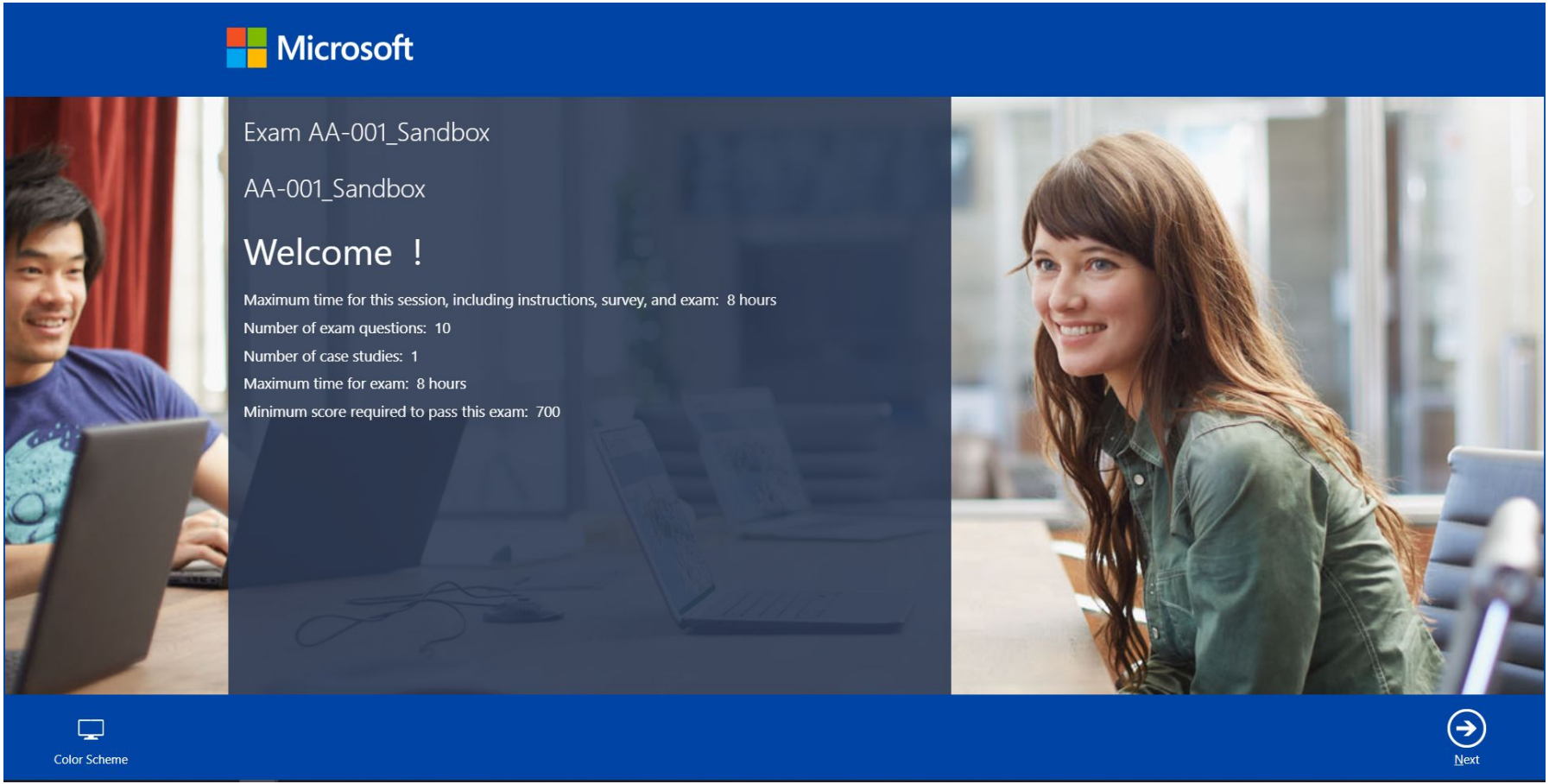
Item Stem

Technical Environment	
Business Plan / Problem	
Goal Statement	You need to ensure that you are monitoring cost consumption of Azure usage.
Question Statement	What tool should you use?

Item Options

Option A	Resource monitor
Option B	Pricing calculator
Option C	Budget alerts
Option D	

Exam Sandbox



Describe cloud concepts

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Chapter study guide

Describe cloud concepts (25–30%)

Describe cloud computing

- Define cloud computing
- Describe the shared responsibility model
- Define cloud models, including public, private, and hybrid
- Identify appropriate use cases for each cloud model
- Describe the consumption-based model
- Compare cloud pricing models

Describe the benefits of using cloud services

- Describe the benefits of high availability and scalability in the cloud
- Describe the benefits of reliability and predictability in the cloud
- Describe the benefits of security and governance in the cloud
- Describe the benefits of manageability in the cloud

Describe cloud service types

- Describe infrastructure as a service (IaaS)
- Describe platform as a service (PaaS)
- Describe software as a service (SaaS)
- Identify appropriate use cases for each cloud service (IaaS, PaaS, SaaS)

CLOUD COMPUTING

Cloud computing components & key characteristics

Cloud components:

Computing power

Storage

Networking

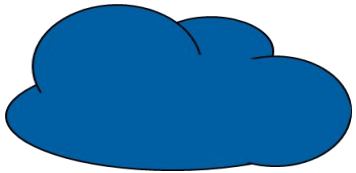
Artificial Intelligence

IoT (Internet of Things)

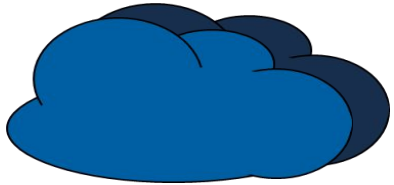
Key characteristics:

- Scalability
- Elasticity
- Agility
- Fault tolerance
- Disaster recovery
- High availability

Main types of cloud computing

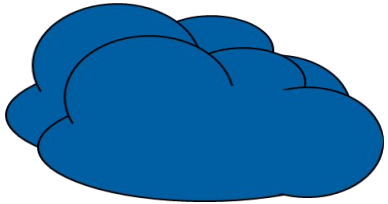


Public Cloud
Cloud computing delivered via internet and shared across organizations



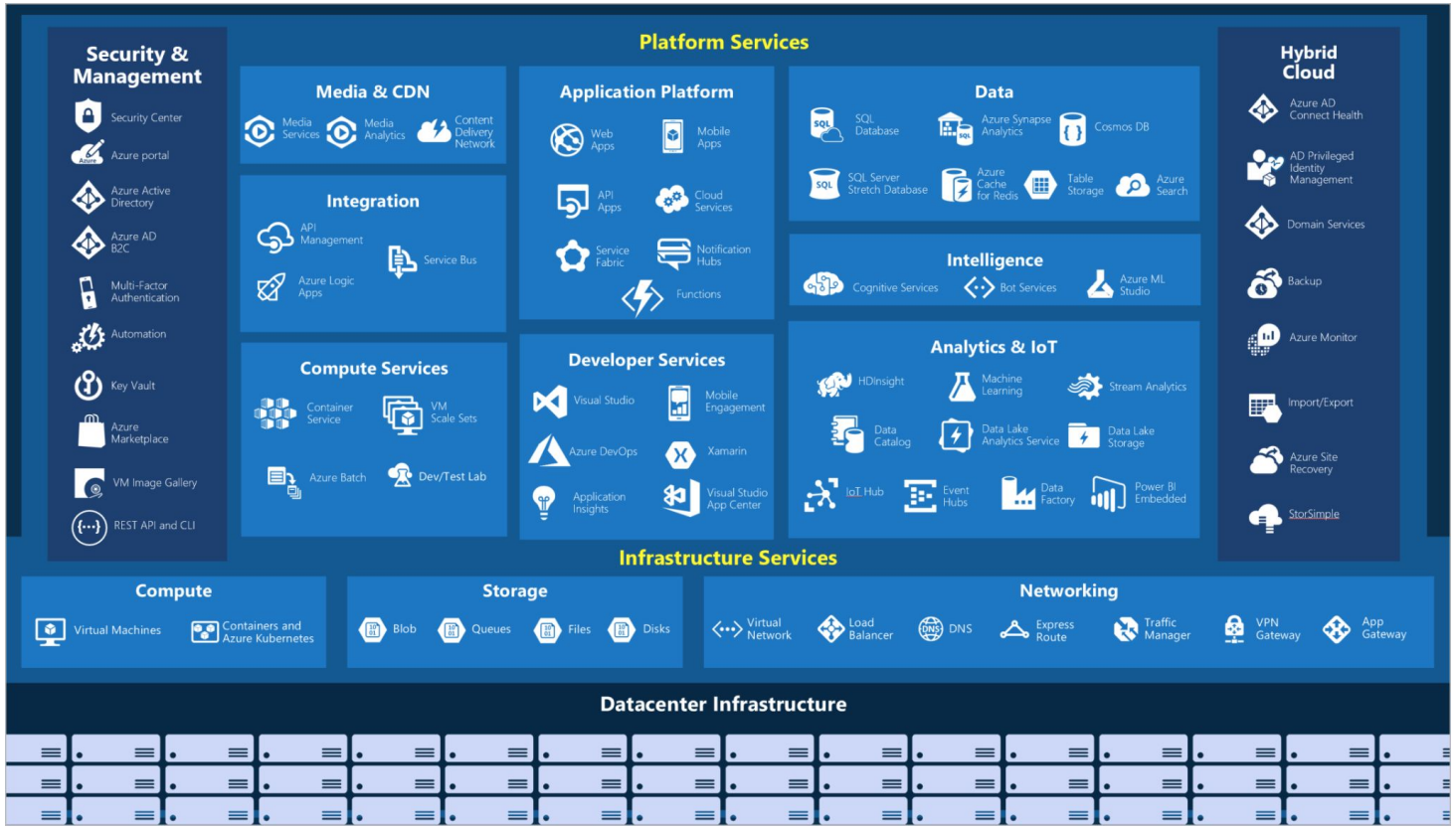
Hybrid Cloud
Cloud computing using private and public cloud

Private Cloud
Cloud computing dedicated to your organization



Multi-Cloud
Use of different Public Cloud in the same time (AWS - Azure)

Microsoft Azure platform



DEVELOPMENT OF CLOUD COMPUTING

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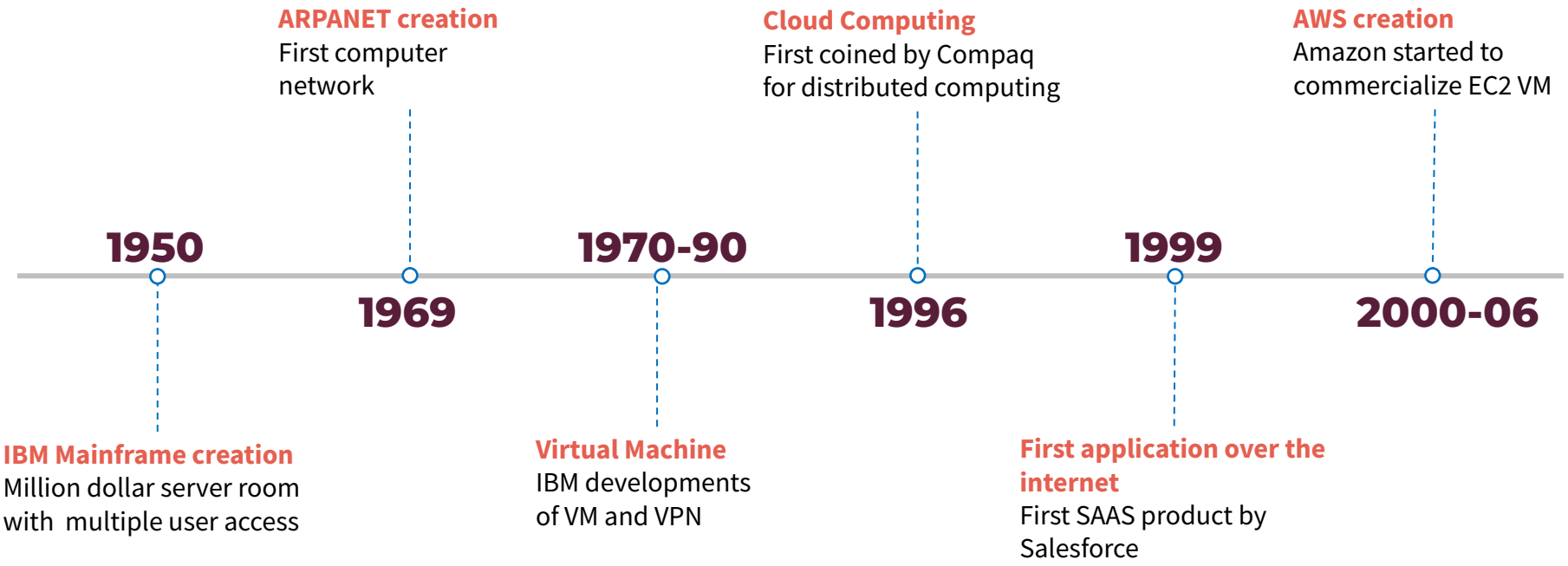
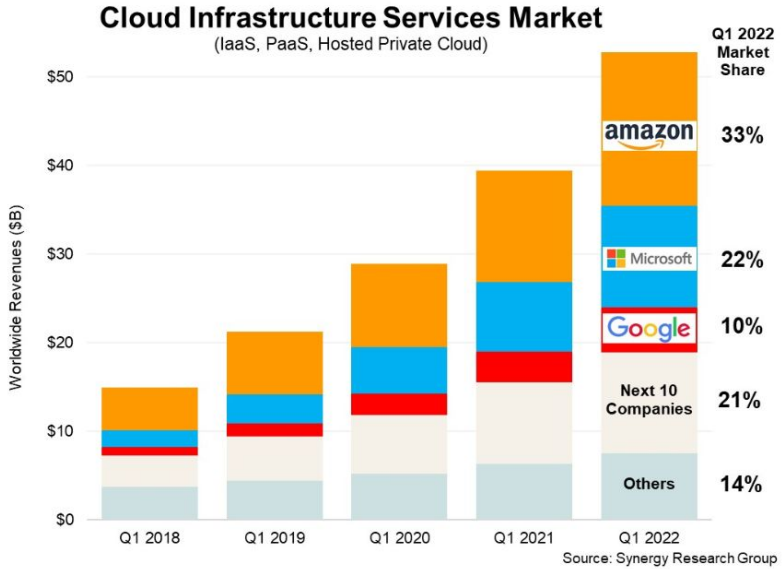
HISTORY OF CLOUD COMPUTING



OVERVIEW OF THE CLOUD ECOSYSTEM



Cloud market shares

Operating Income (Loss)

Operating income (loss) by segment is as follows (in millions):

	Year Ended December 31, 2020	2021
Operating Income (Loss):		
North America	$ 8,651	$ 7,271
International	717	(924)
AWS	13,531	18,532
Consolidated	$ 22,899	$ 24,879

Amazon annual report 2022

AMAZON ANNUAL REPORT NET SALES IN MILLIONS

	Year Ended December 31,		
	2014	2015	2016
Net Sales:			
North America	$ 50,834	$ 63,708	$ 79,785
International	33,510	35,418	43,983
AWS	4,644	7,880	12,219
Total consolidated	$ 88,988	$ 107,006	$ 135,987
Year-over-year Percentage Growth:			
North America	23%	25%	25%
International	12	6	24
AWS	49	70	55
Total consolidated	20	20	27
Year-over-year Percentage Growth, excluding the effect of foreign exchange rates:			
North America	23%	26%	25%
International	14	21	26
AWS	49	70	55
Total consolidated	20	26	28
Net Sales Mix:			
North America	57%	60%	59%
International	38	33	32
AWS	5	7	9
Total consolidated	100%	100%	100%

Amazon annual report 2017

	Year Ended December 31,	
	2020	2021
Net Sales:		
North America	$ 236,282	$ 279,833
International	104,412	127,787
AWS	45,370	62,202
Consolidated	$ 386,064	$ 469,822
Year-over-year Percentage Growth:		
North America	38 %	18 %
International	40	22
AWS	30	37
Consolidated	38	22
Year-over-year Percentage Growth, excluding the effect of foreign exchange rates:		
North America	38 %	18 %
International	38	20
AWS	30	37
Consolidated	37	21
Net sales mix:		
North America	61 %	60 %
International	27	27
AWS	12	13
Consolidated	100 %	100 %

Amazon annual report 2022

Cloud computing and its benefits

Capital Expenditure vs Operational Expenditure

Capital Expenditure

Capital expenditure is the cost a business incurs to acquire assets that will provide benefits beyond the current year.

- Long-term investment
- Upfront cost
- Full responsibility & Ownership
- Deductible over the lifetime of a tangible asset
- Overbuying for future capacity requirements

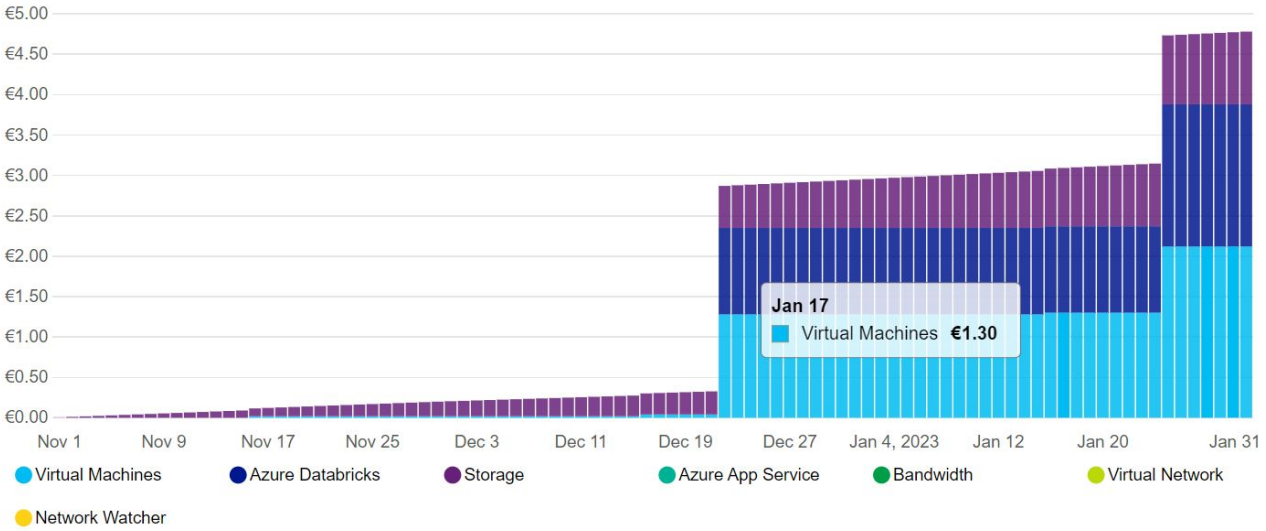
Operational Expenditure

Operating expenses refer to the money a company spends to run day-to-day operations.

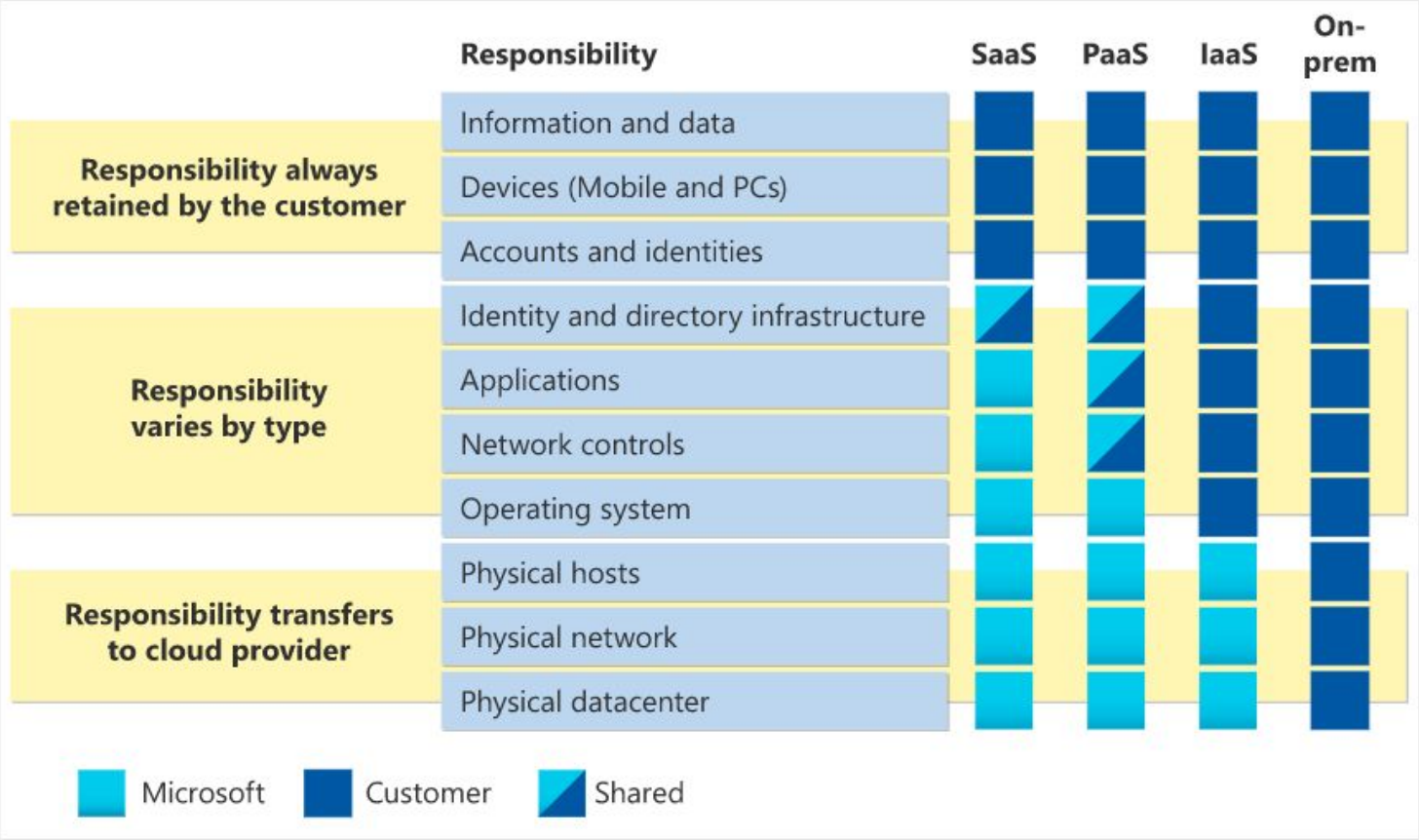
- Short-term investment
- Pay-as-you-go pricing
- Limited responsibility & Ownership
- Deducted in full within the same year they are incurred
- Flexibility of resource allocation

Consumption based model

- No upfront costs
- No wasted resources
- Pay for additional resources when needed
- Stop paying at any time



SHARED RESPONSIBILITY MODEL



Describe cloud service types

ON-PREM, IAAS, PAAS AND SAAS

Flexibility

-

SaaS
Software as a Service

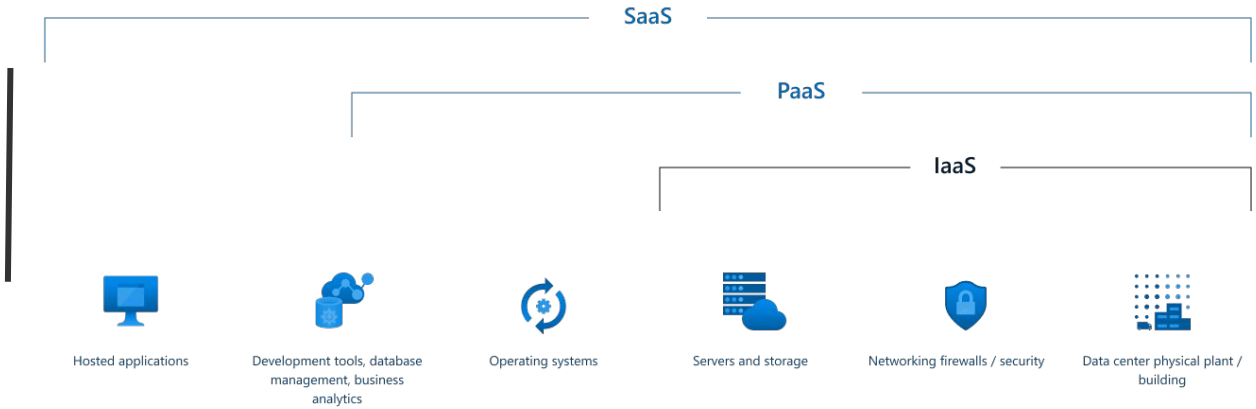
Serverless
Paas-like without infrastructure

PaaS
Platform as a Service

IaaS
Infrastructure as a Service

On-prem
Inhouse infrastructure

+



Service types example

IAAS	PAAS	SAAS
- Lift-and-shift migration - Testing & development	- Development Framework - Analytics or business intelligence	- Email and messaging. - Business productivity applications. - Finance and expense tracking.

Quizz session

https://forms.office.com/Pages/ResponsePage.aspx?id=DMCNU7rZFEirl1hLiiuqx9tk-8Z7mwJNqhl-Fs2tZlZUMTJUMzhNRzJBSU5VUERYUEEyUlJNUVU3Qi4u

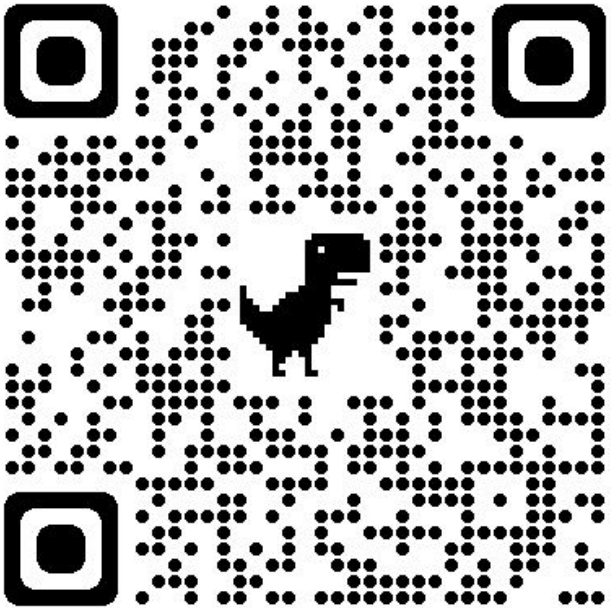
WORKSHOP

Workshop Program

- Setup Azure account
- Présentation de l’interface - OK
- Mettre en place un budget sur Azure - OK
- Install Visual Studio Code & Python - OK

Python Cheat Sheet

https://steven-vcnt.github.io/Steven-Vcnt/BSB%20Courses/1.introduction/

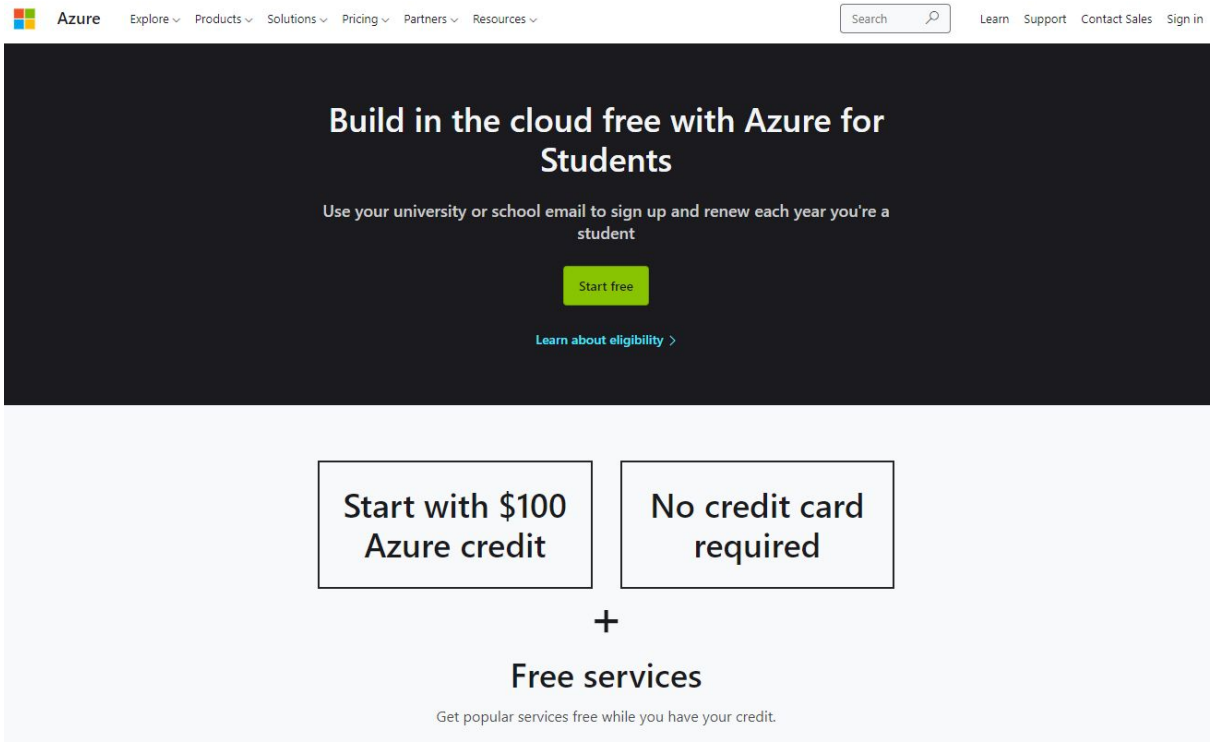


Workshop documentation

https://steven-vcnt.github.io/introduction-cloud-azure/docs/installation.html

SET UP YOUR AZURE STUDENT ACCOUNT

Create a new account the bsb mail address : [Azure for Students – Free Account Credit]



SET UP THE AZURE ENVIRONMENT

Container that holds related resources for an Azure solution

Better manage cloud spend by managing costs across all your clouds with a single, unified view.

Contains all of your Azure Storage data objects, including blobs, file shares, queues, tables, and disks.

Workshop Program

- Python basics refresher -> Website
- Read data from a data lake -> Website
- Use an API to fetch data -> Website
- Create a personal Data lake & Store Data in a data lake -> Website

Go to website

https://steven-vcnt.github.io/introduction-cloud-azure/

PYTHON ENVIRONMENT CREATION

Environment Creation:

```
PS D:\data_engineering_BSB_courses> python -m venv data-engineering
```

Go to Terminal > New Terminal and type :
python -m venv Data-Engineering

Environment Activation:

```
> D:\data_engineering_BSB_courses\data-engineering\Scripts\Activate.ps1
(data-engineering) PS D:\data_engineering_BSB_courses>
```

Go to your Env name then scripts and copy path of Activate.ps1:
D:\data_engineering_BSB_courses\data-engineering\Scripts\Activate.ps1

Upgrade pip:

```
> python -m pip install --upgrade pip
```

```
> pip install pandas
```

Upgrade pip:
Python -m pip install –upgrade pip
Install pandas as your first package:
Pip install pandas

Install ipykernel: