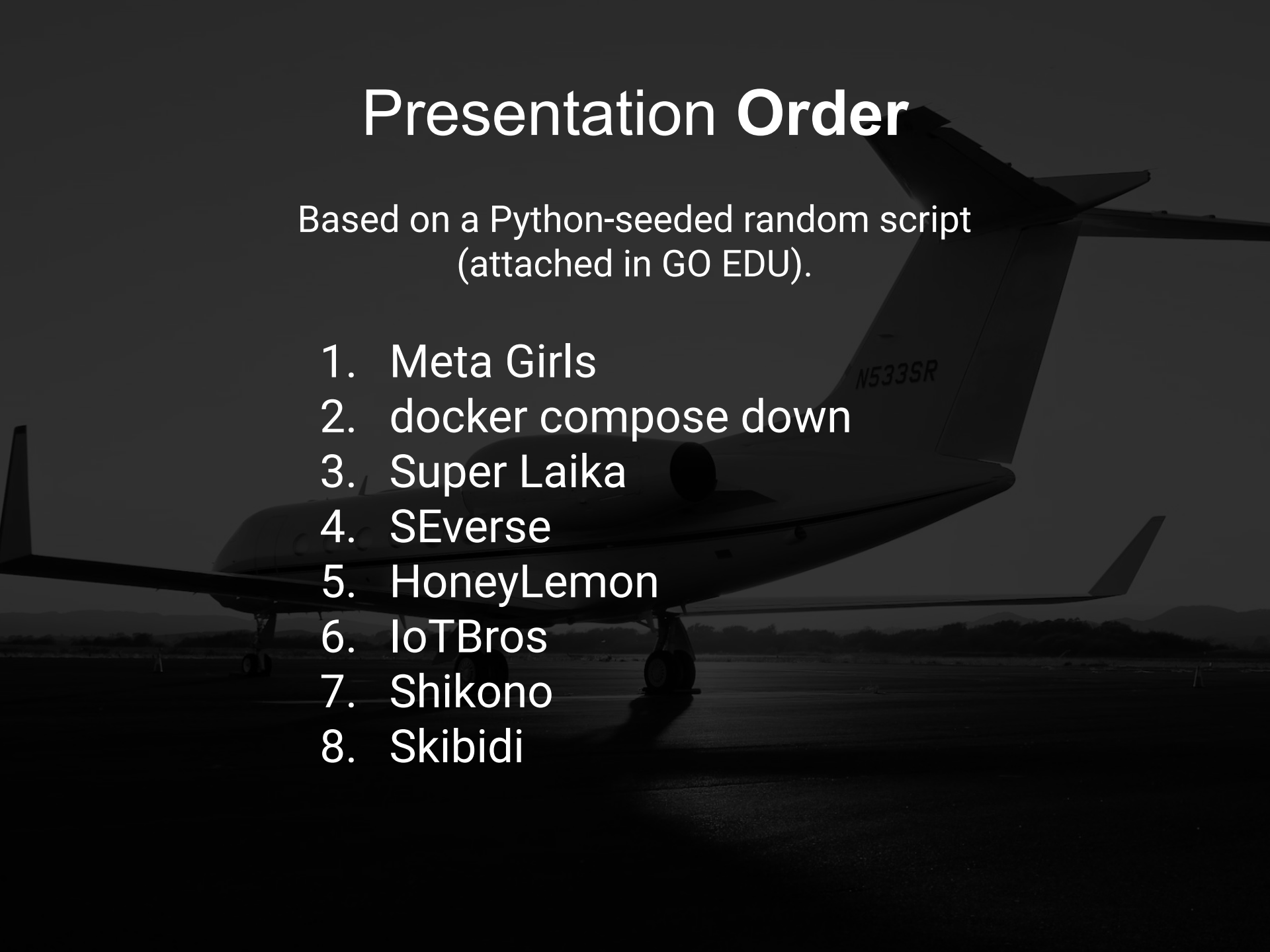


Presentation Order

Based on a Python-seeded random script
(attached in GO EDU).

1. Meta Girls
2. docker compose down
3. Super Laika
4. SEverse
5. HoneyLemon
6. IoTBroS
7. Shikono
8. Skibidi



After Hours



Technically, finished the course (i.e. knowing all development aspects related to Microservices).

This is *Encore*.

Anything that needs clarification?

Let us deal with it now.

After Hours

Flexible Releases & Schedule

Slides:

- Week 13 & Week 14 *released simultaneously*
= ~**28 Days** to prepare for the final exam (29th Oct - Will be there).
- Each slide has only one question as **the main objective**.
- Each slide has the presentation and/or the mock exam practice as **the optional objective**.

Submission:

- Possible to **speedrun** all the main objectives in Week 13. Then, use Week 14 for optional objectives.
- Submitted something each week = attendance record.
- Submit the presentation and/or the mock exam during Week 13 and/or 14
= Formally grade them for you after the class.
(and still can send an email for the mock exam practice after this.)

After Hours

Flexible In-Class Activities

After finished the main objectives, you may:

Presentation:

- Prepare the slide and/or script in-class & ask for casual feedback.

Mock Exam:

- Do this as individual or a group (up to you), then ask for brief feedback.

You are also allowed to ask any other questions about the course in class (both the first season & the second season).

Additionally, you can arrange for a consultation session (I owed you last week).

A military aircraft, possibly an F-16, is parked on a runway at sunset. The sun is low on the horizon, casting a warm, golden glow across the scene. The aircraft's tail fin is prominent in the upper right, and its landing gear is visible on the tarmac. The background shows a clear sky and distant hills.

"One for the Road"

#3: CLOUD @ 01/10

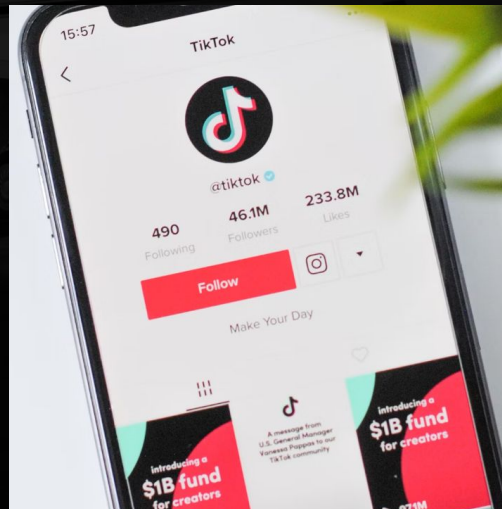
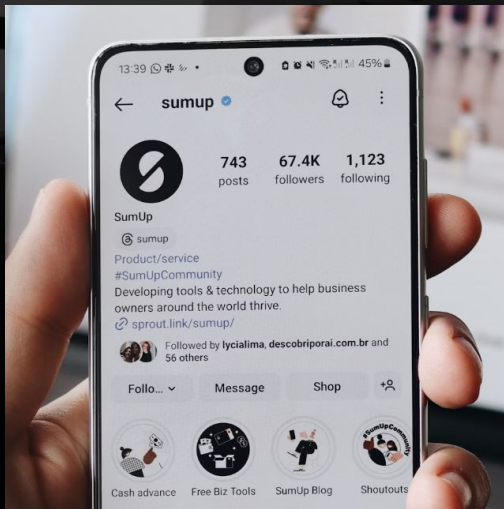
Cloud Service Types: 1. SaaS

SaaS = Software as a Service.

TL;DR: On-demand Application.

- Can be a product of Microservices.
- Irrelevant to Microservices system development (i.e. cannot develop/deploy microservices on SaaS).

Example:



Cloud Service Types: 2a. PaaS

PaaS = Platform as a Service.

TL;DR: On-demand Dev. Environment.

Notable Providers: Azure App Service, Google App Engine, Heroku

Advantage:

- **Predictable Performance:** Servers are ready *from the get-go* = Requests with constant latency.
- **Low Complexity:** Focus on Software & Code. No Need to worry about infrastructure stuff.
- **Stateful-Friendly:** As Long as Servers are Up and Running Normally = State Stays.

Disadvantage:

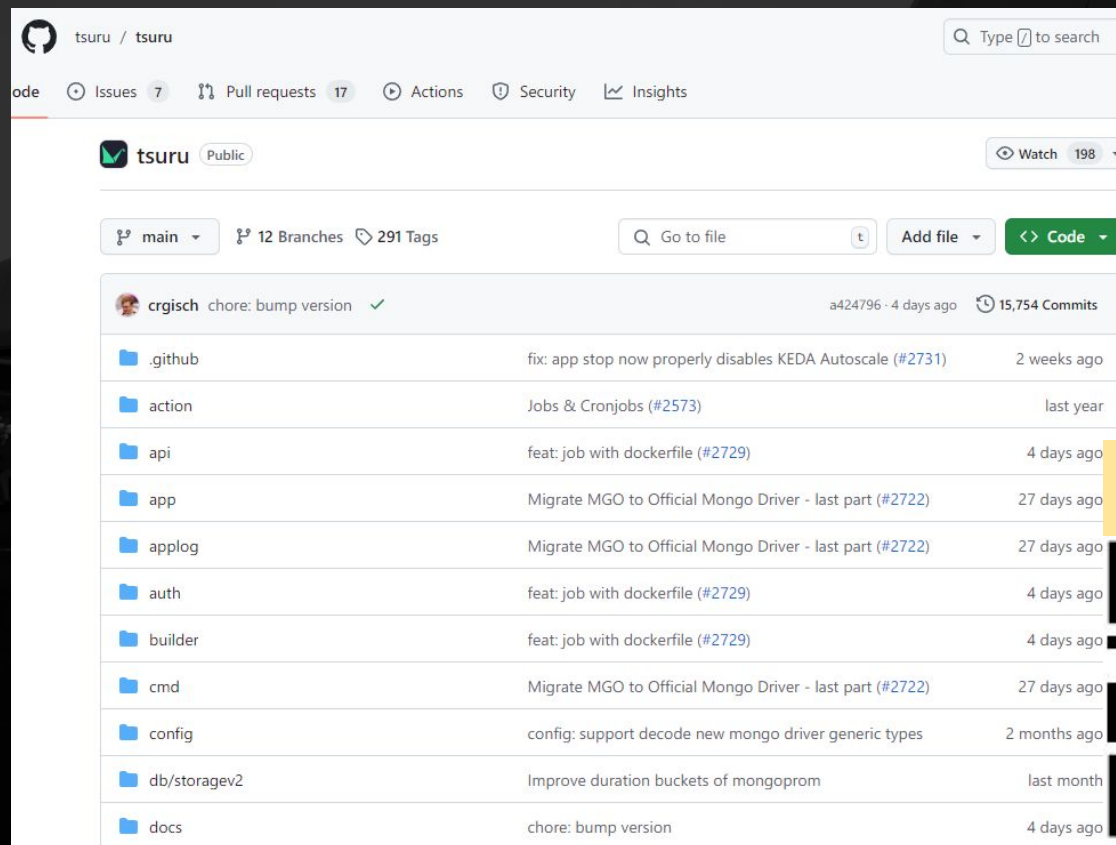
- **Pay Per Server:** Incur charges even *when servers are not in use*.
- **Providers' Limitations:** Some providers *do not support certain programming languages*.
- **Limited Hardware-related config:** May required *fine-tuning* for resource-heavy functions.

Cloud Service Types: 2a. PaaS

PaaS = Platform as a Service.

Example (DIY PaaS - Tsuru):

<https://github.com/tsuru/tsuru>



The screenshot shows the GitHub repository for Tsuru, a Platform as a Service (PaaS). The repository is public and has 198 watchers. It features a table of files and folders, each with a description and a commit hash. The repository is maintained by crgisch and has 15,754 commits. The table lists various components like .github, action, api, app, applog, auth, builder, cmd, config, db/storagev2, and docs, along with their respective commit messages and dates.

File/Folder	Description	Commit Hash	Time Ago
.github	fix: app stop now properly disables KEDA Autoscale (#2731)	a424796	2 weeks ago
action	Jobs & Cronjobs (#2573)		last year
api	feat: job with dockerfile (#2729)		4 days ago
app	Migrate MGO to Official Mongo Driver - last part (#2722)		27 days ago
applog	Migrate MGO to Official Mongo Driver - last part (#2722)		27 days ago
auth	feat: job with dockerfile (#2729)		4 days ago
builder	feat: job with dockerfile (#2729)		4 days ago
cmd	Migrate MGO to Official Mongo Driver - last part (#2722)		27 days ago
config	config: support decode new mongo driver generic types		2 months ago
db/storagev2	Improve duration buckets of mongoprom		last month
docs	chore: bump version		4 days ago

URL:



Cloud Service Types: 2b. FaaS

FaaS = Function as a Service.

TL;DR: On-demand Dev. Environment (*/w different pricing*).
Notable Providers: AWS Lambda, Azure Functions, Google Cloud Functions.

Advantage:

- **Pay Per Execution:** *Do not incur charges when servers are not in use; the same Cost for paying PaaS can deploy more Servers = more scalable than PaaS.*
- **Low Complexity:** Similar to PaaS, Focus on Software & Code. No Need to Worry about Infrastructure stuff.

Disadvantage

(Same as PaaS, plus the following):

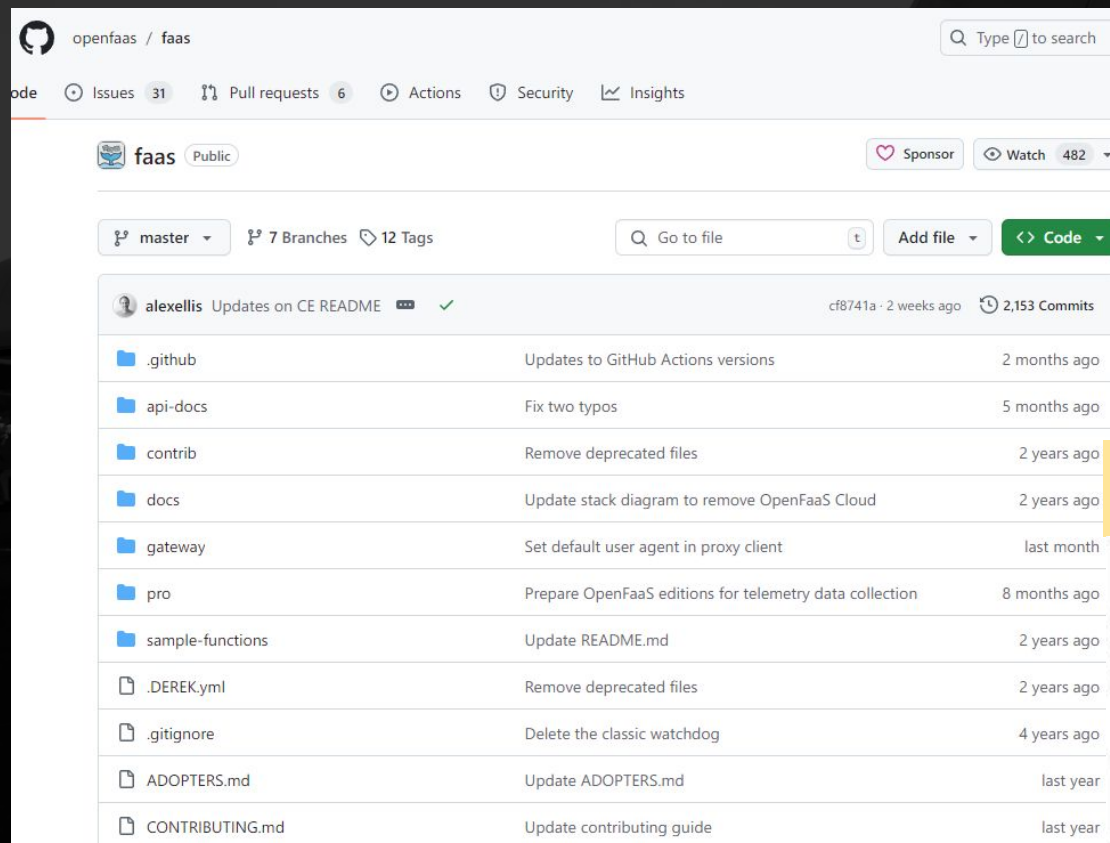
- **Stateful-Challenging:** Some providers cap the *lifetime of the execution* = the state may be lost when the lifetime expires.

Cloud Service Types: 2b. FaaS

FaaS = Function as a Service.

Example (DIY FaaS - Openfaas):

<https://github.com/openfaas/faas>



The screenshot shows the GitHub repository for OpenFaaS. The repository is public and has 31 issues, 6 pull requests, and 482 watchers. The commit history is displayed, showing updates to the README, .github directory, api-docs, contrib directory, docs directory, gateway directory, pro directory, sample-functions directory, .DEREK.yml, .gitignore, ADOPTERS.md, and CONTRIBUTING.md. The repository is maintained by alexellis.

Commit	Message	Time
cf8741a	Updates on CE README	2 weeks ago
	Updates to GitHub Actions versions	2 months ago
	Fix two typos	5 months ago
	Remove deprecated files	2 years ago
	Update stack diagram to remove OpenFaaS Cloud	2 years ago
	Set default user agent in proxy client	last month
	Prepare OpenFaaS editions for telemetry data collection	8 months ago
	Update README.md	2 years ago
	Remove deprecated files	2 years ago
	Delete the classic watchdog	4 years ago
	Update ADOPTERS.md	last year
	Update contributing guide	last year

URL:



Cloud Service Types: 2b. FaaS

FaaS = Function as a Service.

Serverless Computing: “No server on your premises, we take care of the server and its configuration for you.”

Serverless Runtime =

FaaS

+

Event-Driven (Week 9)

+

DIY Container (Week 5&11)
& API (Week 10)

Serverless Database/Backend =

FaaS

+

Their API (to connect to their
database & storage)

E.g. Amazon Aurora,
Azure Data Lake, Firebase.

Cloud Service Types: 3. IaaS

IaaS = Infrastructure as a Service.

TL;DR: On-demand (Virtualised) Computing Resources.

Notable Providers: AWS EC2, Azure, Google Compute Engine.

Advantage:

- **More customisable** than the rest (both on hardware & software config sides).
- **Transferred Security Risk:** Infrastructural-related Security is Handled by the provider.

Disadvantage

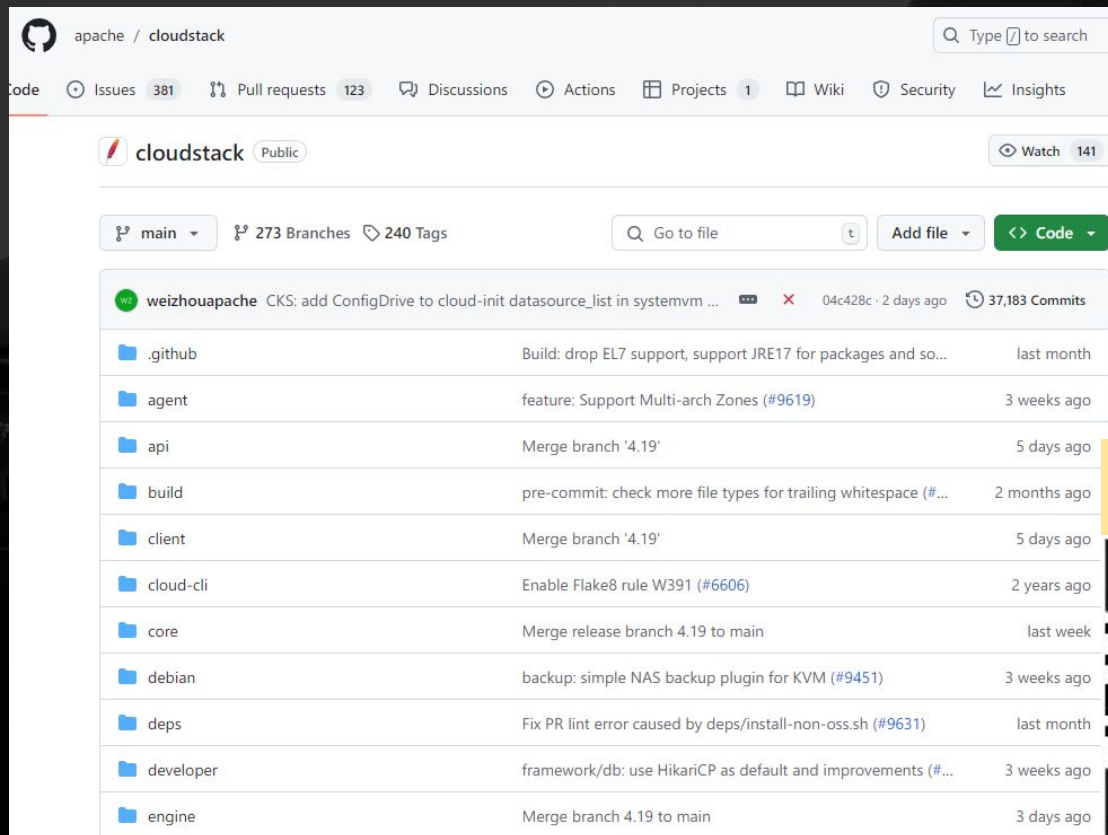
- **Unexpected costs:** Peak traffic, which lead to additional costs (*in certain pricing*).
- **Security risk from relying on a vendor:** If a vendor config. got a common vulnerability, it may apply to all systems from the provider (e.g. Azure vs. CloudStrike).
- Moving to IaaS vendors can be labour-intensive. **Require planning ahead** (next week).

Cloud Service Types: 3. IaaS

IaaS = Infrastructure as a Service.

Example (DIY IaaS - Cloudstack):

<https://github.com/apache/cloudstack>



The screenshot shows the GitHub repository for Apache CloudStack. The repository is public and has 141 watchers. It features a table of recent commits with columns for the commit message, the commit hash, the time since the commit, and the number of commits. The repository is organized into folders such as .github, agent, api, build, client, cloud-cli, core, debian, deps, developer, and engine.

Commit Message	Commit Hash	Time	Commits
Build: drop EL7 support, support JRE17 for packages and so...	04c428c	2 days ago	37,183
feature: Support Multi-arch Zones (#9619)		3 weeks ago	
Merge branch '4.19'		5 days ago	
pre-commit: check more file types for trailing whitespace (#...		2 months ago	
Merge branch '4.19'		5 days ago	
Enable Flake8 rule W391 (#6606)		2 years ago	
Merge release branch 4.19 to main		last week	
backup: simple NAS backup plugin for KVM (#9451)		3 weeks ago	
Fix PR lint error caused by deps/install-non-oss.sh (#9631)		last month	
framework/db: use HikariCP as default and improvements (#...		3 weeks ago	
Merge branch 4.19 to main		3 days ago	

URL:



Group Exercise - Week 13



Main Objective:

- Which type of cloud services do you plan to use for your system? Why and why not? Is it related to the problem statement requirement(s)?

Optional Objective:

- Practice for the presentation and/or the mock exam(s). & submit for formal grading.

Submit to:
suwichak.fu(at)kmitl.ac.th

Subject:

[6622][Team Name] Group Exercise Submission