

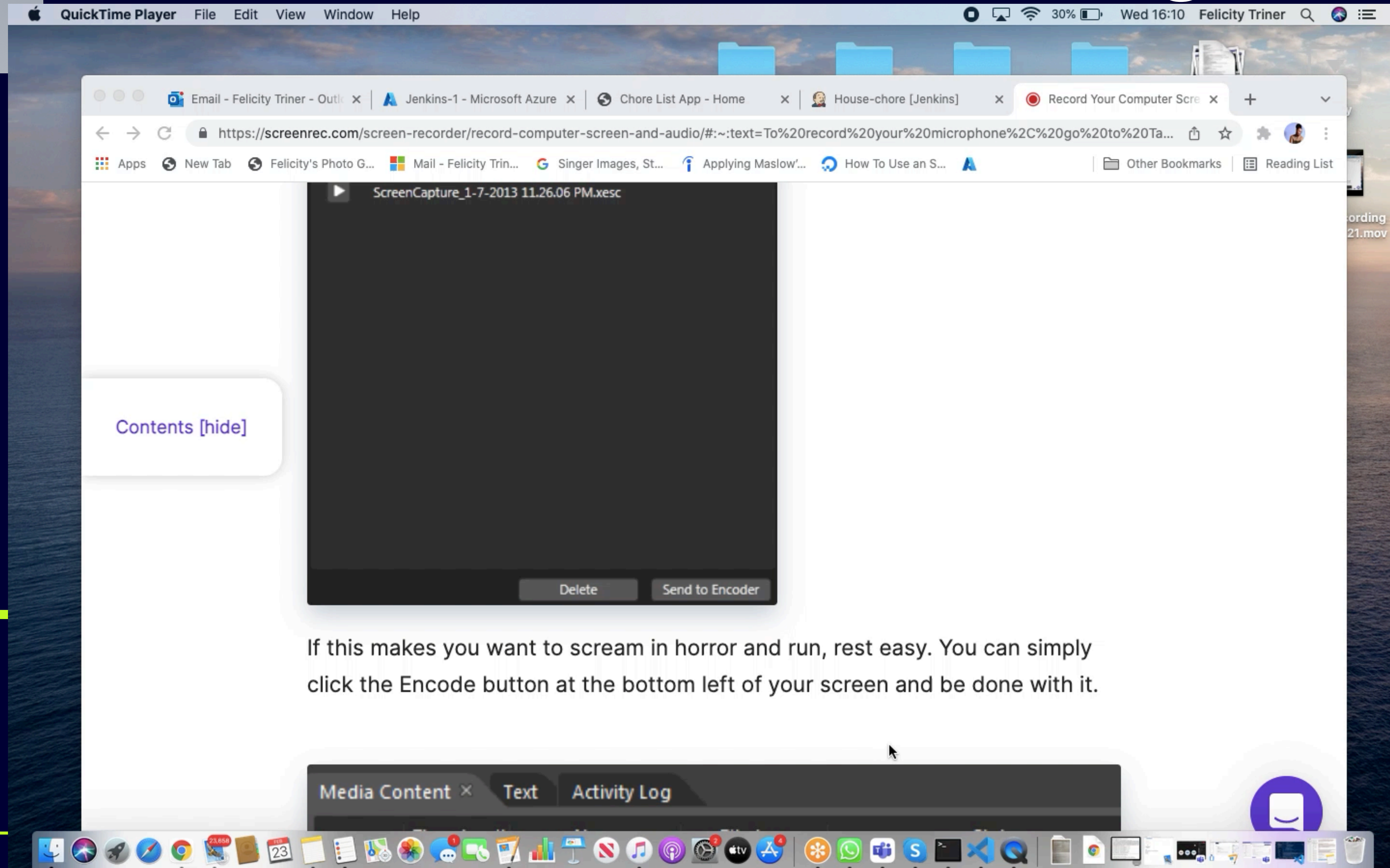
House Chores Flask Project Terms of reference:

- To create a **web application** that integrates with a **database** and demonstrates **CRUD** functionality.
- To utilise **containers** to host and deploy your application.
- To create a **continuous integration (CI)/continuous deployment (CD) pipeline** that will automatically **test**, **build** and **deploy** your application.
- To

```
application import app, db
File "/home/Felicity/webApp2/application/__init__.py", line 12, in <module>
    from application import routes
File "/home/Felicity/webApp2/application/routes.py", line 2, in <module>
    from application.models import Properties
File "/home/Felicity/webApp2/application/models.py", line 44
    Properties_id = db.Column(db.Integer), db.ForeignKey('Properties.id'), nullable=False
```

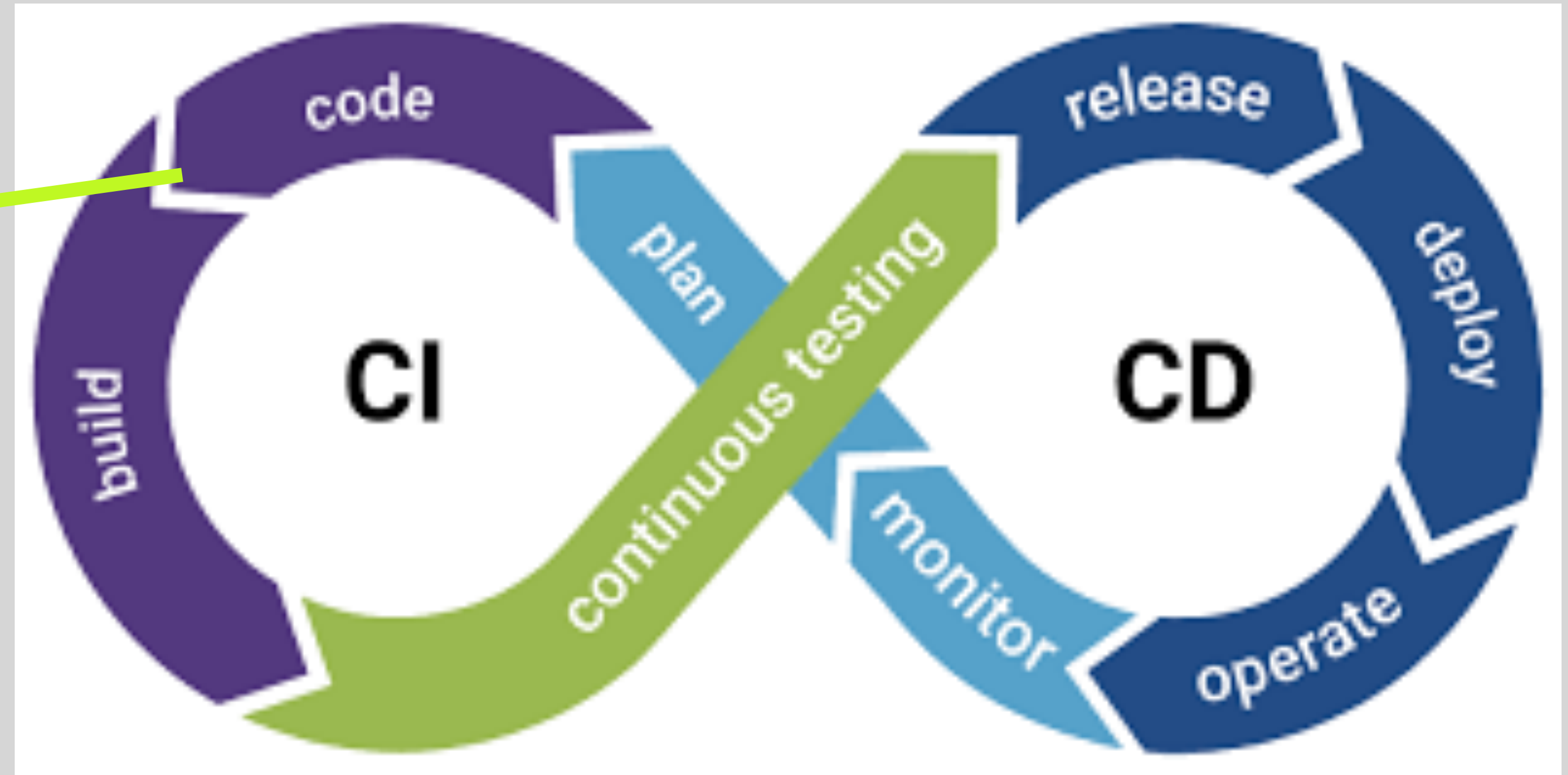
QA Final Project

Screen recordings



If this makes you want to scream in horror and run, rest easy. You can simply click the Encode button at the bottom left of your screen and be done with it.

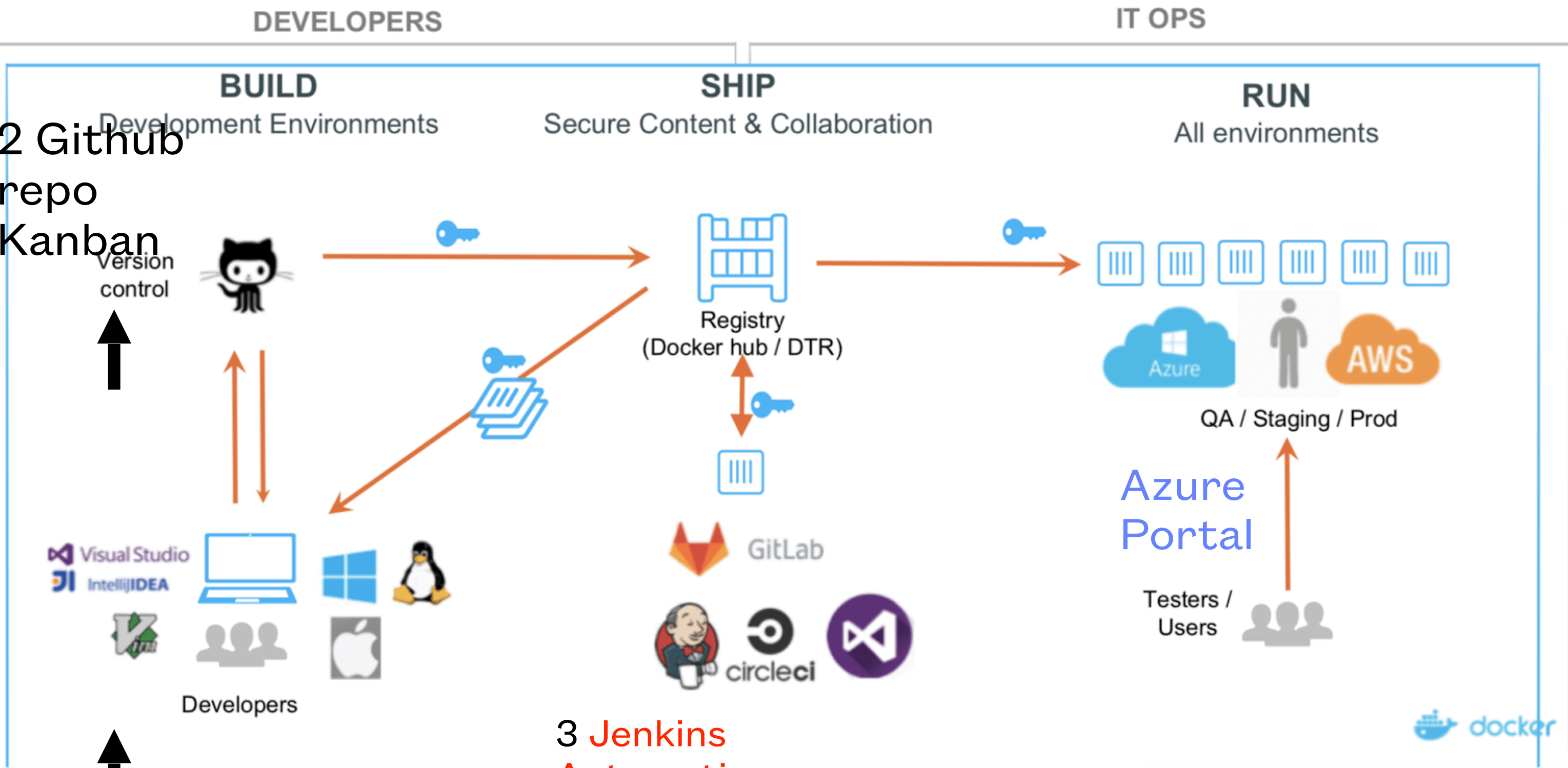
The backbone of DevOps
is **CI and CD**
follows this route:
STARTs
CI and CD means
continuous Integration
and continuous
deployment



The Project Brief Tools

- Git. Python Code, Build. Version Control Collaboration-Python is an Open source And Assessible
 - Jenkins. Jenkins Pipeline Build, Test, Deploy. Also Github allows for automation of the software workflows and can Build and Test and Deploy code.
 - Docker. Build, Deploy, Operate.
-

Continuous Integration & Delivery Workflow



2 Github
repo
Kanban

1 Azure
Portal

VMS x2
Development
and
Production

3 Jenkins
Automation
Pipeline & unit
tests

4 Docker
Build, Deploy,
Operate.

Infrastructure Cloud Resources &

CI and CD pipeline diagram

This slide shows the technologies/Tools
Used for House Chores FLASK APP

The Activities & Process (setup)

- First Created Virtual Machines on Microsoft Azure. Two Virtual machine were made. Development and Production. One machine (Felicity2) was used for the code editor Virtual Studio IDE & Python 3.8 DB VENV and the second machine (Deployment) was used for the Production for the eg Jenkins Docker containers Dockerhub
- Created a new Project - Github repository was created [git@github.com:Fel65/webApp2.git](https://github.com/Fel65/webApp2.git).
- Create a Github Boards-Kanban board and User Stories see slide 6
- Code was cloned down from Github using CLI on Visual studio code. Also Visual Studio a Config file was essential for the Azure VMS connection.
- Create a Feature branch- feature/1create_chore. First need to pwd into Dev branch
- Create schema - Create Virtual ENV on CLI to create Database Export CREATE_SCHEMA = True
- Start to use Python 3.9 code to Build webAPP2

My Activities Creating **House Chores FLASK APP**

- As a Developer work on the application code the IDE (Integrated Development Environment) it is software for making applications so the code editor is Visual studio code using Python Html CSS my Version control is GIT
- As a developer my code was already committed to GIT commit so I had to clone it down into my code editor VSC from my GitHub account.
- As DEVOPs developer I had to create Virtual Machines (VMs) on Microsoft Azure. Two VM's were created one to use for Development eg GIT and Python the second VM to use for Production and Deployment side for utilising Docker to create containers for the webApp2 - House Chores App.
- As developer I had to ensure that both my Github account and Azure Virtual Machines were linked creating Public SSH keys. Azure VMs were both set in UK south region to ensure there were no communication difficulties. My Development machine was called Felicity2 and Production was called Deployment. VSC Config file was very essential for the connection to the Azure VM. If there is simple error with the name of the VM or password the connection would not operate.
- The files cloned down from Github were :- application folder included the following files: init.py, forms.py, models.py and routes.py there was a templates folder included these
- files(index.html, and layout.html)
- (tests folder included these files (test_unit.py, _init_.py), gitignore, app.py, README.md, requirements.txt. The app.py is the important file for executing the webApp2. There were difficulties! Output errors :- app.py not detected, not found? Undertook debugging Python code through PDB .I collaborated with a few members of my cohort to try to resolve the the issue but the webApp2 kept failing. Output error app I was going to proceed but I did not want to push bad code to my feature branch because there might be a chance of it being integrated into the . I did manage to find alternative Python Flask code for my webApp2
- Jenkins/Azure Pipelines automation kicks off a build based on the Git commit. I was unable to do this get this part of the job because of difficulties with the code bugs delaying progress but the major problem was losing access my Azure Account.

THE FOLLOWING STEPS WERE NOT ACHIEVED:THE BUILD PIPELINE PULLS THE LATEST ML MODEL FROM BLOB STORAGE AND CREATES A CONTAINER.

- ~~The pipeline pushes the build image to the private image repository in ACR.~~
- The Release pipeline kicks off based on the successful build.
- The pipeline pulls the latest image from ACR and deploys it across the Kubernetes /Docker Swarm cluster on AKS.
- User requests for the app go through the DNS server.
- The DNS server passes the requests to a load balancer, and sends responses back to the users.

THE STEPS BELOW WOULD HAVE BEEN UNDERTAKEN IF IT HAD NOT BEEN FOR THE CODE BUGS AND AZURE PORTAL BEING BLOCKED

- The Build pipeline pulls the latest ML model from blob storage and creates a container.
 - The pipeline pushes the build image to the private image repository in ACR.
 - The Release pipeline kicks off based on the successful build.
 - The pipeline pulls the latest image from ACR and deploys it across the Kubernetes /[Docker Swarm](#) cluster on AKS.
 - User requests for the app go through the DNS server.
 - The DNS server passes the requests to a load balancer, and sends responses back to the users.
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CONFIG File

CONFIG File
important for the
connection to the
Azure VM.

The screenshot shows the Visual Studio Code editor interface. The Explorer sidebar on the left displays the file structure, with the `.ssh/config` file selected. The main editor area shows the content of the `config` file, which is an SSH configuration file. The file contains two host entries: `Host deploymentserver` and `Host jenkinsserver`. The `deploymentserver` entry specifies the hostname `felicity2.uksouth.cloudapp.azure.com` and the user `felicity2`. The `jenkinsserver` entry specifies the hostname `felicity1.eastus.cloudapp.azure.com` and the user `Felicity`. Below the editor, there are two notifications from the Marketplace, one for PDF files and one for database files, both with buttons to search or dismiss. The status bar at the bottom shows the current file is `SSH Config` and the encoding is `UTF-8`.

```
1 # Read more about SSH config files: https://linux.die.net/man/5/ssh_config
2 Host deploymentserver
3     HostName felicity2.uksouth.cloudapp.azure.com
4     User felicity2
5
6 Host jenkinsserver
7     HostName felicity1.eastus.cloudapp.azure.com
8
9     User Felicity
10
11 Host deployment
12     HostName felicitydeployment.uksouth.cloudapp.azure.com
13     User Felicity
14
15
16
17
18
```


New Config file

The image shows a VS Code editor window with a dark theme. The main editor displays an SSH configuration file named `config`. The file contains three host entries: `Host Deployments`, `Host felicityjenkins`, and `Host deployment2`. The `Host deployment2` entry is currently selected, showing its details: `HostName 20.90.153.80`, `User azureuser`, and `IdentityFile ~/.ssh/id_rsa`. The status bar at the bottom indicates the cursor is at line 18, column 25, with 2 spaces.

Overlaid on the right side of the editor is a terminal window titled `Untitled-1 — azureuser [SSH: JenkinsProject]`. The terminal shows a prompt `azureuser@Jenkins-1:~$` and a message: "To run a command as administrator (user "root" and>". See "man sudo_root" for details."

The Explorer sidebar on the left shows the file system structure of the `azureuser [SSH: JenkinsProject]` session, including directories like `.cache`, `.ssh`, `.vscode-server`, and files like `.bash_logout`, `.bashrc`, `.profile`, `.wget-hsts`, and `Untitled-1`.

```
config
1  # Read more about SSH config files: https://linux.die.net
2  Host Deployments
3  HostName felicity8.uksouth.cloudapp.azure.com
4  User felicitytriner
5  IdentityFile ~/.ssh/id_rsa
6
7  Host felicityjenkins
8  HostName felicity28.uksouth.cloudapp.azure.com
9  User felicitytriner
10 IdentityFile ~/.ssh/id_rsa
11
12 Host deployment2
13 HostName 20.90.153.80
14 User azureuser
15 IdentityFile ~/.ssh/id_rsa
16
17 Host JenkinsProject
18 HostName 20.117.68.149
19 User azureuser
20 IdentityFile ~/.ssh/id_rsa
21
22 #####Host jenkins
23
24 #####Host jenkins
25 #####Host jenkins

Welcome
1 hello there This to finalise

TERMINAL 1: bash
To run a command as administrator (user "root" and>".
See "man sudo_root" for details.

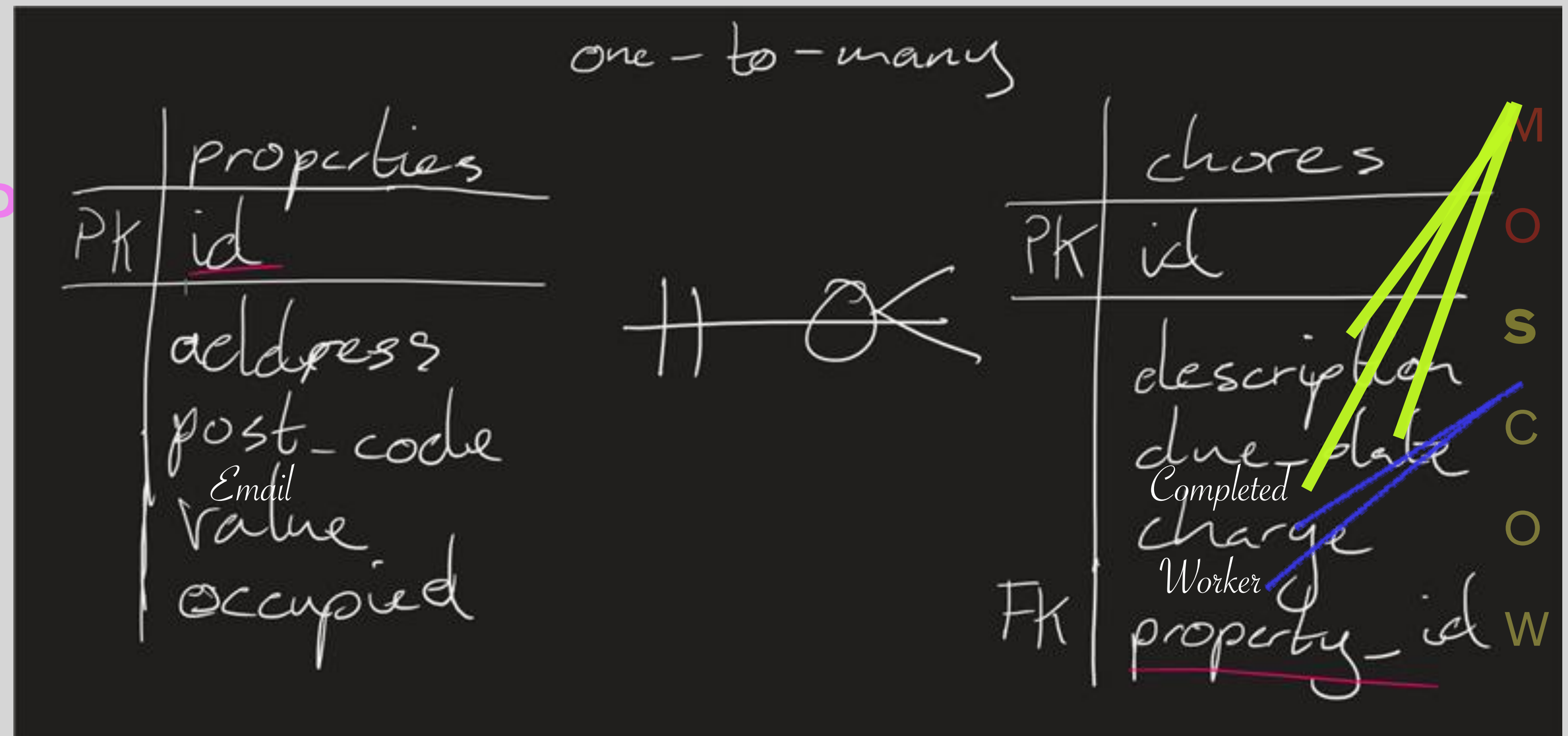
azureuser@Jenkins-1:~$
```

House Chores APP

Entity Relationship Diagram

Model one to many relationship using SQLAlchemy.

The DB chores table has CRUD functionality



CRUD Functionality

House Chores Flask App

- **C**reate = Able to create new House chores and create details of properties
- **R**ead= Able to read and edit details of the chores and details of properties in case chores change
- **U**pdate= Able to see whether House chores have been completed and whether properties need house chores undertaken and amend.
- **D**elete= Able to delete house chores that are no longer needed anymore and properties no longer needing House chores

This information was incorporated in the Github Board (kanban board) as user stories. See next slide

Github Board - user stories

ChromeFileEditViewHistoryBookmarksProfilesTabWindowHelp7%Thu 13:12Felicity Triner

ci and cc xCreate a xci and cc xCI/CD Pl xBeginner xContinu x@Fel65's xide mear xPersonal xwww.fac xwww.sai x

https://github.com/users/Fel65/projects/1

AppsNew TabFelicity's Photo G...Mail - Felicity Trin...Singer Images, St...Applying Maslow'...How To Use an S...Other BookmarksReading List

Search or jump to...Pull requestsIssuesMarketplaceExplore

@Fel65's webApp2 project

View 1View 4View 5New viewBetaGive feedback

Filter by keyword or by field

No Status5

- Todo-Felicity #2
 - * As a user, I want to edit the description of an existing task, in case the task changes.
- Todo-Felicity #3
 - * As a user, I want to know which tasks are pending completion, so that I know what I still need to do.
- Todo-Felicity #4
 - As a user, I want to set a chore as 'complete',

+ Add item

Todo7

- Todo-Felicity #9
 - Feature: Chore Edit
- Draft
 - As a user I want to edit the description of a existing chore. In case the chore changes
- Todo-Felicity #10
 - Feature: Read Chore
- Draft

+ Add item

In Progress2

- Todo-Felicity #8
 - Feature: Create House Chore
- webApp2 #1
 - As a user i want to create a new chore so I can keep track of what I need to do

+ Add item

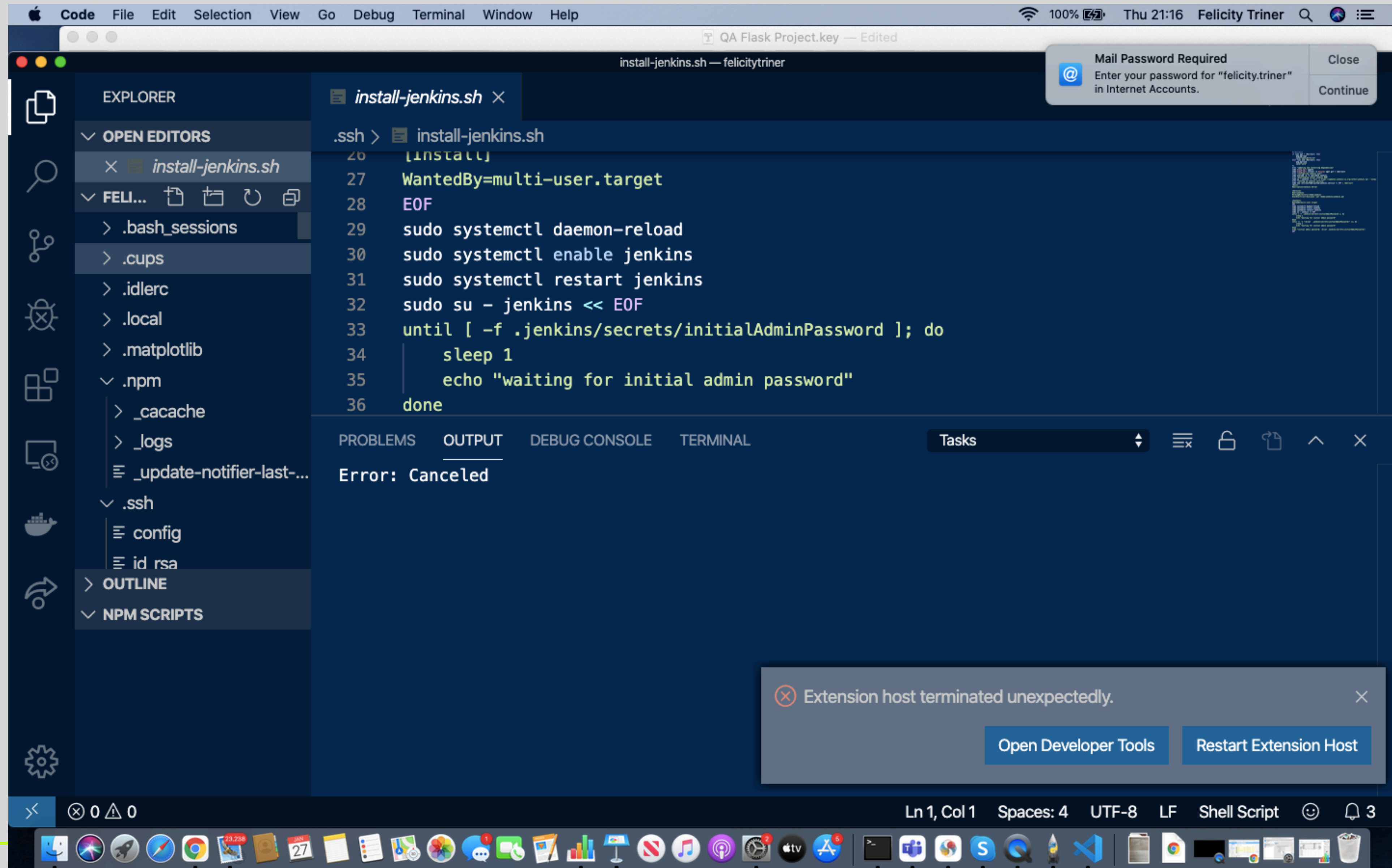
Don

- As
- kee

+ Ad

What went wrong	Issues	Contingency Plans	What went right	What I have learnt
Essential that the files are cloned down from Github correctly	Not all files were cloned properly- missing code.	Use alternative code	I was able to clone some of the files. Used the debugger to correct code	To have alternative code ready Take regular backups. Need ensure code is not broken or incomplete!
VM for SQL server went down	Target missed to undertake automation and code was not recoverable	Did save it to the Github VCS	I was able to create DB file	Resolve account issues with Microsoft early!
VM for Jenkins server went down	Target missed to undertake automation and code was not recoverable	Did not get to the stage to save it Github VCS. However some of the files	I was able to install Jenkins on VM	
Sharing of secret credentials by pushing to Github, for example the credentials for SQL machine and database	None	If you use os.getenv The Jenkins credentials secrets, and password these would be protected	This was achievable	Different ways to create a database eg using inbuilt Sqlite but ensuring no sensitive info is pushed up to the VCS
Azure Account issues lost use of Vm 's	Locked out of the account and could use VM's	Make funds available to have had my own account	This is still in progress contacted Microsoft re: Azure account. Will be resolving the issue	Things are not a simple fix. Perhaps if I had an expert give guidance on options on how to proceedNot sure why

Jenkins Installation



Alternative ERD Felicity Tracking Views Website

FAN		
PK ID		
email address		
Country		

Felicity Song viewed		
PK ID		
Foreign Key(FK)	Fan ID	
	Song Description	
	Date	
	Review	

M O S C O W