Day 7

Topics

1. Big Query - Demo
2. Storage and Database Decision Chart
3. Devops
4. Docker

BigQuery

- Enterprise Data warehouse
- This is fully managed.
- Any source data.
- Structured or unstructred.
- Project->dataset->table->link your data

Demo :

1. Query a public dataset
2. Create a new dataset

-x-x-x-x-x-x-x-x--x-x-x--x-x-x-x-x-x--x-x-x-x-x-x-x-x-x--x-x-x--x-x-x-x-x-x-

- There will be codes that I will use in the next 2 days.
- I will upload all these code + yaml files etx etx to the same repo for your testing.

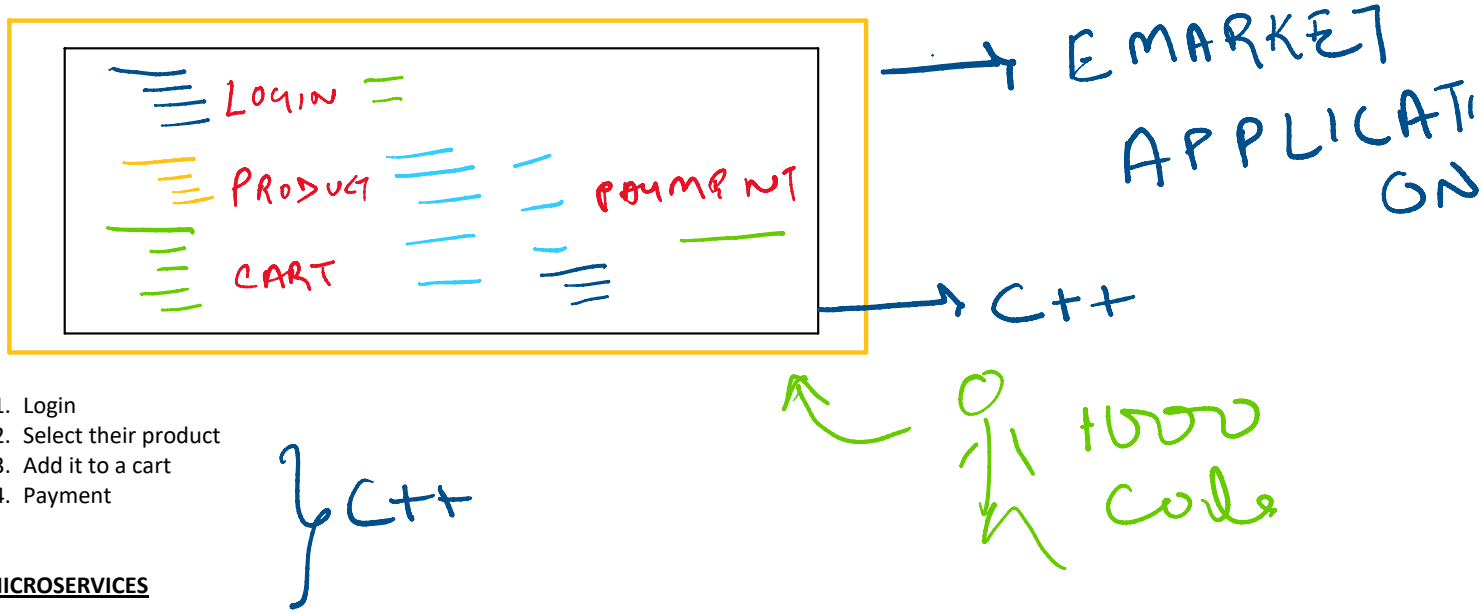
DEVOPS?

1. Devops = Development + Operations
2. Speed and make sure your code is prod ready !
3. Removing barriers between development and release process is what devops helps with.
4. Devops is NOT A TOOL or a SERVICE.
5. Just a practice. Combination of tools and service and practice.

MONOLITHICS vs MICROSERVICES

Monolithic [Big Stone]

- If all the functionalities of a application is written in a single piece of code, this is what is know monolithic application.



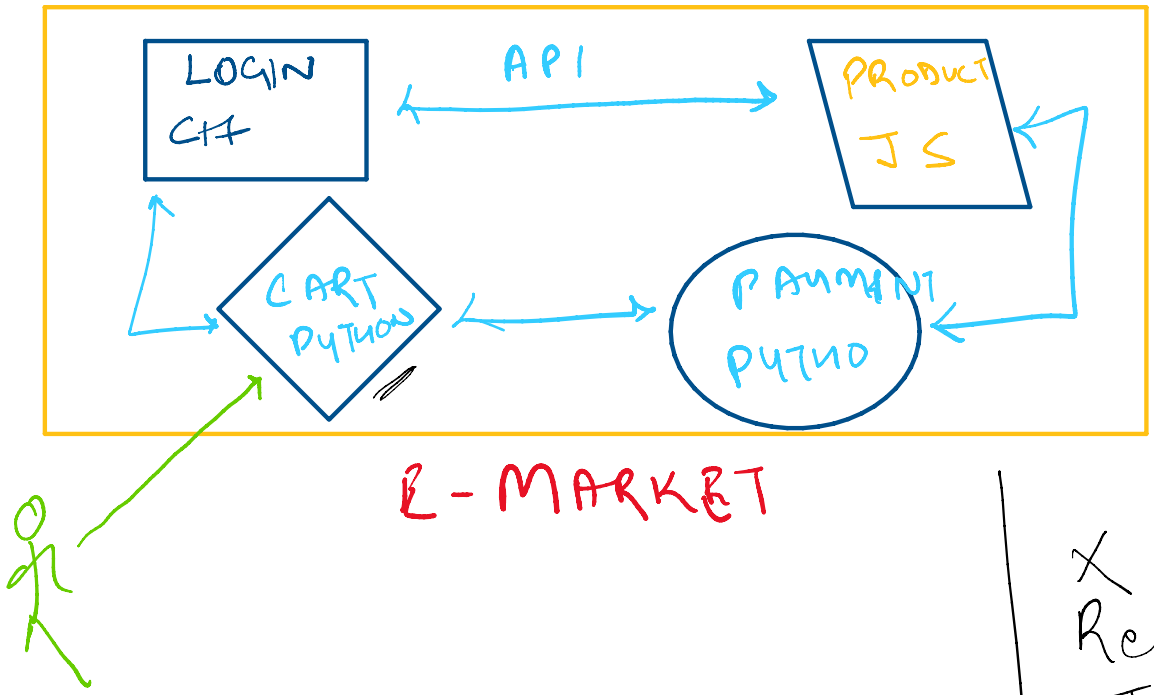
1. Login
2. Select their product
3. Add it to a cart
4. Payment

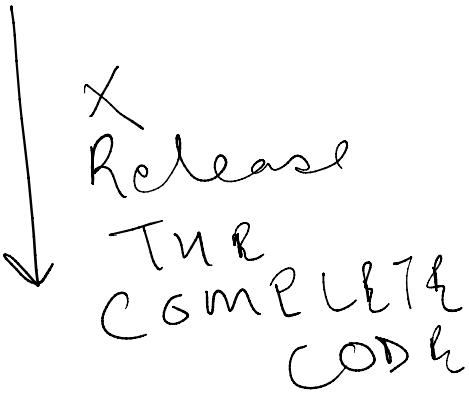
C++

MICROSERVICES

MICROSERVICES

Entire functionality of an application [code] is split into independent deployable modules which communicated using APIs.
Each service has its own function/scope and can be independently updated.





Strengths of Microservice

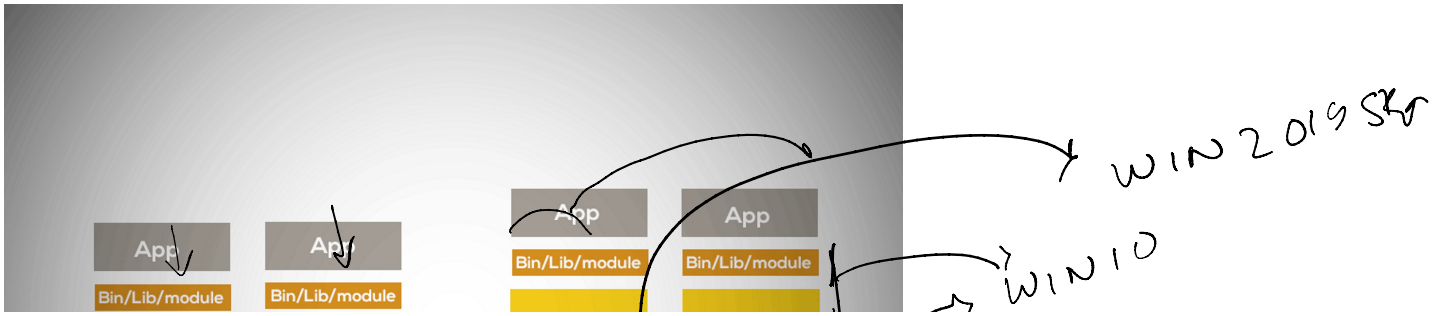
1. Independent components
2. Easy understanding of code
3. Flexibility in choosing the tech
4. Better agility

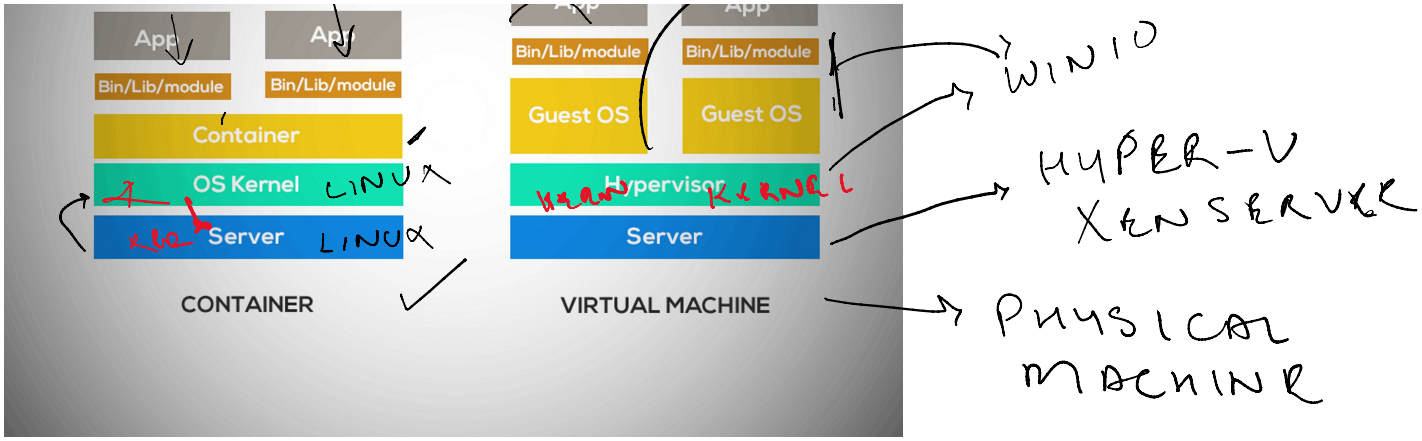
- Tools like Docker and Kubernetes are being used in order to deploy and manage these microservices.

VMs vs Containers

- In a microservice architecture the independent piece of code run inside a container.
- Container is a building block of a microservice architecture.
- Container = Code + Its Dependencies [binaries + libraries + configuration file]
- Containers solve the problem of "It is running in my machine but not running in your machine"

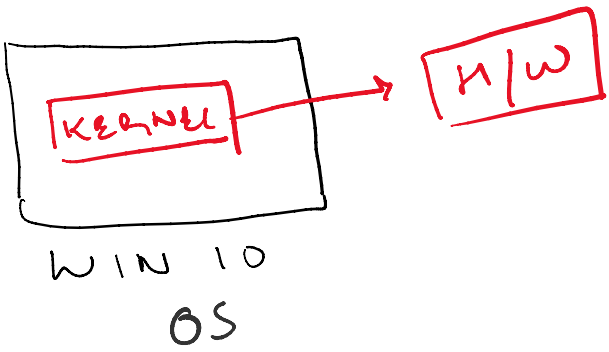
- Virtual machine have an OS.
- **Containers share the OS of the kernel. Containers do NOT have their own OS and thats why containers are faster.**





VM - Helped you out to virtualize your hardware.
Containers - Helped you out to virtualize your OS.

Visual Studio Code - https://code.visualstudio.com/



DOCKER

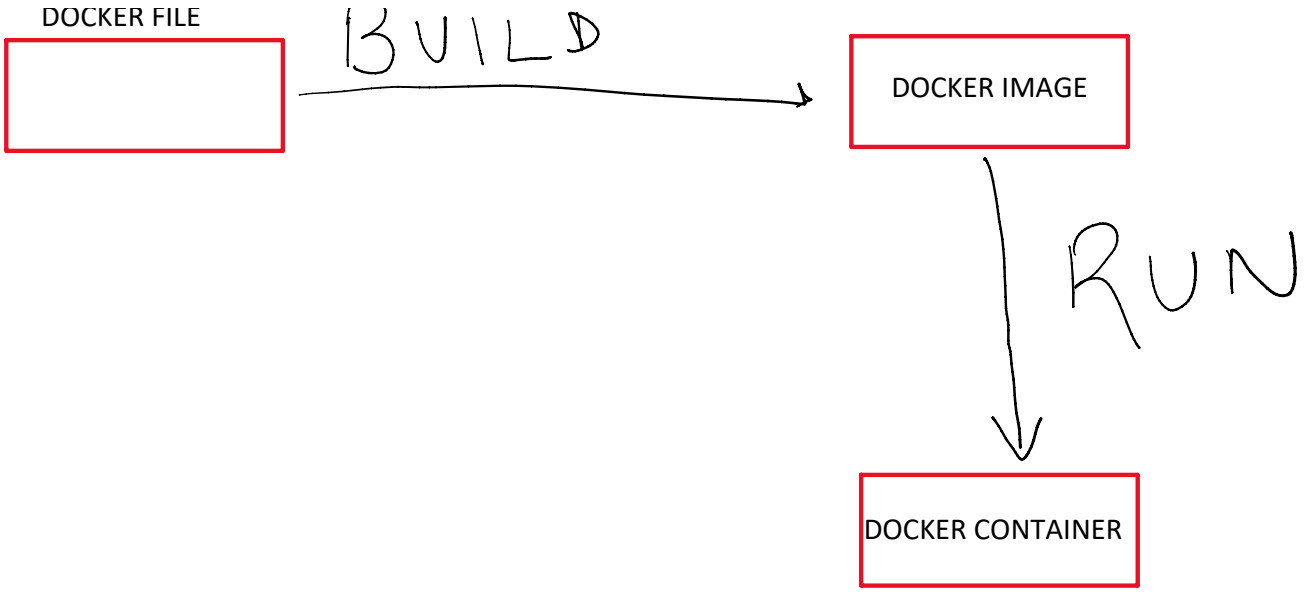
1. Docker is the application/tool that you can use to containerize your applications.
2. Open source tool.
3. Similar Tools - LXC, Podman, containerd, kaniko.
4. Docker - https://docs.docker.com/desktop/setup/install/windows-install/

1. **Docker Engine**
   - Runtime. Build and run containers

2. **DOCKER FILE [Critical]**
   - Docker container has a very simple text file.
   - Instruction on how to build the container.
   - CLI command list that helps the container to be build.

3. **Docker Images**
   - You use the docker file to build Docker Image.
   - It is basically the instructions that are present in a docker file.

4. **Docker Containers**
   - Running instance of docker images is called as Docker Containers.



Docker File

```
FROM nginx:alpine
#Use a lightweight web server image
#COPY the HTML,CSS and JS file into the web server's root directory
COPY index.html /usr/share/nginx/html/
COPY styles.css /usr/share/nginx/html/
COPY script.js /usr/share/nginx/html/
#EXPOSE port 80 for the web server
EXPOSE 80
#Start the Nginx Web Server
CMD ["nginx", "-g", "daemon off;"]
```

- Build an image using Docker File
  Docker image build -t emarket .

- Run the Image
- docker run -d -p 80:80 imageid