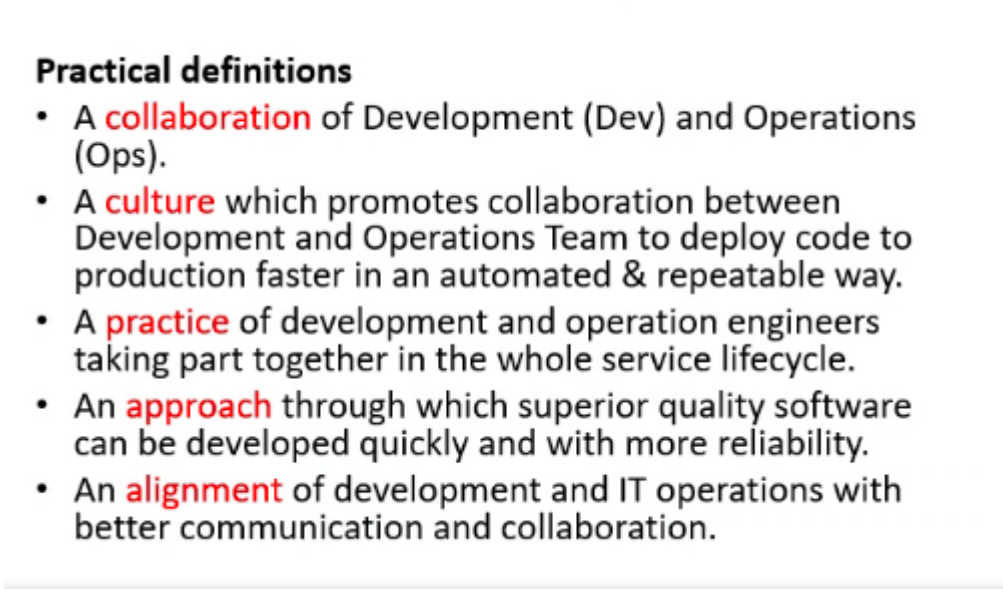
DevOps Theory

Software development methodology

Four pillars of DevOps

- Ease of use
- Flexibility
- Robustness
- Cost - minimises costs due to allowing projects to be shorter

What is DevOps



Teams no longer wait for one another to complete dev or ops or SecOps. Teams all work hand-in-hand to make sprints more efficient

- Academics definition (from Wikipedia)

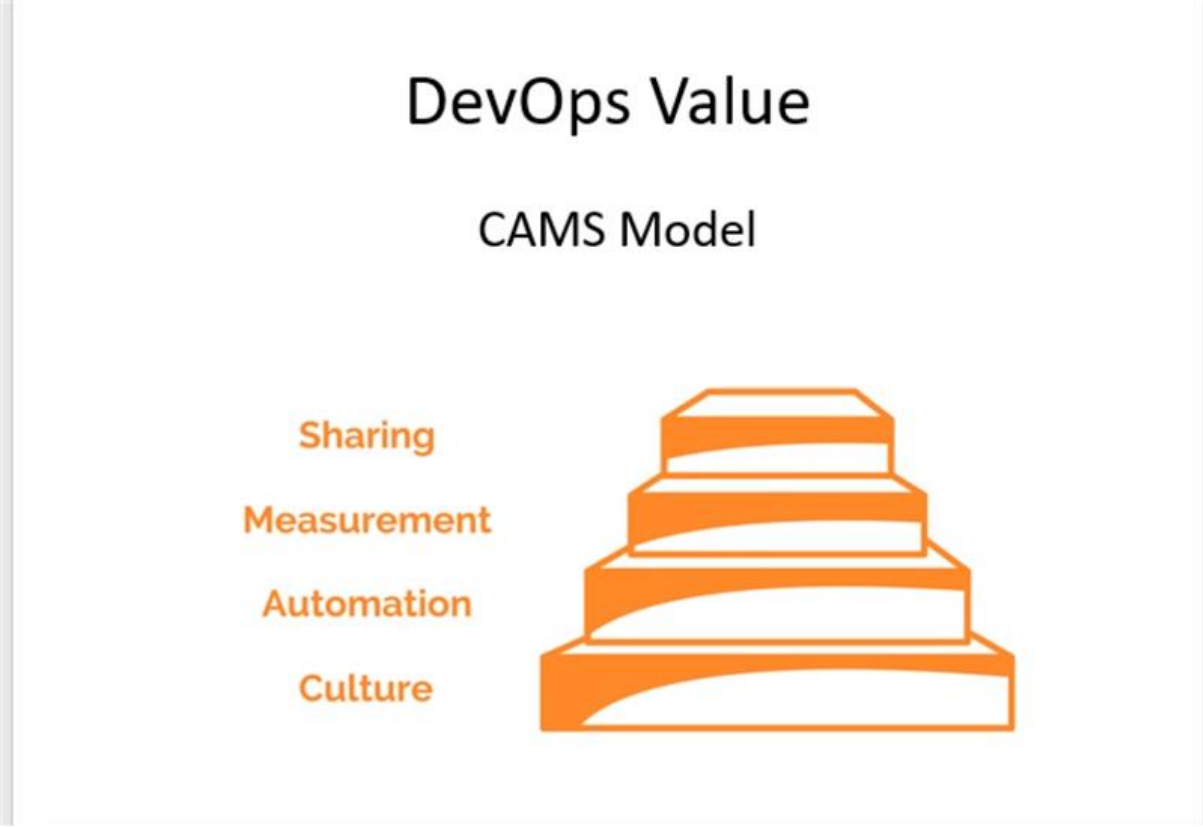
  A set of **practices** intended to reduce the time between committing a change to a system and the change being placed into normal production, while ensuring high quality.

  - A set of practices – many ways of doing something
  - Moving changes from development to production
    - ✓Shorter time
    - ✓Higher quality

DevOps Value

CAMS model

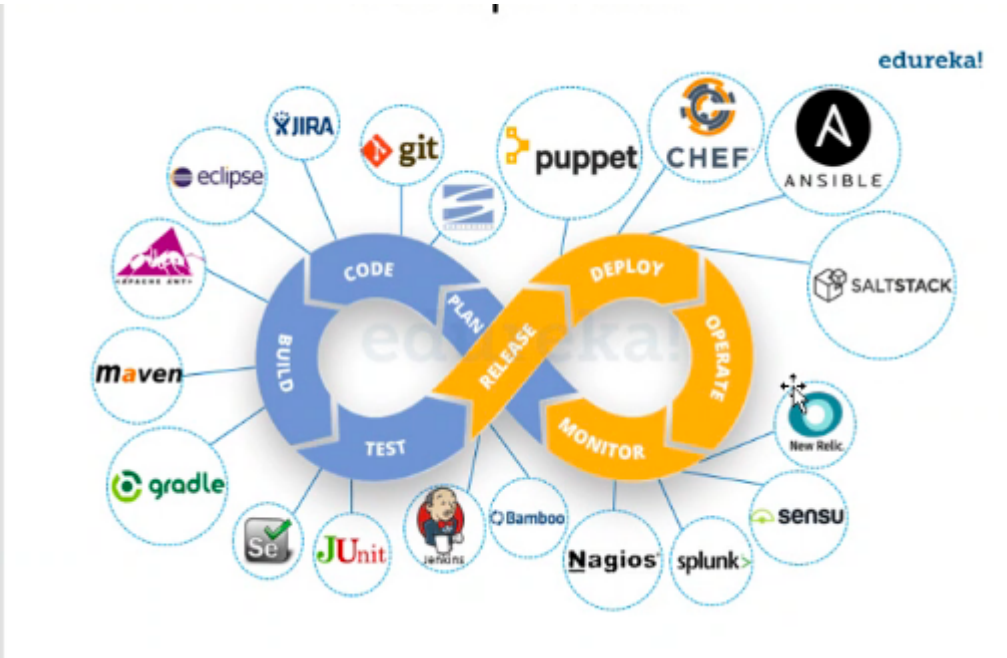
Challenges to DEvOps Enginees



Principles

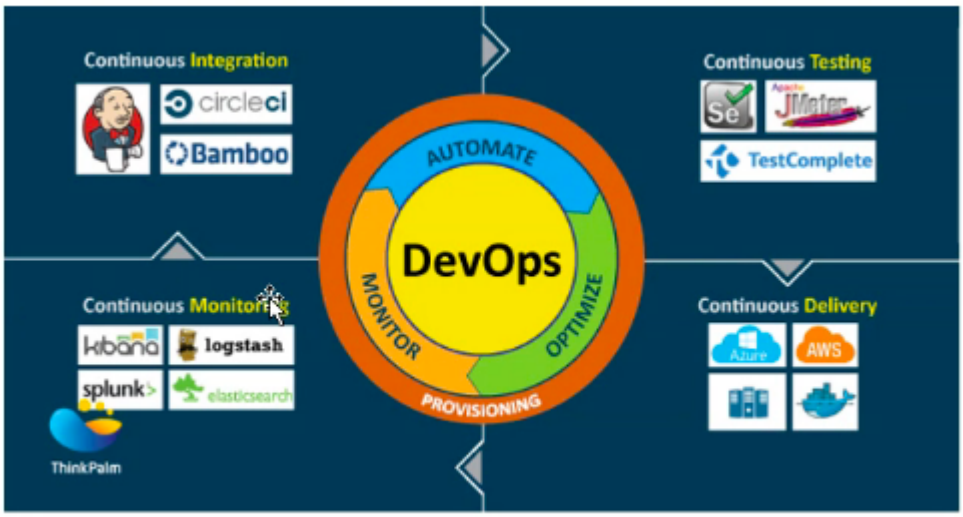
- Customer centric action
- end to end responsibility
- continuous improvement - agile iterative
- automate everything -
- work as one team
- Monitor and test everything -using different tools at different times

DevOps Tools



- more or less do the same things, can spin answers by saying what youve used instead and giving examples

DevOps Architecture and Platform



DevOps Implementation

- Cloud Platform
  - AWS
  - GCP
  - Azure
- Infrastructure Architecture
  - Virtualization
  - Containerization (Docker)
- DevOps Implementations
  - Infrastructure as code (IaC)
  - infrastructure as a service (IaaS)
  - infrastructure as a platform (IaaP)
  - infrastructure as a product

- these terms are widely used so we will need to know what they all mean

Risk Register

A typical risk register might look like this:

Description	Chance of occurrence	Potential Damage	Risk
Dev Environment broken	Medium	Developers can not work	Low/Medium
Testing server broken	Medium/High	New code cannot be tested	Low/Medium
Automated testing broken	Medium/High	New code cannot be tested	Low/Medium
Jenkins server broken	Medium	New code cannot be pushed live	Low/Medium
Production server fails	Medium	Loss of revenue	High

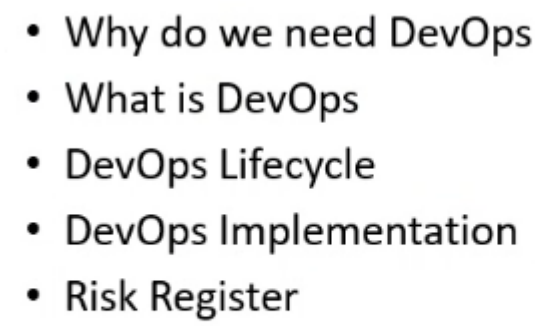
- Failure of production server must not happen as it means nothing else that was done worked
- We must find out what went wrong/ isn't working before the client
- If money is lost, likely to lose customer also and potential future business

Conclusion

DevOps impacts

- Culture
- Collaboration
  - People/teams
- Principles
- Automation tools
- Software development Lifecycle
- System quality
- Cost efficiency
- Business value

Summary



The above are common interview questions, answers can be found widely online

Vagrant

Git Bash commands

- vagrant ssh after vagrant up allows us to get into the VM

```
sudo apt-get update
```

- sudo is to run the command as admin
- get is a package manager used to install
- update upgrades the packages

```
vagrant destroy
vagrant reload
```

- these destroy then reload the vm

- commands must be run from the location of vagrant file in your os

```
exit
```

- exit command allows us to exit the vm

```
vagrant ssh
```

- allows us to get back into the vm after exiting

Theory

- From our operating systems: windows, Mac
- We got into the VM using the vagrant ssh machine after vagrant up
- Once the commands were successful, we updated our version of the VM
- We created a development environment (Dev Env) by using ubuntu virtual box
- When we go an a site, this is the fist thing we are expected to do
  - we get a laptop and a link to the GitHub
  - fork the repo and create the venv
- The will have tested all the links and functionalities of GitHub and venv before handing us task so we are expected to troubleshoot for ourselves

Bash

```
clear
```

- Helps us clear the screen

```
sudo apt-get update -y
```

- Automates the updates without asking us. The 'y' is a way to get around the prompt, does optional and mandatory updates

```
nano unix_commands.md
```

- opens a readme file
- nano is an editor that we can use in command line

```
ls - a
```

- is the command to see all/ hidden files in the dir

```
uname
```

is how you find the name of your system

```
sudo apt-get install
```

- syntax for installation