Department of Computer Science

IT Infrastructure

End of course Assignment

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Q#1: What is test automation frame-work?

A test automation framework is essentially a set of guidelines for creating and designing test cases. It is a conceptual part of automated testing that helps testers to use resources more efficiently.

What is selenium?

Selenium is one of the most widely used open source Web UI (User Interface) automation testing suite. It was originally developed by Jason Huggins in 2004 as an internal tool at Thought Works. Selenium supports automation across different browsers, platforms and programming languages.

How does it work?

Selenium can be easily deployed on platforms such as Windows, Linux, Solaris and Macintosh. Moreover, it supports OS (Operating System) for mobile applications like iOS, windows mobile and android.

Selenium supports a variety of programming languages through the use of drivers specific to each language. Languages supported by Selenium include C#, Java, Perl, PHP, Python and Ruby. Currently, Selenium Web driver is most popular with Java and C#. Selenium test scripts can be coded in any of the supported programming languages and can be run directly in most modern web browsers. Browsers supported by Selenium include Internet Explorer, Mozilla Firefox, Google Chrome and Safari.

Why do you need it?

Selenium can be used to automate functional tests and can be integrated with automation test tools such as **Maven**, **Jenkins**, **& Docker** to achieve continuous testing. It can also be integrated with tools such as **TestNG**, *&* **JUnit** for managing test cases and generating reports.

https://www.javatpoint.com/selenium-tutorial

Q2: The most common tools that are used for configuration management are packer and ansible? Compare both of them.

What is Ansible? *Radically simple configuration-management, application deployment, task-execution, and multi-node orchestration engine*. Ansible is an IT automation tool. It can configure systems, deploy software, and orchestrate more advanced IT tasks such as continuous deployments or zero downtime rolling updates. Ansible's goals are foremost those of simplicity and maximum ease of use.

What is Packer? *Create identical machine images for multiple platforms from a single source configuration*. Packer automates the creation of any type of machine image. It embraces modern configuration management by encouraging you to use automated scripts to install and configure the software within your Packer-made images.

Ansible belongs to **"Server Configuration and Automation"** category of the tech stack, while Packer can be primarily classified under **"Infrastructure Build Tools"**.

Some of the features offered by Ansible are:

- Ansible's natural automation language allows sysadmins, developers, and IT managers to complete automation projects in hours, not weeks.
- Ansible uses SSH by default instead of requiring agents everywhere. Avoid extra open ports, improve security, eliminate "managing the management", and reclaim CPU cycles.
- Ansible automates app deployment, configuration management, workflow orchestration, and even cloud provisioning all from one system.

On the other hand, Packer provides the following key features:

- Super fast infrastructure deployment. Packer images allow you to launch completely provisioned and configured machines in seconds, rather than several minutes or hours.
- Multi-provider portability. Because Packer creates identical images for multiple platforms, you can run production in AWS, staging/QA in a private cloud like OpenStack, and development in desktop virtualization solutions such as VMware or VirtualBox.
- Improved stability. Packer installs and configures all the software for a machine at the time the image is built. If there are bugs in these scripts, they'll be caught early, rather than several minutes after a machine is launched.

"Agentless" is the top reason why over **251** developers like Ansible, while over **24** developers mention **"Cross platform builds"** as the leading cause for choosing Packer.

Ansible and Packer are both open source tools. It seems that Ansible with **38.2K** GitHub stars and **16K** forks on GitHub has more adoption than Packer with **9.1K** GitHub stars and **2.47K** GitHub forks.

DigitalOcean, **9GAG**, and **Rainist** are some of the popular companies that use Ansible, whereas Packer is used by **Instacart**, **Oscar Health**, and **Razorpay**. Ansible has a broader approval, being mentioned in **960** company stacks & **587** developers stacks; compared to Packer, which is listed in **115** company stacks and **21** developer stacks.

https://stackshare.io/stackups/ansible-vs-packer