**CLOUD APPLICATION AND DEVELOPMENT**

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**B4**

**Explain what Keystone, CLI programming, and instance creation are in OpenStack.**

**Keystone :**

Keystone is the identity service in OpenStack that handles authentication and authorization for other OpenStack services including Swift, Cinder, and Nova. Being the manager of user authentication and authorisation across all OpenStack services, Keystone serves as a key part of the OpenStack architecture.

For OpenStack services, Keystone serves as a lone point of authentication and permission. It supports a variety of authentication methods, including identity federation, token-based authentication, and password-based authentication. In order to guarantee that only authorised users can access resources within the OpenStack environment, Keystone also offers role-based access control (RBAC).

**CLI Programming**

CLI programming in OpenStack involves using the OpenStack command-line interface (CLI) to interact with OpenStack services from the command line.To communicate with OpenStack services, a set of commands is available through the OpenStack CLI. A remote computer or the command line of an OpenStack controller node can be used to perform the commands. Developers may automate the provisioning and management of OpenStack resources by combining the OpenStack CLI with other technologies like Terraform or Ansible.

For developers and administrators who utilise OpenStack, knowing CLI programming is a useful ability. It makes it simpler to develop and operate cloud-based applications by enabling effective and automated administration of OpenStack resources.

**Instance Creation**

On an OpenStack cloud, the process of creating a virtual machine (VM) instance is referred to as instance creation. A virtual computer running inside the OpenStack cloud infrastructure is what is known as an instance. Instances can be accessed via a remote console or a remote desktop client and are built using the OpenStack Compute service (Nova).

In order to create an instance in OpenStack, you must choose a virtual machine image, specify the instance's compute resources (such as CPU, memory, and storage), and determine the network configuration. Once the instance has been set up, you can connect to it using a remote console or a client for remote desktop