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**Q 1] Write the difference between containerisation and virtualisation.**

**Containerization:**

Containerization is a lightweight form of virtualization that encapsulates applications and their dependencies into isolated units called containers. These containers share the host OS kernel, resulting in efficient resource usage and consistent deployment across various environments.

**Points:**

- Lightweight virtualization method.

- Encapsulates applications and dependencies into containers.

- Shares host OS kernel.

- Enhances resource efficiency and portability

**Virtualization:**

Virtualization involves creating virtual versions of physical resources, such as servers or storage devices. It enables multiple operating systems or applications to run on a single physical machine. Virtualization can be achieved through technologies like hypervisors, which emulate complete hardware environments for different OS instances.

**Points:**

- Creates virtual versions of physical resources.

- Enables multiple OS or applications on one machine.

- Uses hypervisors to emulate complete hardware environments.

- Provides isolation between virtual instances

**Q 2] Write a short note about SVN and Git.**

**SVN (Subversion):**

SVN, or Subversion, is a centralized version control system designed to track changes in files and directories over time. It enables multiple contributors to collaborate on a project by maintaining a central repository that keeps a historical record of changes, allowing users to revert to previous versions, track modifications, and manage concurrent development. SVN utilizes a linear revision numbering system and follows a centralized model where a central repository stores the project's complete version history.

- Centralized version control system.

- Tracks changes in files and directories.

- Uses a central repository.

- Linear revision numbering.

- Checkout and commit model.

**Git**:

Git is a distributed version control system (VCS) used for tracking changes in source code during software development. It allows multiple developers to collaborate on a project by providing a decentralized repository. Git efficiently handles branching, merging, and tracking changes, enabling developers to work independently on different features or fixes. It has become a widely adopted tool in software development due to its speed, flexibility, and robust version control capabilities.

**Points:**

- Distributed version control system.

- Decentralized, each clone is a full repository.

- Branching and merging is fundamental.

- Non-linear revision history.

- Fast and flexible.

**Q 3] Write short notes of Git, Gitlab, Github and Bitbucket.**

**Git:**

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**Points:**

- Distributed version control system.

- Decentralized, each clone is a full repository.

- Branching and merging is fundamental.

- Non-linear revision history.

- Fast and flexible.

**Gitlab:**

GitLab is a web-based platform that provides a complete DevOps lifecycle tool. It includes a Git repository manager for source code management, continuous integration and delivery (CI/CD) capabilities, code review, issue tracking, and more. GitLab allows teams to collaborate on software development projects efficiently by providing a centralized platform for version control, automated testing, and project management. It supports both cloud-hosted and self-hosted installations, giving teams flexibility in managing their development workflows.

**Points:**

- Web-based DevOps platform.

- Includes Git repository management.

- Offers CI/CD, code review, and issue tracking.

- Facilitates collaboration and project management.

- Supports both cloud-hosted and self-hosted installations.

**GitHub:**

GitHub is a web-based platform that utilizes the Git version control system. It serves as a collaborative environment for software development, allowing teams to manage and track changes to source code. GitHub provides features such as hosting Git repositories, pull requests, code review, issue tracking, and more, making it a popular choice for both open-source and private projects.

**Points:**

- Web-based platform for version control using Git.

- Facilitates collaborative software development.

- Hosts Git repositories for source code management.

- Offers features like pull requests, code review, and issue tracking.

- Widely used for open-source and private projects.

**Bitbucket:**

Bitbucket is a web-based platform for version control using Git or Mercurial. It allows software developers to collaborate on projects, manage source code, and track changes. Bitbucket provides features like code repositories, branching, pull requests, and issue tracking to facilitate efficient and collaborative development workflows.

**1. Version Control Platform:** Bitbucket is a web-based platform for version control.

**2. Git and Mercurial Support**: It supports version control systems like Git and Mercurial.

**3. Collaborative Development:** Enables software developers to collaborate on projects.

**4. Code Repositories**: Provides a centralized location to store and manage source code.

**5. Branching:** Allows developers to create branches for parallel development.

**6. Pull Requests**: Facilitates the process of reviewing and merging code changes.

**7. Issue Tracking:** Includes tools for tracking and managing project issues.

**8. Web-Based Interface**: Accessible through a web browser for ease of use.