

Swed Lösungen für blatt 8

1)

Difference Between a Virtual Machine and Docker

Feature	Virtual Machine (VM)	Docker (Container)
Architecture	Each VM runs with its own full OS.	Docker shares the host OS kernel.
Resource Usage	Heavy – uses more CPU and memory.	Lightweight – uses fewer resources.
Startup Time	Takes minutes to boot up.	Starts in seconds.
Isolation	Strong isolation (uses hypervisor).	Process-level isolation (less secure).
Performance	Lower performance due to full OS overhead.	Higher performance – no full OS running.
Portability	Harder to move and replicate.	Highly portable and consistent across environments.
Use Cases	Running different operating systems, strong isolation needed.	Microservices, CI/CD, lightweight app environments.

2)

What is the main purpose of Continuous Integration?

Answer:

frequently integrate code into a shared repository and run automated tests

4) Answer: **Jenkins**

It is an open-source tool widely used to automate Continuous Integration and Continuous Deployment (CI/CD) processes.

5) There are some strategies to speed up the testing stage in a CI pipeline:

1. **Parallel Testing** – Run tests in parallel across multiple machines or threads.
2. **Test Caching** – Cache dependencies and test results when possible.

3. **Run Only Affected Tests** – Use tools that detect which files have changed and run only related tests.
4. **Use Faster Test Frameworks** – Choose lightweight and fast test frameworks.
5. **Optimize Test Code** – Refactor slow or redundant tests.
6. **Use Mocking** – Mock external dependencies (like APIs or databases) to avoid delays.
7. **Sharding Tests** – Split tests across different nodes for simultaneous execution.
8. **Skip Tests on Trivial Changes** – For small documentation or styling changes, skip tests if appropriate.