**CI/CD**

1. What are the fundamental differences between DevOps & Agile?

Answer:

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| Agile | DevOps |
| Agile is an iterative approach that encourages collaboration, organization and feedback as a means of completing projects faster | DevOps is a practice of bringing development and operations team together. |
| Focus on constant changes | Focus on constant testing and delivery |
| More suitable for complex project | More suitable for end-to-end process |
| Better suited for smaller teams to complete work faster | Larger team size |
| Feedback is from customers | Feedback is from internal team |
| Addresses the gap between customer and development team | Addresses the gap between development and operations team |
| Involves practices such as Scrum, Kanban etc. | Involves processes such as Continuous Integration, Continuous Delivery, Continuous Testing etc. |
| Agile doesn’t emphasize on automation | Automation is the primary goal of DevOps |

1. What is the need for DevOps?

Answer:

Companies are adopting DevOps because

* DevOps enable continuous integration and Continuous delivery which essentially means we can deploy the software faster and effectively.
* As the development and operations team is together it will be easy to detect code defects at the earlier stage itself.
* Development cycle will be shorter in DevOps which tend to deliver the output faster. Instead of releasing a big feature, they are trying to deliver a small feature to customers which will have advantages like quick feedback, better software quality etc.
* Industry today is moving towards automation. This is the primary goal of DevOps.

1. What are the advantages of DevOps?

Answer:

Few advantages of DevOps include

* Faster delivery of product
* Continuous software delivery
* Early bug detection
* Faster resolution of problems
* Increases collaboration between teams
* More stable operating environment
* Entire development process become transparent

1. Explain with a use case where DevOps can be used in industry/ real-life.

Answer:

In the middle of covid-19 pandemic, companies like Eurisko Mobility has successfully elaborated a DevOps powered work from home strategy to safeguard mobility and thus efficiency and productivity.

DevOps has process oriented and automated software delivery method which doesn’t differentiate if the team works from home or office. It can well adopt the change caused by covid-19 in the software industry. So this may be a DevOps shining moment.

1. What are the success factors for Continuous Integration?

Answer:

Earlier in software development life cycle integration team will merge the code developed by developers only at the end of the process. This process will result in many issues. Whereas Continuous Integration is a development process where the developers take up the role of integration team, they will integrate their work frequently often multiple times a day.

Continuous Integration require

* Version control where everyone can merge their code
* Unit test cases to check the implementation of functions
* Integration test to ensure different components work together
* UI test to cover important user scenarios
* Effective Communication across the team
* Implementation of tools that support CI/CD

1. What are the differences between continuous integration, continuous delivery, and continuous deployment?

Answer:

Continuous integration is a practice in which the developers will integrate their changes into a common source code so that the changes will be transparent to everyone.

Continuous delivery is a practice designed to ensure that code can be rapidly and safely deployed into production by delivering every code change to a production like environment. And the application can be deployed to production when the business is ready

Continuous deployment is a step up from continues delivery in which all changes in the source code is automatically deployed to production without explicit approval.

1. What role does the Quality Assurance (QA) team play in DevOps?

Answer:

In DevOps both testers and developers play equally important role. QA integrate the testing and development together and enables them to take collaborate approach. The role of Quality Assurance team is integral part of DevOps cycle, which includes in every stage of developing a product. QA always tries to provide quality software and lower the risk as early as possible in the development process

1. Describe an efficient workflow for continuous integration

Answer:

Basic CI Workflow

* Set up integration tool
* Create feature branch: there will be a main release branch, each developers will have to create their own branch to add their changes.
* Coding and testing: Developers make their changes and test them locally.
* Merge code: When developers complete their coding and local testing, they check in their code to source control repository
* Initiate build: When CI server detect a change in the repository, it will initiate a new build
* Testing: After built is successful, automated unit and integration testing will be initiated
* Send test result: After testing is completed, test results will be send to relevant team members.

1. What are the best practices for DevOps implementation?

Answer:

* Efficient communication and collaboration
* Active stakeholder participation
* Keep all teams together
* Perform performance review for team and individuals
* Implement Continuous Integration
* Implement Continuous delivery
* Implement Continuous deployment
* Test Automation
* Automated Dashboard
* Achieve better result with monitoring and feedback

1. How will you approach when a project needs to implement DevOps?

Answer:

* **Choose correct team**: Identification of correct resources is very important in DevOps. Resources should be trained well with latest DevOps tools that are available in the market
* **Start small, but not too small**: Since it is impossible to change everything at once, it is wise to start on small scale and then scale up.
* **Follow Agile principles**: Agile methods ensure that software is delivered to customers in iterations and each iterations implement CI/CD to get feedback from customers
* **Prepare the Environment**: Tools that will be part of DevOps configuration need to be selected. CI/CD and continuous testing environment need to be prepared
* **Customer Feedback**: Customers should be included in every step right from the requirement analysis. The customer feedback mechanism will enable the organisation to deliver a better quality product.