

Assignment Project Exam Help

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Continuous inte

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Slides from Tim Storer

Java Build tools

- Ant and ivy **Assignment Project Exam Help**
- Maven **<https://eduassistpro.github.io/>**
- **Gradle (Lab)** **Add WeChat edu_assist_pro**

Continuous Integration

■ Integration Hell

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■ Change M

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■ Monitoring and Maintaining Software Quality

■ Continuous Deployment

■ Continuous Integration Environments

Integration Hell

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Practices in CI [Fowler, 2006]

Change management:

- Maintain a single source repository
- Everyone commits to the mainline every day
- Every commit is automatically integrated into the mainline
- Everyone can see what's happening

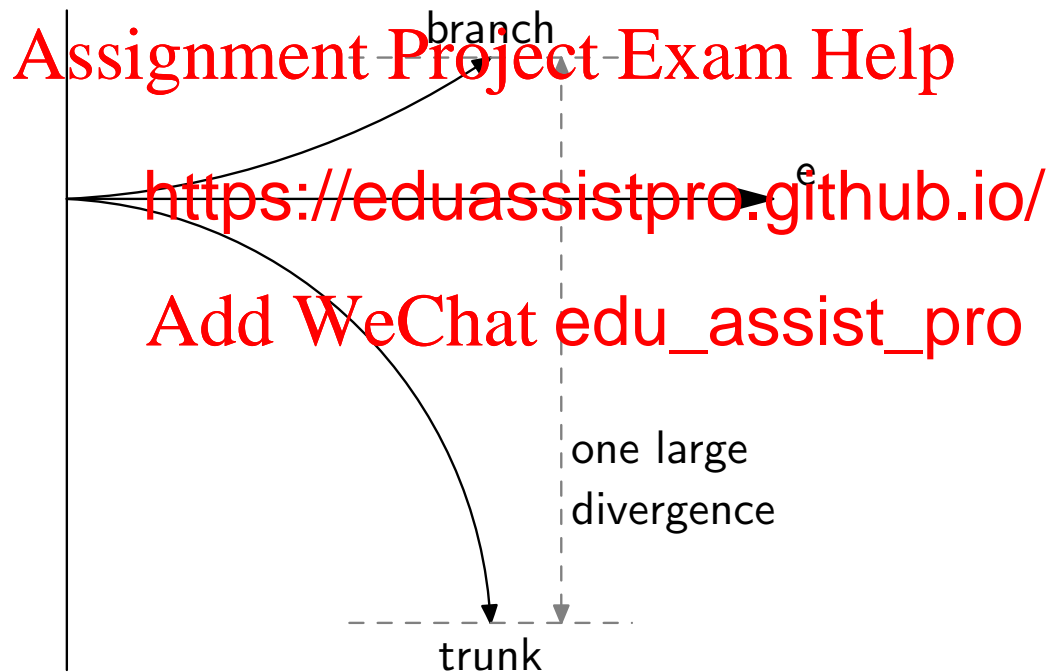
Quality assurance:

- Automate the build
- Make your build self-testing
- Test in a clone of the production environment
- Keep the build fast

Deployment:

- Make it easy for anyone to get the latest executable
- Automate deployment

Integration frequency



(a) large, infrequent commits

Figure: divergence between trunk and feature branches over time

Integration frequency

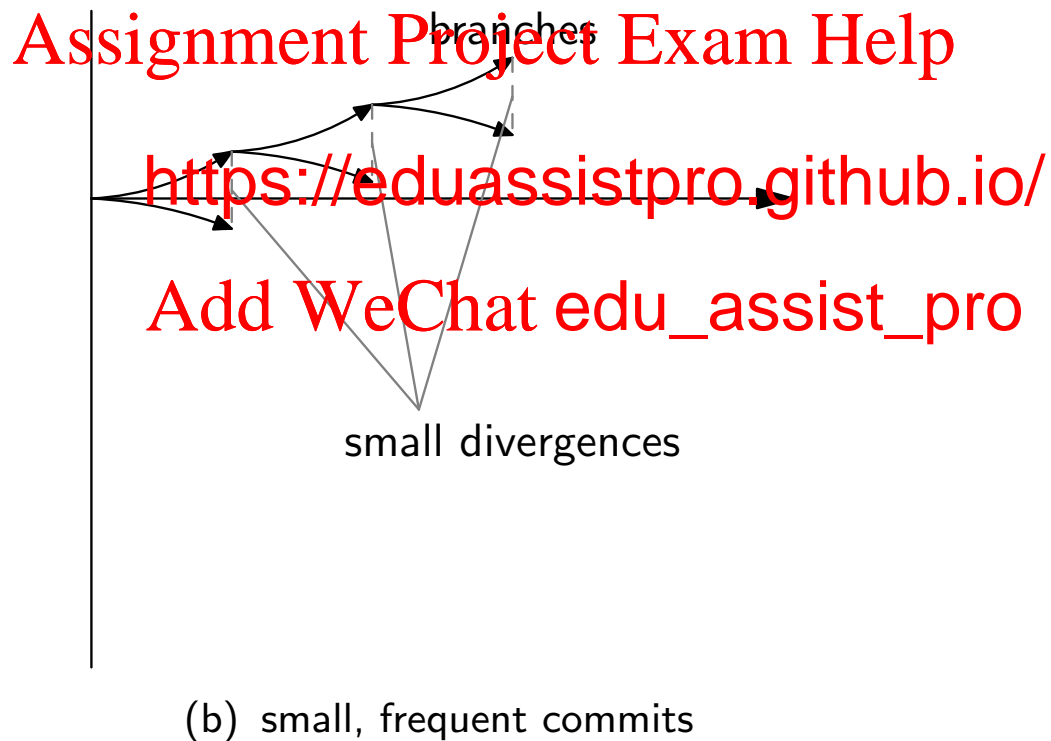


Figure: divergence between trunk and feature branches over time

Feature branching in continuous integration

- Implement the new feature on the trunk, with frequent commits of small changes.
- Implement the new feature in a branch and merge changes from the trunk frequently.
- Implement a feature as a prototype branch and then re-implement the feature on the trunk in small changes.
- Implement the feature as a permanent branch.

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Detecting broken builds

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every time a change is made to

- The system should be deployed to the production environment. <https://eduassistpro.github.io/> e
- A suite of automated regression tests should be run on the complete system. n
- Appropriate static analysis checks (such as code style conformity) should be performed and compared to benchmarks.

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Preventing broken public builds

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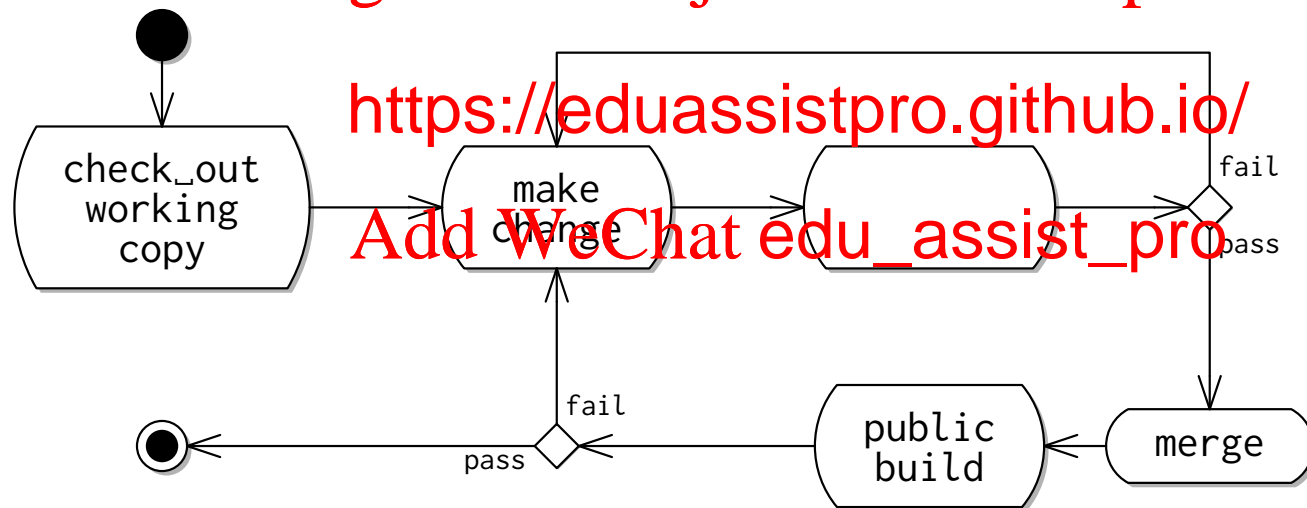
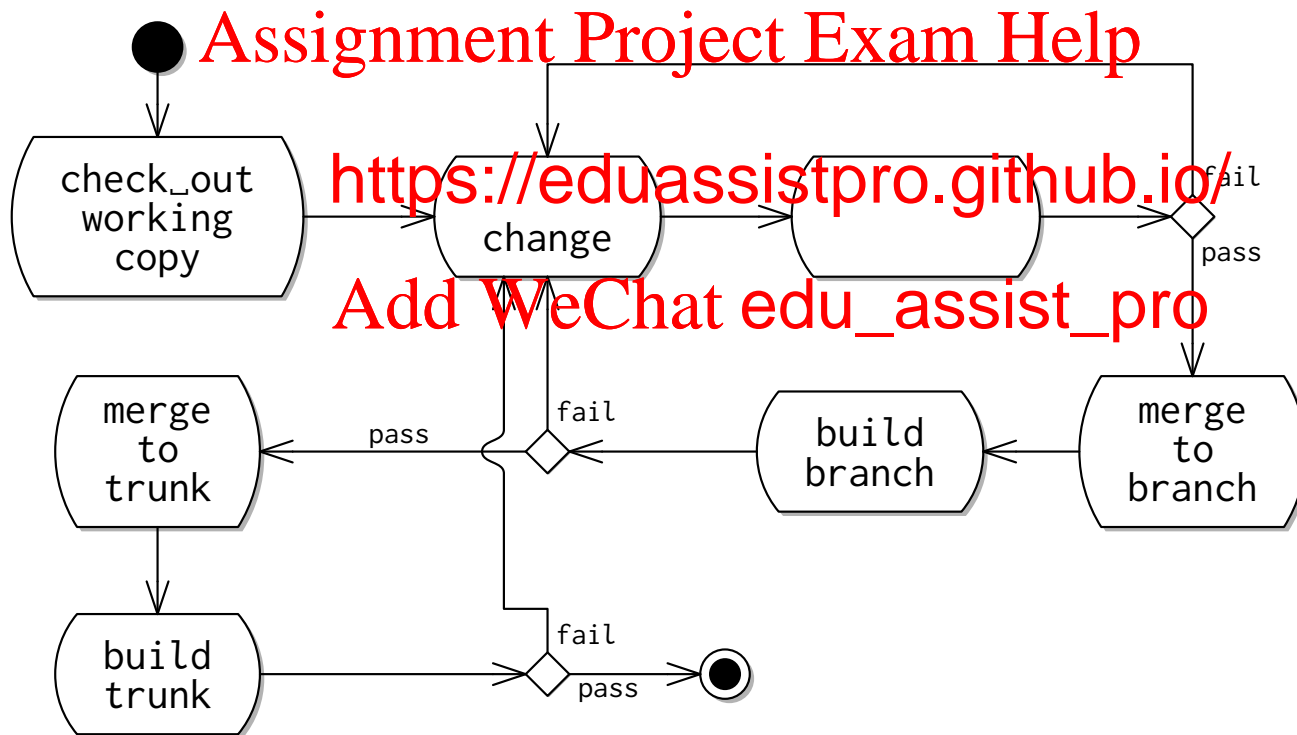


Figure: the continuous integration workflow for a developer

Preventing broken builds with branches



Maintaining visibility

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- Push notification <https://eduassistpro.github.io/>
- Broadcast mechanisms such as display on a large screen display in the development monitor on

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CI metrics for project stability

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Unsuccessful build measures how frequently a project is broken.

Average unsuccessful tests per build to estimate the rate at which defects are introduced into a production implementation of new features

Time to build is important to monitor to ensure that a CI process remains viable.

Jenkins build stability reports

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The importance of fast builds

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- Delays in compilation build will also delay the discovery of any problems.
- Developers will be deterred from making frequent commits, because the need to wait for a build to complete will reduce productivity.

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Tuning build speeds

- Reconfigure the build process to ensure that no unnecessary steps are being undertaken is being built. <https://eduassistpro.github.io/>
- Configure several different types of build that are performed for different parts of the project and/or causes of change.
- Prioritise test cases and then partition them into different categories for different types of build.
- Partition large projects into smaller well defined components that can be developed concurrently.

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Continuous deployment

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- Ensures that the deployment process is re
- Different feature variants can be deployed to different users.

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Continuous integration environments

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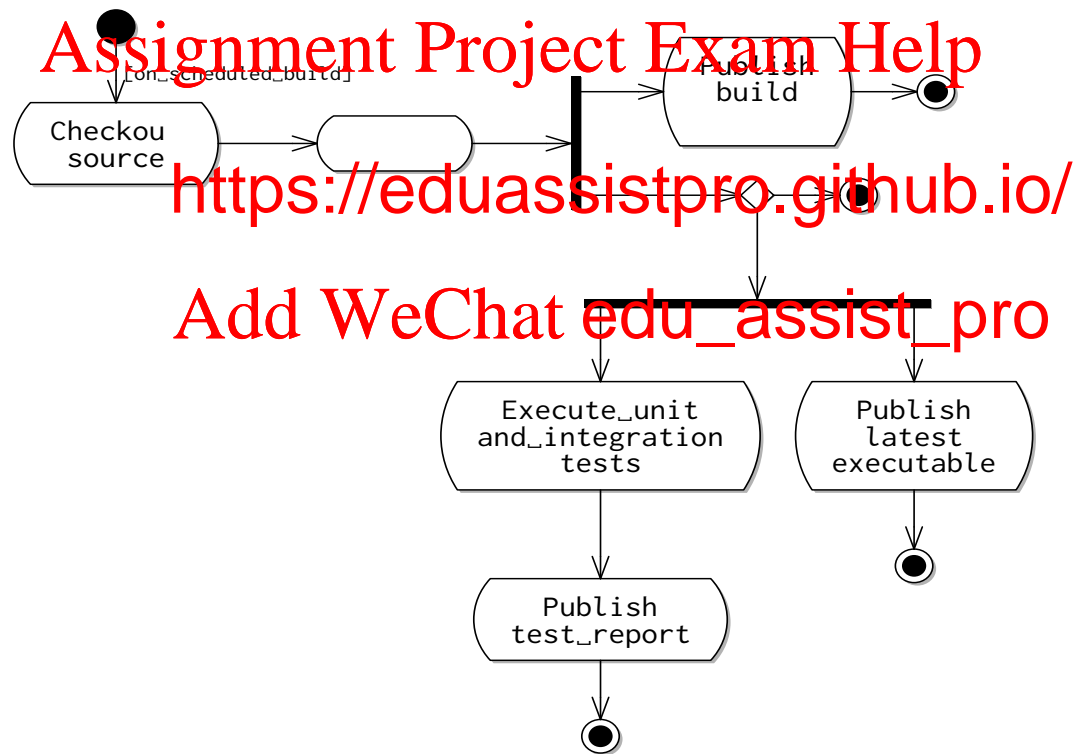
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BuildBot

Integrity

Table: some continuous integration environments

Continuous integration environment workflow



Key message

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Continuous integration is the
disruption caused by rapid, concurrent
software systems.

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PI Question (session1280)

In AE2, How many bugs have you found?

▣ A: 1

▣ B: 2

▣ C: 3

▣ D: 4

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