Continuous Integration: Processes and APIs

1. Abstract
2. Intro
   1. High level overview of CI.
3. Continuous Integration: What it is?
   1. What is continuous integrations?
   2. What is the purpose
   3. Current usages
      1. continuous integration in industry
         1. Raytheon
         2. Northrop Grumman
      2. continuous integration in academia
      3. Servers vs standalone PCs
   4. Benefits of continuous integration
   5. Limitations of continuous integration
4. Continuous Integration Processes
5. Continuous Integration Tools and APIs
   1. Jenkins
   2. Buildbot
   3. Travis CI
   4. Strider
   5. Go
   6. Integrity
   7. Circle
   8. Codeship
6. **Best Practices**
   1. **Resource Management**
      1. **Master – resource management**
      2. **Slaves – Different baselines on different Oss**
   2. **Parallelization**
   3. **Fast Builds with most recent changes**
      1. **Image from electric-cloud**
   4. **Build Flow**
      1. **Branch**
      2. **Pull Request**
7. **Proposed New Applications In Continuous Integration Systems**
   1. **Automated systems that are easy to set up, will execute tests and deployments on demand with no manual intervention and easily adapt to changes**
   2. **Auto test generation**
      1. **History of tests**
      2. **Create test stubs**
         1. **Expand on tools - Parasoft**
      3. **Known tests that cause problems – highlight**
   3. **Continuous Delivery and Deployment**
   4. **Parallelization of build and tests**
   5. **Building multiple baselines at once. Build in multiple merges individually and simultaneously**
   6. **Commits go through builds, and tests before being merged**
   7. **Reporting procedures**
      1. **Broken build – email all developers and manager**
      2. **Broken unit test – email all developers and managers**
      3. **Broken integration/regression test – email / test all developers and managers**
8. References

<https://opensource.com/business/15/7/six-continuous-integration-tools>

<https://www.thoughtworks.com/continuous-integration>

<https://aws.amazon.com/devops/continuous-integration/>

<https://jenkins.io/index.html>

<https://insights.sei.cmu.edu/devops/2015/01/continuous-integration-in-devops-1.html>

<http://www.360logica.com/blog/2015/08/the-existing-challenges-of-continuous-integration-ci.html>

<https://cloudacademy.com/cloud-computing/introduction-to-continuous-integration-course/>

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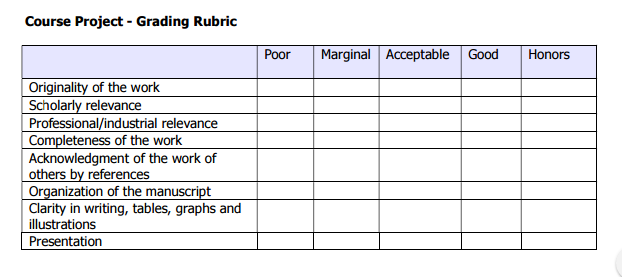
<https://www.java.net//blog/kohsuke/archive/20070514/Hudson%20J1.pdf>

<http://sourceforge.net/project/shownotes.php?release_id=155929>

<http://buildbot.net/index.html>

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Continuous Integration/Deployment is a huge piece in the current Computer Science field. This is a topic I believe I will want to write about for my course project. The topic is still relatively new in the computer science field and has a lot of growing information. Considering that the topic is newer, it leaves a great opportunity to conduct research on it to determine the best way to use it. This research can be done by analyzing its current uses in industry and by applying new uses if applicable.



15 minute presentation

10 minute Q and A