

DevOps

CSC 354, Software Engineering II

DevOps

- DevOps
 - Combines software development (Dev) and IT operations (Ops)
 - Goals:
 - Shorten the system development life cycle
 - Provide continuous delivery of high quality software

System Development Life Cycle

- Analysis
- Design
- Environments
- Testing
- Training and transition
- Operations and maintenance

Toolchains

- Different sets of tools are referred to as toolchains
- Toolchains fit into the following categories
 - 1 Coding
 - 2 Building
 - 3 Testing
 - 4 Packaging
 - 5 Releasing
 - 6 Configuring
 - 7 Monitoring

Coding Tools

- Code development and review
- Source code management tools
- Code merging

Building Tools

- Continuous integration (CI)
 - Practice of merging all developers' working copies to a shared mainline several times a day
 - Tools to: compile code, run tests, and deploy artifacts from CI
- Build status

Testing Tools

- Continuous testing
 - Process of executing automated tests as part of the software delivery pipeline
 - Provide immediate feedback on the business risks associated with a software release

Packaging Tools

- Artifact repository
 - CI is typically use to continuously build binary artifacts
- Application pre-deployment staging

Releasing Tools

- Change management
- Release approvals
- Release automation

Configuring Tools

- Infrastructure configuration and management
- Infrastructure as code
 - Process of managing and provisioning data centers via machine readable definition files

Monitoring Tools

- Applications performance monitoring
 - Application performance metrics
 - Load: volume of transactions processed by the application, for example requests per second.
 - Response time: time required to respond to user actions under load.
 - End-user experience