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Maven Build Automation





What is Maven?

- Automates Software Build Lifecycle
- **Dependency Management Tool** (open source, 3rd party, libraries)
- Artifact generation (jar, war, etc.)
- Artifact repository
- Set of conventions to eliminate configuration complexity
- Project kickstarter (archtypes)
- Promotes modularity
- Documentation



Automated Tools History

- Makefiles - Bell Labs 1977, Unix/C
- Apache Ant - ~2000 Java
- Maven - 2007



Convention vs. Configuration

- Removing unnecessary, time-consuming decisions out of development process for common tasks
 - Developers already know structure of codebase
 - Automated tools know where to find artifacts
 - Similar to Software Design Pattern concep.
- Set of rules on how to organize a codebase
- Boosts productivity by eliminating decisions, reducing tribal knowledge and work



Maven Directory Structure Convention

```
my-app
|-- pom.xml
`-- src
    |-- main
    |   |-- java
    |   |   |-- com
    |   |   |   |-- mycompany
    |   |   |   |   |-- app
    |   |   |   |   |   App.java
    |   |-- resources
    |   |   |-- META-INF
    |   |   |   |-- application.properties
    |-- test
    |   |-- java
    |   |   |-- com
    |   |   |   |-- mycompany
    |   |   |   |   |-- app
    |   |   |   |   |   AppTest.java
    |-- resources
    |   |-- test.properties
```

- pom.xml
- src/main - application classes & resources
- src/test - test classes & resources



Maven Lifecycle

- Standard lifecycle commands or goals
 - clean
 - compile
 - test
 - package
 - install
- Custom and advanced goals
 - deploy
 - site
 - documentation



Project Object Model

- Single configuration file containing information necessary to build a project.
- Provides base information
 - Group ID “com.business.feature...”
 - Artifact ID
- Dependencies
 - What external software does the project depend on
 - What version
- Environment Variables
- Plugins for additional build capabilities
 - Testing tools
 - Security tools

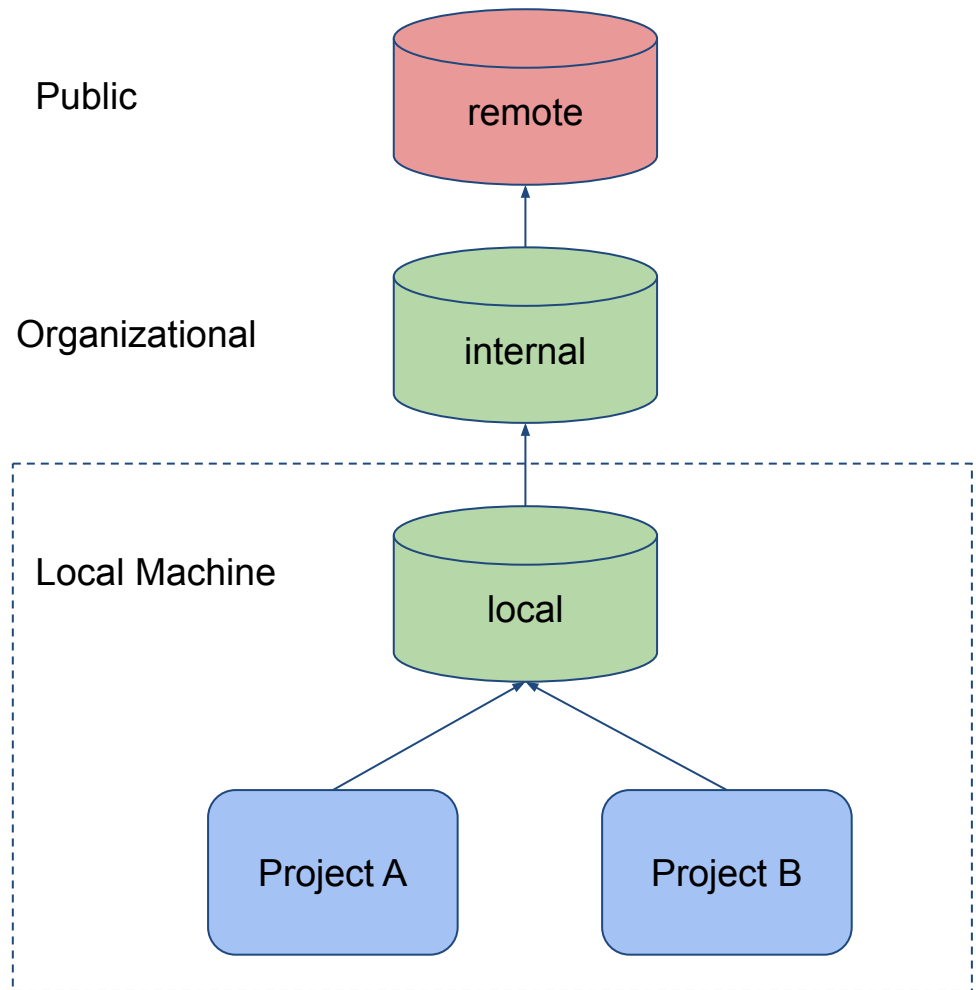
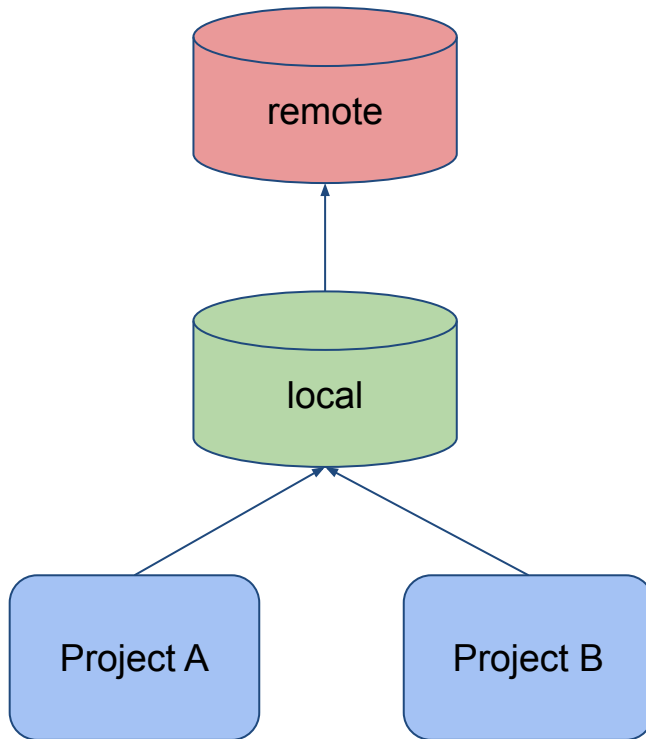


Artifact Repositories

- Local Repository
 - Local cache for dependency artifacts
 - Useful for offline builds
 - Can be erased as Maven recursively looks for dependencies and will reload
- Default location in **.m2/repository folder**
- Location can be specified through **\$MAVEN_HOME/conf/settings.xml**
- Public vs. Private repositories
 - Private - local machine (.m2) or internal server with repository software
 - Public - Maven Central located publicly on the internet



Repository Relationship





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