

**PGPI**

*Tools*

Práctica 9

Autor

Abdullah Taher Saadoon AL-Musawi

Y

OSCAR RUBIO GARCÍA



Escuela Técnica Superior de Ingenierías Informática y de Telecomunicación

—

Granada, December de 2019

# Tool selection

## Version Control Tools

|  |  |
| --- | --- |
| Tool Name | Git |
| URL | <https://git-scm.com/> |
| Cost | 0 |
| Featured Characteristics | * Provides strong support for non-linear development. * Distributed repository model. * Compatible with existing systems and protocols like HTTP, FTP, ssh. * Capable of efficiently handling small to large sized projects. * Cryptographic authentication of history. * Pluggable merge strategies. * Toolkit-based design. * Periodic explicit object packing. * Garbage accumulates until collected. |
| Limitations | * Not recommended to be used when handling big amounts of data or constantly changing binaries. * Cannot be used to manage multiple branches. |

|  |  |
| --- | --- |
| Tool Name | CVS (Concurrent Versioning System) |
| URL | <https://savannah.nongnu.org/projects/cvs> |
| Cost | 0 |
| Featured Characteristics | * Client-server repository model. * Multiple developers might work on the same project parallelly. * CVS client will keep the working copy of the file up-to-date and requires manual intervention only when an edit conflict occurs * Keeps a historical snapshot of the project. * Anonymous read access. * ‘Update’ command to keep local copies up to date. * Can uphold different branches of a project. * Excludes symbolic links to avoid a security risk. * Uses delta compression technique for efficient storage. |
| Limitations | * No integrity checking of source code * Commits are not atomic * Poor support for distributed source control. * Mainly oriented towards text files only. |

|  |  |
| --- | --- |
| Tool Name | Monotone |
| URL | <https://github.com/graydon/monotone> |
| Cost | 0 |
| Featured Characteristics | * Provides good support for internationalization and localization. * Focuses on integrity over performance. * Intended for distributed operations. * Employs cryptographic primitives to track file revisions and authentications. * Can import CVS projects. * Uses a very efficient and robust custom protocol called netsync. |
| Limitations | * Unable to check out from behind proxies * Performance issues * Not as popular as other choices * Lacks visual interfaces |

## Compilation tools

|  |  |
| --- | --- |
| Tool Name | Microsoft Build Engine |
| URL | <https://docs.microsoft.com/es-es/visualstudio/msbuild/msbuild?view=vs-2019> |
| Cost | 0 |
| Featured Characteristics | * Useful tool in automation * Easily accessible * Shares build system with Visual Studio |
| Limitations | * Long documentation needed to get started * Uses XML syntax, which might not be too intuitive |

|  |  |
| --- | --- |
| Tool Name | Apache Ant |
| URL | <https://ant.apache.org/> |
| Cost | 0 |
| Featured Characteristics | * Highly portable * Flexible * Extensible, and with multitude plugins |
| Limitations | * Complex XML syntax * Limited fault handling rules * Lazy property evaluation not supported |

|  |  |
| --- | --- |
| Tool Name | Maven |
| URL | <https://maven.apache.org/> |
| Cost | 0 |
| Featured Characteristics | * Comfortable to use * Multitude of plugins to incorporate * Focused on automation * Integration of testing in it |
| Limitations | * Slow * Can be unreliable * Can’t depend on the newest version of something * Mainly focused on Java development |

## Test Automation Tools

|  |  |
| --- | --- |
| Tool Name | TestingWhiz |
| URL | <https://www.testing-whiz.com/> |
| Cost | $149.00/month/user |
| Featured Characteristics | * Automation * Can be used to schedule jobs * Risk-based testing included * Mobile testing support * Keyword-driven, data-driven testing, and distributed testing * Browser Extension Testing |
| Limitations | * False sense of quality due to automation * Slow feedback * Requires maintenance time |

|  |  |
| --- | --- |
| Tool Name | HPE Unified Functional Testing (HP – UFT formerly QTP) |
| URL | <https://www.microfocus.com/es-es/products/uft-one/overview> |
| Cost | $3,200 anual |
| Featured Characteristics | * Integration with Mercury Business Process Testing and Mercury Quality Center * Unique Smart Object Recognition * Error handling mechanism * Creation of parameters for objects, checkpoints, and data-driven tables * Automated documentation |
| Limitations | * Funky behaviour may happen * Not supported for certain browsers * Any web-based environment like SAP, .NET WebForms ext.. is not supported |

|  |  |
| --- | --- |
| Tool Name | TestComplete |
| URL | <https://smartbear.com/product/testcomplete/overview/> |
| Cost | €2,135 per user |
| Featured Characteristics | * GUI testing * Scripting Language Support – JavaScript, Python, VBScript, JScript, DelphiScript, C++Script & C#Script * Test visualizer * Scripted testing * Test recording and playback |
| Limitations | * Limited browser support * Continuous integration only with AQtrace and AQtime integration. * Provides results in a single pane instead of a summary or report |

## Continuous integration tools

|  |  |
| --- | --- |
| Tool Name | Travis CI |
| URL | <https://travis-ci.com/plans> |
| Cost | $228 USD per month |
| Featured Characteristics | * Automatic integration with GitHub. * Repository access to build pull requests. * Support for 21 languages like Android, C, C#, C++, Java, JavaScript * Pre-installed build & test tools. |
| Limitations | * Hard to configure sometimes * Not many customization options, inflexible * Cannot be integrated with other 3rd party tools |

|  |  |
| --- | --- |
| Tool Name | Bamboo |
| URL | <https://www.atlassian.com/software/bamboo> |
| Cost | Free for open source / $10 for up to 10 users anually or $1270 for unlimited users annually |
| Featured Characteristics | * Built in git branching * Built in integration with other Atlassian tools, ej Jira * Built in failure analysis system * Can be used to import data from Jenkins |
| Limitations | * Alien nomenclature * No passing of properties * No concept of inherited project structure |

|  |  |
| --- | --- |
| Tool Name | Jenkins |
| URL | <https://jenkins.io/> |
| Cost | 0 |
| Featured Characteristics | * Constant community support * Easy to install * Portable * Multitude of plugins to incorporate * Flexible |
| Limitations | * No visibility to the analytics * Problems tracking the accountability of changes made in the code * Doesn’t allow the viewing of changes made by other team members * Requires multiple plugins to solve various issues |

## Bug Tracking Tools

|  |  |
| --- | --- |
| Tool Name | JIRA |
| URL | <https://www.atlassian.com/es/software/jira> |
| Cost | $100 anually |
| Featured Characteristics | * Highly configurable * Very flexible * Can easily be modified via interfaces * Can be used to track time in tasks |
| Limitations | * Can handle up to 40000 issues only * JQL search and JIRA-based saved filters are not supported * Custom filed types are not supported * Can be hard to set up and use initially |

|  |  |
| --- | --- |
| Tool Name | Backlog |
| URL | <https://backlog.com/> |
| Cost | $100 monthly |
| Featured Characteristics | * Easy to use * Jira and Redmine support * IP address control |
| Limitations | * Lacks customization * Depending on project might require more storage space * No internal document creation |

|  |  |
| --- | --- |
| Tool Name | Bugzilla |
| URL | <https://www.bugzilla.org/> |
| Cost | 0 |
| Featured Characteristics | * Easy to use and handle * Easy to integrate in test management instruments * Automates documentation |
| Limitations | * Hard to manage logged in errors * Might have code defects * Can handle real time release tracking |

## Comparison Table

### Version Control Tools

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Weight | Git | CVS | Monotone |
| **Price** | 10% | 5 | 5 | 5 |
| **Usability** | 30% | 5 | 2 | 3 |
| **Project Suitability** | 60% | 5 | 3 | 1 |
| **Total** | 100% | 15 | 10 | 9 |

### Compilation tools

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Weight | Microsoft build | Apache Ant | Maven |
| **Price** | 10% | 5 | 5 | 5 |
| **Suitability** | 40% | 5 | 4 | 2 |
| **Learning complexity** | 50% | 3 | 3 | 2 |
| **Total** | 100% | 13 | 12 | 9 |

### Test Automation Tools

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Weight | TestingWhiz | HPE | TestComplete |
| **Price** | 10% | 3 | 3 | 4 |
| **Report generation** | 20% | 4 | 5 | 4 |
| **Project Suitability** | 50% | 5 | 4 | 5 |
| **Integration** | 30% | 5 | 5 | 5 |
| **Total** | 100% | 17 | 17 | 18 |

### Continuous integration tools

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Weight | Travis CI | Bamboo | Jenkins |
| **Price** | 10% | 3 | 4 | 5 |
| **Flexibility** | 20% | 4 | 5 | 5 |
| **Setup Requirements** | 10% | 3 | 4 | 2 |
| **Integration** | 40% | 2 | 4 | 3 |
| **Total** | 100% | 12 | 17 | 15 |

### Bug Tracking Tools

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Weight | Jira | Backlog | Bugzilla |
| **Price** | 10% | 4 | 3 | 5 |
| **Ease of Use** | 30% | 4 | 5 | 5 |
| **Futureproof** | 30% | 5 | 4 | 2 |
| **Configurable** | 30% | 5 | 2 | 3 |
| **Total** | 100% | 18 | 14 | 15 |

## Tools Chosen

|  |  |  |
| --- | --- | --- |
| Tool Type | Tool | Justification |
| Version Control Tools | Git |  |
| Compilation tools | MSBuild |  |
| Test Automation Tools | TestComplete |  |
| Continuous integration tools | Bamboo |  |
| Bug Tracking Tools | Jira |  |