Stats with Code Maat

CODE MAAT

Code Maat is a command line tool used to mine and analyze data from version-control systems (VCS).

web site:

https://github.com/adamtornhill/code-maat

CODE MAAT

```
statistic,value
number-of-commits,400
number-of-entities,2987
number-of-entities-changed,4471
number-of-authors,31
```

```
entity,n-authors,n-revs
AbstractEntityPersister.java,6,12
Loader.java,6,7
libraries.gradle,5,13
hibernate-core.gradle,5,11
build.gradle,4,33
Configuration.java,4,22
AnnotationBinder.java,4,13
AvailableSettings.java,4,9
Dialect.java,4,9
InfinispanRegionFactory.java,4,6
QueryBinder.java,4,5
CollectionBinder.java,4,5
...
```

```
date,added,deleted,commits
2012-03-08,693,0,1
2012-05-09,61,4,3
2012-10-16,1236,49,1
2012-10-19,551,139,1
2012-10-23,271,47,1
2012-10-25,1373,339,1
2012-12-13,18,0,1
2012-12-14,25,22,1
2012-12-17,145,54,4
2012-12-30,1,0,1
2012-12-31,40,1,1
2013-01-03,243,28,3
...
```

Generating input data

```
git log --pretty=format:'[%h] %an %ad %s' --date=short
--numstat --no-merges --no-renames
--after=YYYY-MM-DD --before=YYYY-MM-DD
```

example:

```
git log --pretty=format:'[%h] %an %ad %s' --date=short
--numstat --no-merges --no-renames
--after=2018-01-01 --before=2018-07-01 > data/evo.log
```

Running Code Maat

java -jar code-maat-[version].jar -h

```
java -jar code-maat-1.1-SNAPSHOT-standalone.jar -h
This is Code Maat, a program used to collect statistics from a VCS.
Version: 1.0-SNAPSHOT

Usage: program-name -l log-file [options]

Options:
  -l, --log LOG                                          Log file with input data
  -c, --version-control VCS                              Input vcs module type: supports svn, git, git2, hg, p4, or tfs
  -a, --analysis ANALYSIS                          authors  The analysis to run (abs-churn, age, author-churn, authors, communication,
coupling, entity-churn, entity-effort, entity-ownership, fragmentation, identity, main-dev, main-dev-by-revs, messages,
refactoring-main-dev, revisions, soc, summary)
      --input-encoding INPUT-ENCODING                    Specify an encoding other than UTF-8 for the log file
  -r, --rows ROWS                                        Max rows in output
  -o, --outfile OUTFILE                                  Write the result to the given file name
  -g, --group GROUP                                      A file with a pre-defined set of layers. The data will be aggregated
according to the group of layers.
  -p, --team-map-file TEAM-MAP-FILE                      A CSV file with author,team that translates individuals into teams.
  -n, --min-revs MIN-REVS                          5     Minimum number of revisions to include an entity in the analysis
  -m, --min-shared-revs MIN-SHARED-REVS            5     Minimum number of shared revisions to include an entity in the analysis
  -i, --min-coupling MIN-COUPLING                  30    Minimum degree of coupling (in percentage) to consider
  -x, --max-coupling MAX-COUPLING                  100   Maximum degree of coupling (in percentage) to consider
  -s, --max-changeset-size MAX-CHANGESET-SIZE      30    Maximum number of modules in a change set if it shall be included in a
coupling analysis
  -e, --expression-to-match MATCH-EXPRESSION             A regex to match against commit messages. Used with -messages analyses
  -t, --temporal-period TEMPORAL-PERIOD                  Instructs Code Maat to consider all commits during the same day as a
single, logical commit
  -d, --age-time-now AGE-TIME_NOW                        Specify a date as YYYY-MM-dd that counts as time zero when doing a code
age analysis
  -h, --help
Please refer to the manual page for more information.
```

Code Maat Command

Generating a summary

java -jar code-maat-[version].jar -l evo.log -c git -a summary

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a summary

Mining organizational metrics

java -jar code-maat-[version].jar -l evo.log -c git

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git

java -jar code-maat-[version].jar -l evo.log -c git -a revisions

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a revisions

Code Maat Command

Calculate code age

java -jar code-maat-[version].jar -l evo.log -c git -a age

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a age

Mining logical coupling

java -jar code-maat-[version].jar -l evo.log -c git -a coupling

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a coupling

Code Maat Command

Code churn measures

absolute churn

java -jar code-maat-[version].jar -l evo.log -c git -a abs-churn

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a abs-churn

churn by author

java -jar code-maat-[version].jar -l evo.log -c git -a author-churn

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a author-churn

churn by entity

java -jar code-maat-[version].jar -l evo.log -c git -a entity-churn

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a entity-churn

Code Maat Command

Ownership patterns

entity ownership

java -jar code-maat-[version].jar -l evo.log -c git -a entity-ownership

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a abs-churn

entity effort

java -jar code-maat-[version].jar -l evo.log -c git -a entity-effort

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a author-churn

main developer

java -jar code-maat-[version].jar -l evo.log -c git -a main-dev

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l evo.log -c git -a main-dev

Workshop

Clone Code Maat

git clone git@github.com:adamtornhill/code-maat.git

Change Directory

cd code-maat

Generating input data

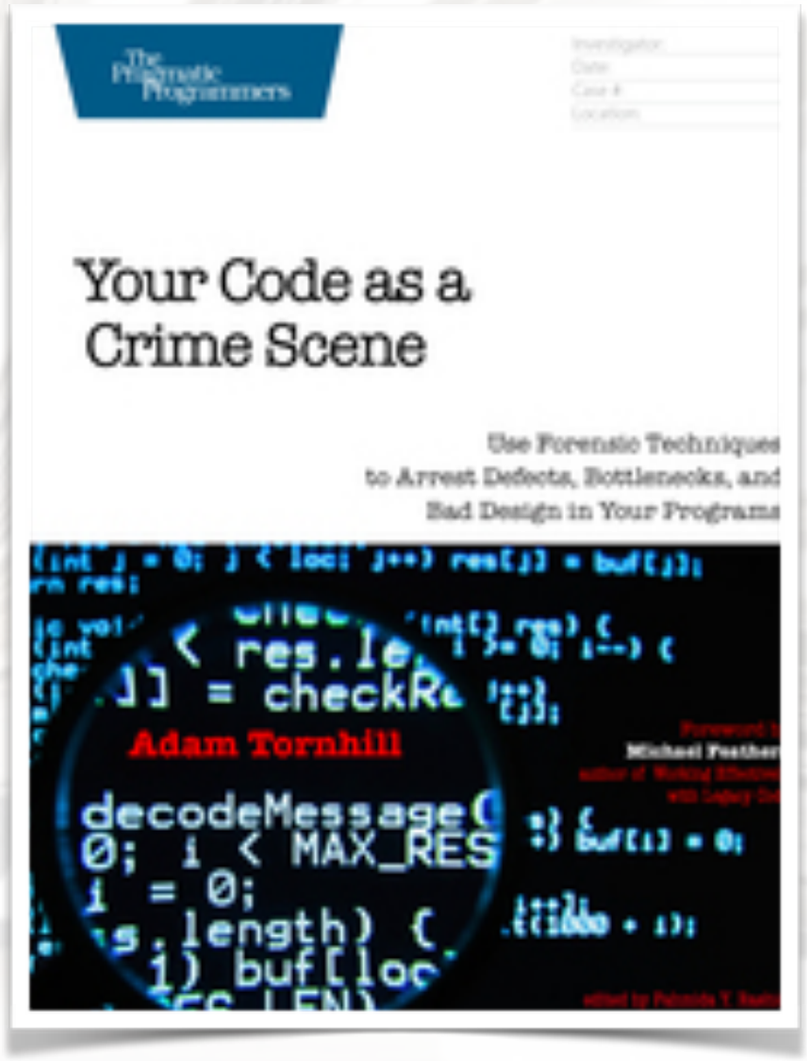
git log --pretty=format:'[%h] %an %ad %s' --date=short --numstat --no-merges --no-renames --after=2017-01-01 > data/evo.log

Copy code-maat.jar to code-maat directory

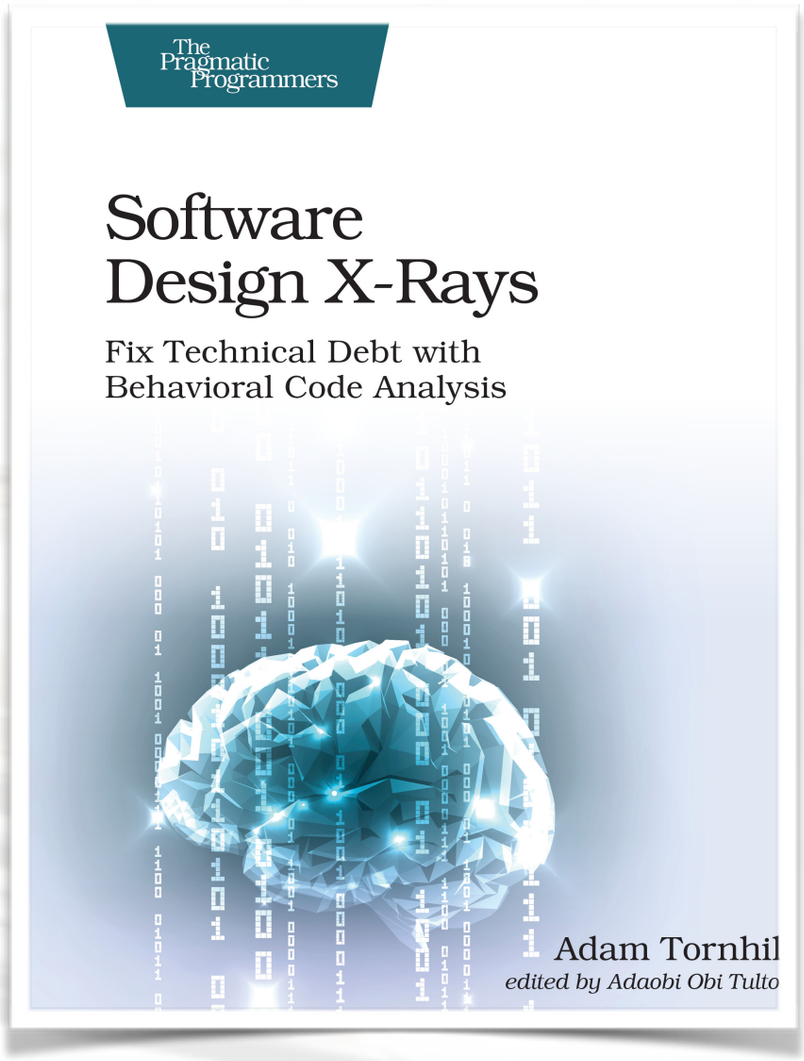
Mining with code maat

java -jar code-maat-1.1-SNAPSHORT-standalone.jar -l data/evo.log -c git

Books to Read and Practice



your-code-as-a-crime-scene



software-design-x-rays