MASTER IN COMPUTER SCIENCE

unine UNIVERSITÉ DE NEUCHÂTEL

Assignment 1 - Files integrity

Security

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27 September 2017

1 Administrative concerns

Sign up on `https://ilias.unibe.ch` for "2017HS: 12016 Security". All the material required to follow this lecture will be available on that platform. For students who do not have access to Ilias (or do not like it for some reason), a shared folder with the same contents is available at `https://frama.link/sec17`. The password for the share will be given during the first exercise session. VerySecure2017

When you have completed your assignment, upload it to Ilias. Students who **do not** have access to Ilias can submit the assignment by e-mail to sebastien.vaucher@unine.ch.

2 Assignment instructions

Develop a program to monitor the integrity of files and folders using cryptographic hash functions (like SHA-2) or error detection codes (like CRC-32). you can use stdlib

The program will work in two phases:

1. **Indexing phase**: the program will recursively scan a directory and record the checksums of all files that are found. The result will be stored in a file.
2. **Analysis phase**: using the previously generated file, the program will check that the directory is still in the same state as recorded. Any file that was modified, deleted or created in the meantime has to be reported as such.

The program has to support reading a set of exceptions from a separate file containing a list of files and folders to skip.

3 Hand-in

The time allotted for this assignment is 2 weeks. The deadline is on 2017-10-11T13:59:59 local time. Late submissions are not accepted.

- To be submitted to Ilias[1]:
  - Source code of **your** assignment
  - Readme file briefly mentioning how to compile and run your program, which dependencies it requires, etc.
  - All the files have to be packed in an archive in a standard format[2], named following this exact pattern (in lowercase letters only):
    `security17-as<assignment number>-<your family name>.<extension>`.
    For example, if your name were to be *Homer J. Simpson*, you would use the following filename for this assignment: `security17-as1-simpson.tar.gz`
- You have to present a demonstration of the program in class (to the TA).
  - It is **mandatory** for each student to demonstrate his or her submission!
  - The sooner you present your assignment, the better (even before the deadline).

Your grade will depend on both the presentation and the code.

4 Notes

You can use your favorite programming language for the assignments of this course, so long as it is a programming language readily available on the GNU/Linux operating system[3]. The suggested language for this assignment is Python.

Should you have additional questions, please direct them the to the TA at sebastien.vaucher@unine.ch.

[1] Or sent by e-mail for external students

[2] `.tar`, `.tar.gz`, `.tar.bz2`, `.tar.xz`, `.zip`

[3] You can use any of the languages in the following list. If you want to use another language, please check with the TA first. List in alphabetical order: Bash, C, C++, Go, Java, Kotlin, Perl, PHP, Python, Ruby, Scala