

## Criando guarda HASH na pasta doc/

```
Atividades Terminal 4 de out 14:25
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito

allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -i ./doc/

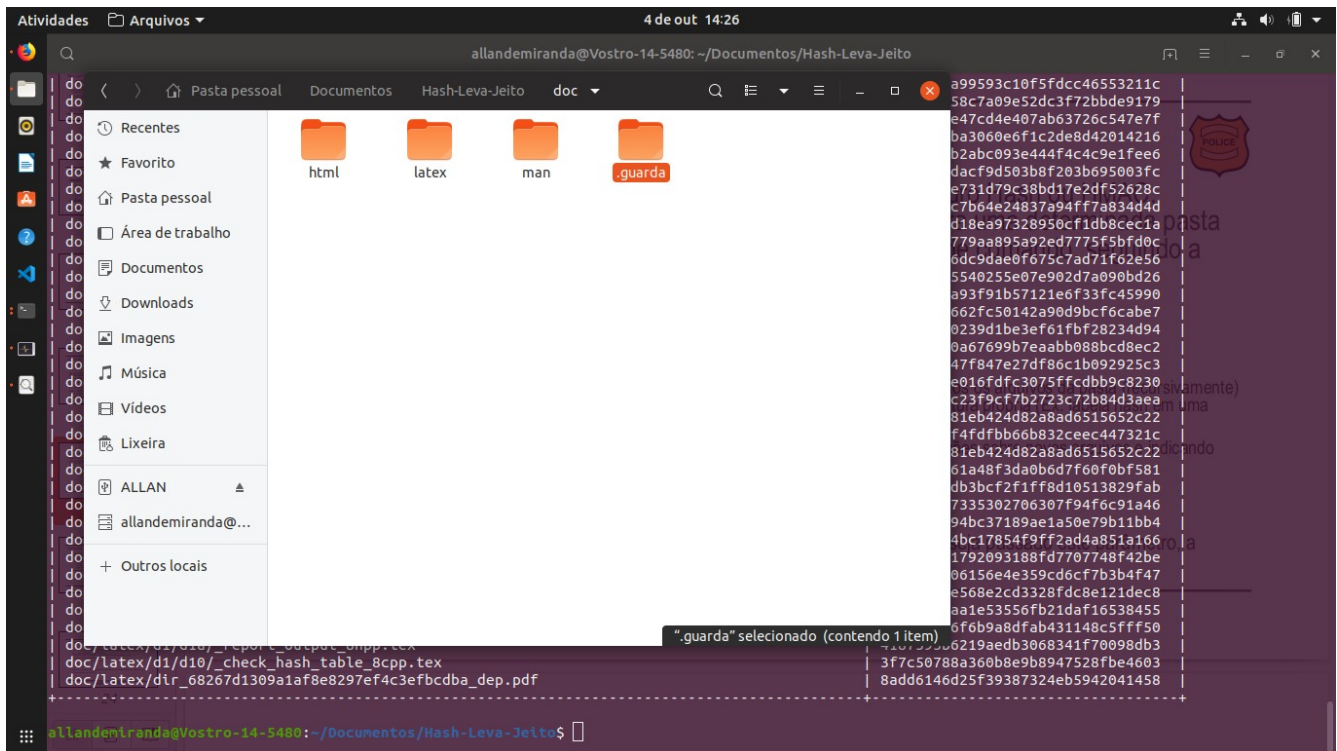
CAMINHO                                     HASH
-----
doc/html/tabs.css                          03e17602ad41cd3551eb76d9434f8ca0
doc/html/menudata.js                       7b5edd27768085a6b520e8fe671f7ac1
doc/html/df/d0a/main_8cpp_source.html      c8039d437853559b3165a1929e16349
doc/html/df/d0a/main_8cpp_source.html      6b4a0a7064788e4dfa6d47b67ba90d45
doc/html/df/d80/_create_hash_table_8cpp.html 508a4b1e71599a558950635b9e1c7349
doc/html/df/d80/_create_hash_table_8cpp_source.html 305cc8a44986179d6029f8d8e3212a4b
doc/html/tab_a.png                         2a5327b5dfc494fd8688fd887991cdab
doc/html/index.html                       df20294d1f1fb8570916b08459fd66db
doc/html/folderopen.png                   9ff4412a8e93e25320b9e260951c6a04
doc/html/dynsections.js                   bcd222771d969778fb39b18e6d54ef8d
doc/html/bc_s.png                         ceaaaa73746596a7519cf782d8aa065
doc/html/tab_s.png                       d5a3e094c590d5113232b74cd902f58f
doc/html/jquery.js                       390db00ac8bf98ebf1735f291773ab
doc/html/graph_legend.html               5762521a8470c5d1efdc0507e3c4dbb3
doc/html/dir_68267d1309a1af8e8297ef4c3efbcdba.html 35ceb7d472a8de8bde4e893ba8081a93
doc/html/d7/d5b/_check_hash_table_8hpp_incl.png 05f2018d068500f650ca759fc66bbad2
doc/html/d7/d9a/_check_hash_table_8hpp_incl.map dd5df73f06e38e3d09376bef821bb86
doc/html/d7/d9a/_check_hash_table_8hpp_incl.mds detectadas/exclusoes
doc/html/d7/d5b/_log_8hpp_incl.mds        6f7c6600df55ce473b50e9faae003f
doc/html/d7/d5b/_log_8hpp_incl.png        325b3aceb8fd8f593a4a9cf2794cfd4
doc/html/d7/d5b/_log_8hpp_incl.map        d304cb588a7ead80cfecb47a4ab9da6
doc/html/d7/d5b/_log_8hpp_incl.map        228947bed2d0507ce7b8177d723252d1
doc/html/d7/d0d/_reading_folder_files_8hpp_incl.mds 94372acfcb9231e26b4e870e36eb4ba
doc/html/d7/d0d/_reading_folder_files_8hpp_incl.map 8f774eb1eeb56480b926de39bc5683e3
doc/html/d7/d0d/_reading_folder_files_8hpp_incl.map 521c1a04d45cc2ec23d8958ce8b6e229
doc/html/bdwn.png                         6249334b2e7fc28090f26abeb32beb78
doc/html/dir_000001_000000.html           63337e80c80deb2991d2d09cdc502c0
doc/html/doxygen.png                     4d8b8c8f1a68a4f320da8294a085f251
doc/html/open.png                        468c228548b4a85dd54d544810bd0edd
doc/html/d3/d58/_log_8hpp_dep_incl.map    bbe2d262b33c4586d537ca169cf9dbfa
doc/html/d3/d58/_log_8hpp_dep_incl.png    4f44bf89c435e1c8410bc8a0bd22448
doc/html/d3/d58/_log_8hpp_dep_incl.mds    55e7df23900db81c6eb411ec3f760976
doc/html/d3/d96/_hash_file_8cpp_source.html 662f785abf8060a9833d777b7594a049
doc/html/d3/d96/_hash_file_8cpp_source.html 4b4486126b6c7e479b0d0f697521f5
doc/html/d3/dd4/_check_hash_table_8hpp.html 1a79b25d9cccf7d9d9b3cef3d289eac9

IMB METRÓPOLE DIGITAL UFPA
```

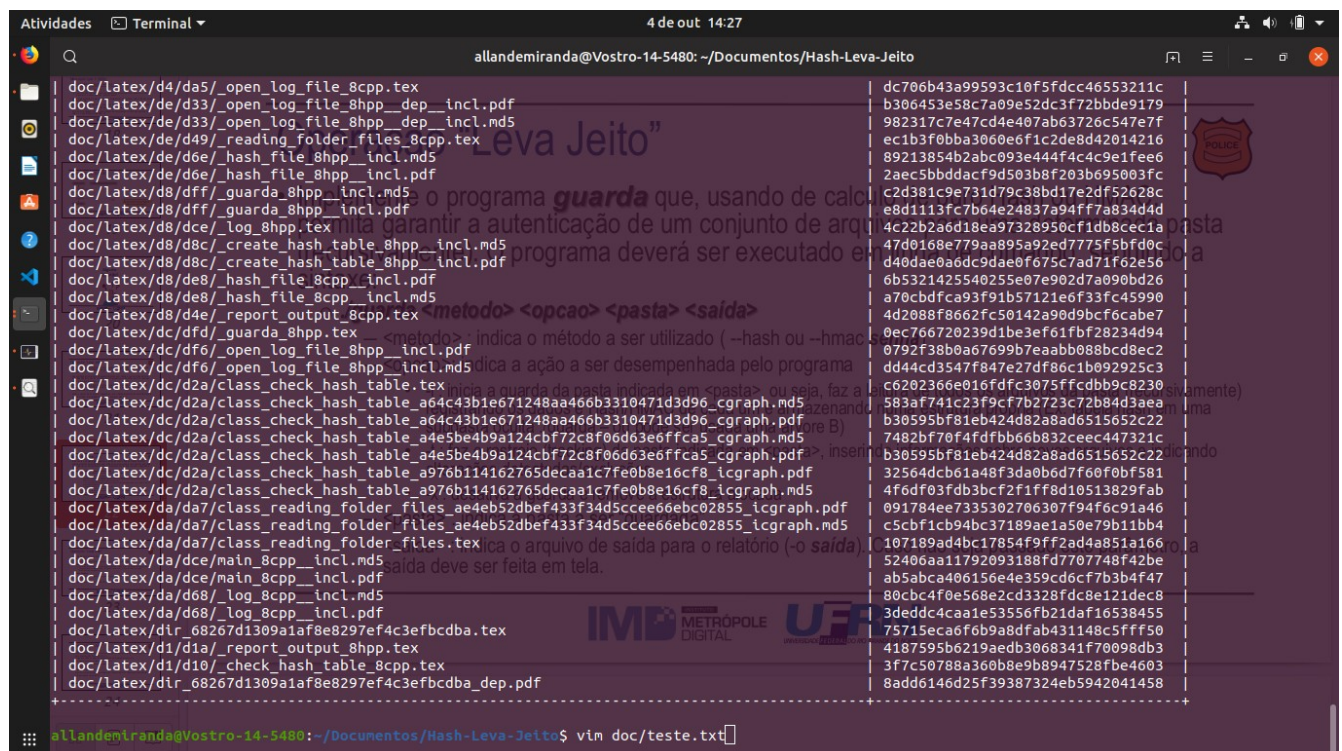
```
Atividades Terminal 4 de out 14:25
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito

doc/latex/d4/d51/guarda_8cpp_incl.pdf      a686a8f4421c3abcc80bf5ccf72aef69
doc/latex/d4/d51/guarda_8cpp_incl.mds     2c81ec3a5f45f2f291b20554effdc46
doc/latex/d4/da5/_open_log_file_8cpp.tex   dc706b43a99593c10f5fddc46553211c
doc/latex/de/d33/_open_log_file_8hpp_dep_incl.pdf b306453e58c7a09e52dc3f72b0bd9e179
doc/latex/de/d33/_open_log_file_8hpp_dep_incl.mds 982317c7e47cd4e407ab63726c547e7f
doc/latex/de/d49/_reading_folder_files_8cpp.tex ec1b3f0bba3060e6f1c2de842014216
doc/latex/de/d6e/_hash_file_8hpp_incl.mds 89213854b2abc093e444f4c49e1fee6
doc/latex/de/d6e/_hash_file_8hpp_incl.pdf 2a6c5bbddac9f503b8f203b695003fc
doc/latex/d8/dff/_guarda_8hpp_incl.mds    c2d381c9e731d79c38bd17e2df52628c
doc/latex/d8/dff/_guarda_8hpp_incl.pdf    e8d1113fc7b64e24837a94ff7a834d4d
doc/latex/d8/dce/_log_8hpp.tex             4c22b2a6d18ea97328950cf1db8c1a
doc/latex/d8/d8c/_create_hash_table_8hpp_incl.mds 47d0168e779aa895a92ed7775f5bf0c
doc/latex/d8/d8c/_create_hash_table_8hpp_incl.pdf 4d0da0a6dc9dae0f675c7ad71f62e56
doc/latex/d8/de8/_hash_file_8cpp_incl.mds 6b5321425540255e07e902d7a090bd26
doc/latex/d8/de8/_hash_file_8cpp_incl.pdf a70cbdfca93f91b57121e6f33fc45990
doc/latex/d8/d4e/_report_output_8cpp.tex   4d2088f8662fc50142a90d9bc6cabe7
doc/latex/dc/dfd/_guarda_8hpp.tex          0ec766720239d1be3ef61fbf28234d94
doc/latex/dc/df6/_open_log_file_8hpp_incl.pdf 0792f38b0a67699b7eaa088bdc8ec2
doc/latex/dc/df6/_open_log_file_8hpp_incl.mds dd44cd3547f847e27df86c1b092925c3
doc/latex/dc/d2a/_class_check_hash_table_a64c43b1e671248aa466b3310471d3d96_cgraph.mds c6202366e016df30c7305ffcd9bb9c8230
doc/latex/dc/d2a/_class_check_hash_table_a64c43b1e671248aa466b3310471d3d96_cgraph.pdf 583af741c23f9cf7b2723c72b84d3aea
doc/latex/dc/d2a/_class_check_hash_table_a4e5be4b9a124cbf72c8f06d63e6ffca5_cgraph.mds b30595bf81eb424d82a8ad6515652c22
doc/latex/dc/d2a/_class_check_hash_table_a4e5be4b9a124cbf72c8f06d63e6ffca5_cgraph.pdf 7482bf70f4fd4fbb66b832ceec447321c
doc/latex/dc/d2a/_class_check_hash_table_a976b114162765decaa1c7fe0b8e16cf8_icgraph.pdf b30595bf81eb424d82a8ad6515652c22
doc/latex/dc/d2a/_class_check_hash_table_a976b114162765decaa1c7fe0b8e16cf8_icgraph.mds 32564dc6b1a48f3da0b6d7f60f0bf581
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.pdf 4f6df03fdb3bc2f1ff8d10513829fab
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.mds 091784ee7335302706307f94f6c91a46
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.tex c5cbf1cb94bc37189a61a50e79b11bb4
doc/latex/da/dce/main_8cpp_incl.mds       107189ad4bc17854f9ff2ad4a851a166
doc/latex/da/dce/main_8cpp_incl.pdf       52406aa11792093188fd7707748f42be
doc/latex/da/d68/_log_8cpp_incl.mds       ab5abca406156e4e359cd6cf7b3b4f47
doc/latex/da/d68/_log_8cpp_incl.pdf       80bc4f0e568e2cd3328fd8e121dec8
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcdba.tex 3deddc4caa1e53556fb21daf16538455
doc/latex/d1/d1a/_report_output_8hpp.tex  75715eca6f6b9a8dfab431148c5ff5f0
doc/latex/d1/d10/_check_hash_table_8cpp.tex 4187595b6219aedb3068341f70098db3
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcdba_dep.pdf 3f7c50788a360b8e9b8947528fb4603
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcdba_dep.pdf 8add6146d25f39387324eb5942041458
```





Vamos criar um arquivo teste.txt dentro da pasta doc



Atividades

Terminal

allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito

teste teste

18

19

20

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22

23

24

Operação “Leva Jeito”

- Implemente o programa **guarda** que, usando de calculo de puro Hash ou HMAC, permita garantir a autenticação de um conjunto de arquivos para uma determinada pasta (recursivamente). O programa deverá ser executado em linha de comando, seguindo a sintaxe:
  - guarda** <metodo> <opcao> <pasta> <saida>
    - <metodo> : indica o método a ser utilizado ( --hash ou --hmac *senha*)
    - <opcao> : indica a ação a ser desempenhada pelo programa
      - i : inicia a guarda da pasta indicada em <pasta>, ou seja, faz a leitura de todos os arquivos da pasta (recursivamente) registrando os dados e Hash/HMAC de cada um e armazenando numa estrutura própria (Ex: tabela hash em uma subpasta oculta .guarda – ou pode ser usada uma árvore B)
      - t : faz o rastreo (tracking) da pasta indicada em <pasta>, inserindo informações sobre novos arquivos e indicando alterações detectadas/exclusões
      - x : desativa a guarda e remove a estrutura alocada
    - <pasta> : indica a pasta a ser “guardada”
    - <saida> : indica o arquivo de saída para o relatório (-o *saida*). Caso não seja passado este parâmetro, a saída deve ser feita em tela.

IMD

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## Executando rastreo na pasta doc

```
Atividades Terminal 4 de out 14:28
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito

doc/latex/d8/d8c/_create_hash_table_8hpp_incl.md5
doc/latex/d8/d8c/_create_hash_table_8hpp_incl.pdf
doc/latex/d8/d8e/_hash_file_8cpp_incl.pdf
doc/latex/d8/d8e/_hash_file_8cpp_incl.md5
doc/latex/d8/d4e/_report_output_8cpp.tex
doc/latex/dc/dfd/_guarda_8hpp.tex
doc/latex/dc/dfd/_open_log_file_8hpp_incl.pdf
doc/latex/dc/dfd/_open_log_file_8hpp_incl.md5
doc/latex/dc/d2a/_class_check_hash_table.tex
doc/latex/dc/d2a/_class_check_hash_table_a64c43b1e671248aa466b3310471d3d96_cgraph.md5
doc/latex/dc/d2a/_class_check_hash_table_a64c43b1e671248aa466b3310471d3d96_cgraph.pdf
doc/latex/dc/d2a/_class_check_hash_table_a4e5be4b9a124cbf72c8f06d63e6ffca5_cgraph.md5
doc/latex/dc/d2a/_class_check_hash_table_a4e5be4b9a124cbf72c8f06d63e6ffca5_cgraph.pdf
doc/latex/dc/d2a/_class_check_hash_table_a976b114162765decaa1c7fe0b8e16cf8_icgraph.md5
doc/latex/dc/d2a/_class_check_hash_table_a976b114162765decaa1c7fe0b8e16cf8_icgraph.pdf
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.md5
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.pdf
doc/latex/da/da7/_class_reading_folder_files.tex
doc/latex/da/dce/_main_8cpp_incl.md5
doc/latex/da/dce/_main_8cpp_incl.pdf
doc/latex/da/d68/_log_8cpp_incl.md5
doc/latex/da/d68/_log_8cpp_incl.pdf
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcbda.tex
doc/latex/d1/d1a/_report_output_8hpp.tex
doc/latex/d1/d10/_check_hash_table_8cpp.tex
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcbda_dep.pdf

4d7d0168e779aa895a92ed77755bfbd0c
d40dae0a6dc9dae0f675c7ad71f62e56
6b5321425540255e07e902d7a090bd26
a70cbdfca93f91b57121e6f33fc45990
4d2088f8662fc50142a90d9bfc6abe7
0ec766720239d1be3ef61fbf28234d94
0792f38b0a67699b7eaaab088bcd8ec2
dd44cd3547f847e27df86c1b092925c3
c6202366e016dfdc3075ffcd9bb9c8230
583af741c23f9cf7b2723c72b84d3aea
b30595bf81eb424d82a8ad6515652c22
7482bf70f4dfdbb66b832ceec447321c
b30595bf81eb424d82a8ad6515652c22
32564dc6b1a48f3da0b6d7f60fbf581
4f6df03fdb3bcf2f1ff8d10513829fab
091784ee7335302706307f94f6c91a46
c5cbf1cb94bc37189ae1a50e79b11bb4
107189ad4bc17854f9ff2ad4a851a166
52406aa11792093188fd7707748f42be
ab5abca406156e4e359cd6cf7b3b4f47
80cbc4f0e568e2cd3328f8dc8e121dec8
3deddc4caa1e53556fb21daf16538455
75715eca6f6b9a8dfab431148c5fff50
4187595b6219aedb3068341f70098db3
3f7c50788a360b8e9b8947528fbc4603
8add6146d25f39387324eb5942041458

allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ vim doc/teste.txt
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -t ./doc/

+-----+
| CAMINHO | STATUS |
+-----+
| doc/teste.txt | Arquivo Criado |
+-----+

allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$
```

## Modificando arquivo teste.txt

```
Atividades Terminal 4 de out 14:28
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito

doc/latex/dc/dfd/_open_log_file_8hpp_incl.md5
doc/latex/dc/d2a/_class_check_hash_table.tex
doc/latex/dc/d2a/_class_check_hash_table_a64c43b1e671248aa466b3310471d3d96_cgraph.md5
doc/latex/dc/d2a/_class_check_hash_table_a64c43b1e671248aa466b3310471d3d96_cgraph.pdf
doc/latex/dc/d2a/_class_check_hash_table_a4e5be4b9a124cbf72c8f06d63e6ffca5_cgraph.md5
doc/latex/dc/d2a/_class_check_hash_table_a4e5be4b9a124cbf72c8f06d63e6ffca5_cgraph.pdf
doc/latex/dc/d2a/_class_check_hash_table_a976b114162765decaa1c7fe0b8e16cf8_icgraph.md5
doc/latex/dc/d2a/_class_check_hash_table_a976b114162765decaa1c7fe0b8e16cf8_icgraph.pdf
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.md5
doc/latex/da/da7/_class_reading_folder_files_ae4eb52dbef433f34d5ccee66ebc02855_icgraph.pdf
doc/latex/da/da7/_class_reading_folder_files.tex
doc/latex/da/dce/_main_8cpp_incl.md5
doc/latex/da/dce/_main_8cpp_incl.pdf
doc/latex/da/d68/_log_8cpp_incl.md5
doc/latex/da/d68/_log_8cpp_incl.pdf
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcbda.tex
doc/latex/d1/d1a/_report_output_8hpp.tex
doc/latex/d1/d10/_check_hash_table_8cpp.tex
doc/latex/dir_68267d1309a1af8e8297ef4c3efbcbda_dep.pdf

dd44cd3547f847e27df86c1b092925c3
c6202366e016dfdc3075ffcd9bb9c8230
583af741c23f9cf7b2723c72b84d3aea
b30595bf81eb424d82a8ad6515652c22
7482bf70f4dfdbb66b832ceec447321c
b30595bf81eb424d82a8ad6515652c22
32564dc6b1a48f3da0b6d7f60fbf581
4f6df03fdb3bcf2f1ff8d10513829fab
091784ee7335302706307f94f6c91a46
c5cbf1cb94bc37189ae1a50e79b11bb4
107189ad4bc17854f9ff2ad4a851a166
52406aa11792093188fd7707748f42be
ab5abca406156e4e359cd6cf7b3b4f47
80cbc4f0e568e2cd3328f8dc8e121dec8
3deddc4caa1e53556fb21daf16538455
75715eca6f6b9a8dfab431148c5fff50
4187595b6219aedb3068341f70098db3
3f7c50788a360b8e9b8947528fbc4603
8add6146d25f39387324eb5942041458

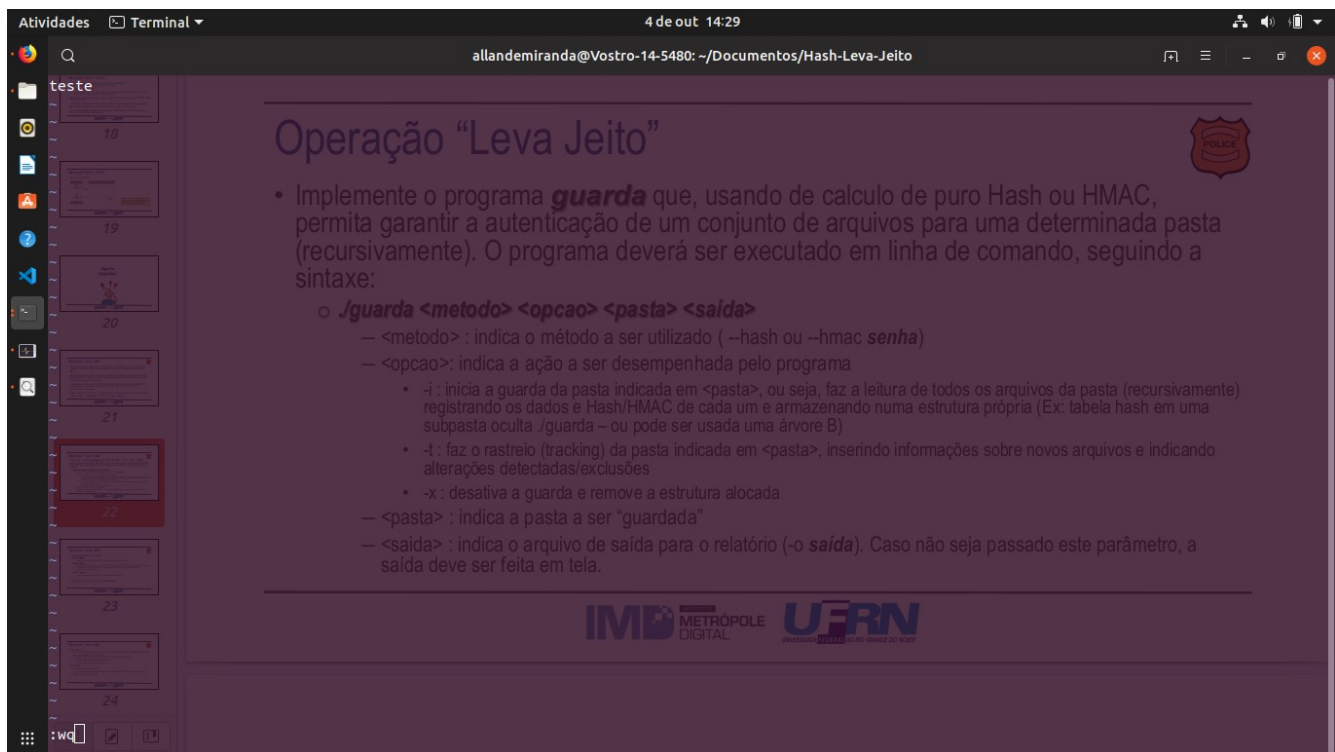
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ vim doc/teste.txt
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -t ./doc/

+-----+
| CAMINHO | STATUS |
+-----+
| doc/teste.txt | Arquivo Criado |
+-----+

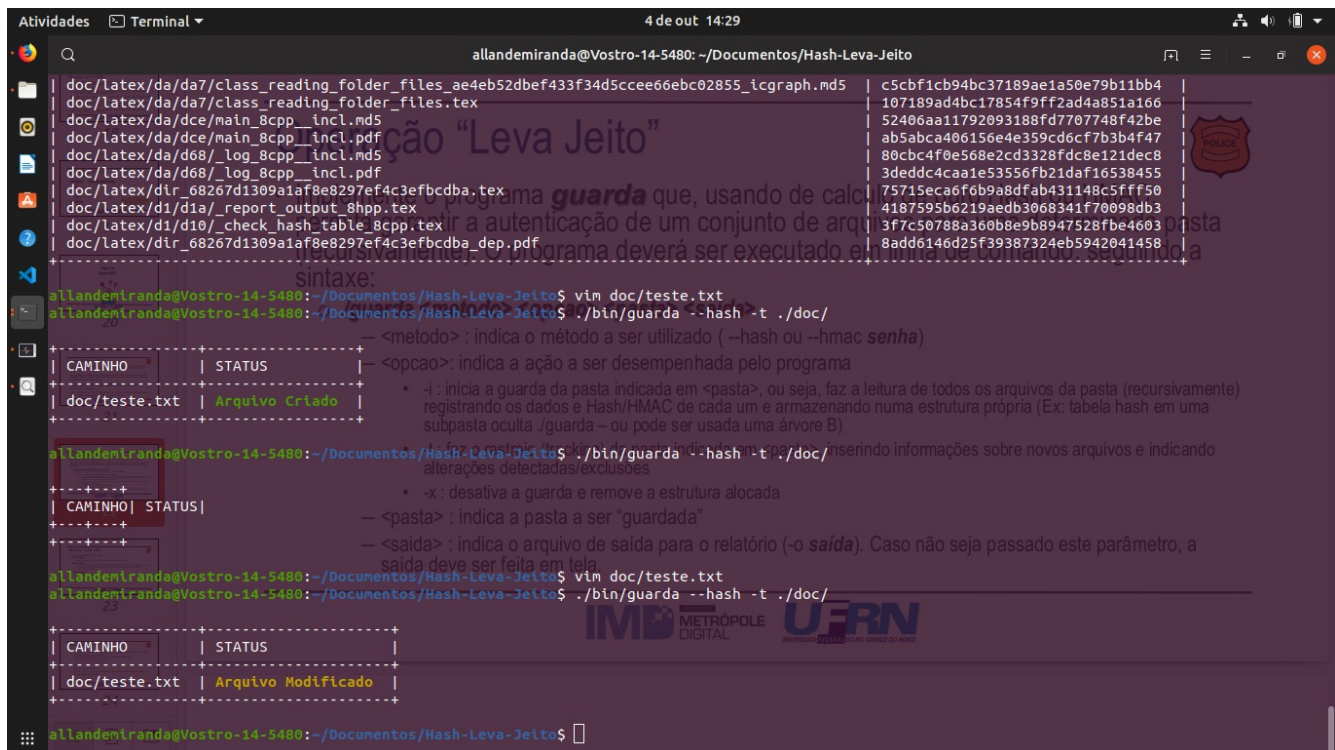
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -t ./doc/

+-----+
| CAMINHO | STATUS |
+-----+
| doc/teste.txt | Arquivo Criado |
+-----+

allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito$ vim doc/teste.txt
```



Executando rastreo na pasta doc





## Removendo arquivo teste.txt

[illegible]

## Executando rastreo na pasta doc

A screenshot of a Linux terminal window with a dark theme. The terminal title bar shows "Atividades" and "Terminal". The user is logged in as "allandemiranda" on a machine named "Vostro-14-5480", with the current directory being "~/Documentos/Hash-Leva-Jeito". The terminal shows the execution of the "guarda" program. The user first runs "vim doc/teste.txt" and then "./bin/guarda --hash -t ./doc/". The program's output is a table with two columns: "CAMINHO" and "STATUS". The table lists files in the "doc/" directory and their status after being processed by the "guarda" program. The status for "doc/teste.txt" is "Arquivo Criado". The user then runs "./bin/guarda --hash -t ./doc/ -m md5 -o ./doc/relatorio.txt". The program's output shows the same table, but the status for "doc/teste.txt" is now "Arquivo Modificado". The user then runs "rm doc/teste.txt" and finally "./bin/guarda --hash -t ./doc/". The program's output shows the same table, but the status for "doc/teste.txt" is now "Arquivo Deletado". The terminal also displays a watermark for "IMEB METRÓPOLE DIGITAL" and a "POLICE" badge icon.

## Removendo a guarda da pasta doc

A screenshot of a Linux terminal window with a dark background and a grid pattern. The terminal shows the execution of a program called 'guarda'. At the top, there's a banner for 'Operação "Leva Jeito"' with a police badge logo on the right. Below the banner, a list of command-line options is shown: 

- m: indica o método a ser utilizado ( -hash ou -hmac *senha* )
- o: indica a pasta a ser guardada
- p: faz a leitura de todos os arquivos da pasta (recursivamente) registrando os dados e hash md5 de cada um e armazenando numa estrutura própria (Ex: tabela hash em uma subpasta oculta .guarda - ou pode ser usada uma árvore B)
- t: faz o rastreo (tracking) da pasta indicada em <pasta>, inserindo informações sobre novos arquivos e indicando alterações detectadas/exclusões
- x: desativa a guarda e remove a estrutura alocada

 The user runs the command `./bin/guarda --hash -t ./doc/`, which results in a table being created. Then, the user runs `rm doc/teste.txt` and `./bin/guarda --hash -t ./doc/` again, showing the table being updated. Finally, the user runs `./bin/guarda --hash -x ./doc/`, which deletes the table. The terminal also shows the directory structure of the 'doc' folder and the 'guarda' subdirectory. The terminal window has a title bar that reads '4 de out 14:30' and 'allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito'.

## Múltiplos status

```
atividades | Terminal | 4 de out 15:02
allandemiranda@Vostro-14-5480: ~/Documentos/Hash-Leva-Jeito
allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -i ./doc/ -o doc/deletarTeste.txt
Table Hash criada
allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ echo testeA > doc/modificarTeste.txt
allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -t ./doc/

+-----+-----+
| CAMINHO | STATUS |
+-----+-----+
| doc/deletarTeste.txt | Arquivo Criado |
| doc/modificarTeste.txt | Arquivo Criado |
+-----+-----+

+-----+-----+
| CAMINHO | STATUS |
+-----+-----+
| doc/deletarTeste.txt | Arquivo Deletado |
| doc/modificarTeste.txt | Arquivo Modificado |
| doc/criarTeste.txt | Arquivo Criado |
+-----+-----+

allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ echo testeB > doc/criarTeste.txt
allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ echo testeC > doc/modificarTeste.txt
allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ rm doc/deletarTeste.txt ou --hmac senha)
allandemiranda@Vostro-14-5480:~/Documentos/Hash-Leva-Jeito$ ./bin/guarda --hash -t ./doc/
- <opcao>: indica a ação a ser desempenhada pelo programa
- <pasta>: indica a pasta a ser guardada, ou seja, faz a leitura de todos os arquivos da pasta (recursivamente)
  registrando os dados e Hash/HMAC de cada um e armazenando numa estrutura própria (Ex: tabela hash em uma
  subpasta oculta ./guarda - ou pode ser usada uma árvore B)
- <acao>: faz o rastreo (tracking) da pasta indicada em <pasta>, inserindo informações sobre novos arquivos e indicando
  alterações detectadas/exclusões
- <localiza>: localiza a guarda e remove a estrutura alocada
- <senha>: indica a senha a ser "guardada"
- <saida>: indica o arquivo de saída para o relatório (-o <saida>). Caso não seja passado este parâmetro, a
  saída deve ser feita em tela.
```