Análise e Teste de Software

Universidade do Minho,
Departamento de Informática

Bruno Veloso
A78352

João Mota
A80791

Rafael Lourenço
A86266

Objetivos e Tarefas

Tarefa 1

- Preparação dos projetos
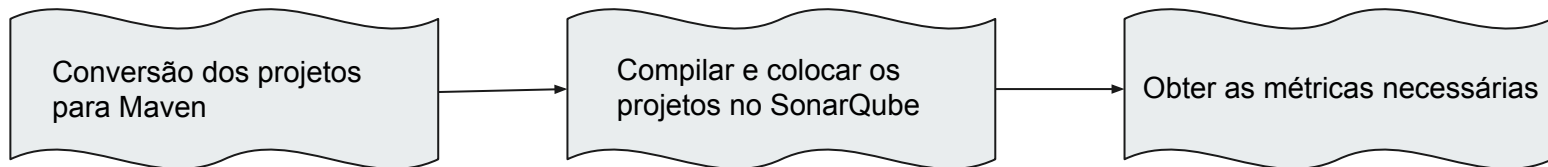- Métricas de software.

Tarefa 2

- Refactoring;

Tarefa 3

- Testes unitários;
- Cobertura;
- Ficheiros logs.

Tarefa 4

- Análise de desempenho a nível energético;

Tarefa 1

Conversão dos projetos para Maven	→	Compilar e colocar os projetos no SonarQube	→	Obter as métricas necessárias

- Criação de novas diretorias para os projetos Maven

- Criação da pom.xml e aplicação aos projetos

- Tratamento dos casos de excepção

- Iniciar o servidor do SonarQube

- Compilar os projetos Maven

- Colocar os projetos no SonarQube

- Guardar num ficheiro .csv as métricas consideradas para todos os projetos

  - ❖ Número do projeto

  - ❖ Bugs

  - ❖ Security Hotspots

  - ❖ Code Smells

  - ❖ Complexidade ciclomática

 - ❖ Linhas Duplicadas

  - ❖ Technical Debt

Tarefa 1 - Análise

name	bugs	security_hotspots	code_smells	complexity	duplicated_lines	debt
p0	17	2	448	596	3.4	4062
p1	16	6	320	607	0.0	3347
p2	6	4	340	360	8.2	3177
p3	15	5	318	434	0.0	3034
p4	13	0	328	393	4.6	3039
p5	0	2	345	294	10.6	3568
p6	25	4	337	623	4.2	3548
p7	33	1	344	387	3.9	2901
p8	11	2	295	537	5.4	2916
p9	19	7	663	992	5.7	6891
p10	19	4	464	447	1.2	4866
p11	27	11	377	704	2.8	3423
p12	21	1	446	532	12.2	4404
p13	10	5	201	169	20.8	1810
p14	24	10	664	733	6.6	7121
p15	9	1	252	413	2.8	2442

Tarefa 1 - Análise

	bugs	security_hotspots	code_smells	complexity	duplicated_lines	debt
count	95.000000	95.000000	95.000000	95.000000	95.000000	95.000000
mean	18.642105	7.747368	362.147368	619.305263	5.177895	3669.768421
std	11.119195	13.353594	146.032055	188.399196	4.235443	1508.089714
min	0.000000	0.000000	151.000000	169.000000	0.000000	1349.000000
25%	12.500000	2.000000	255.500000	511.000000	2.500000	2613.000000
50%	17.000000	5.000000	325.000000	607.000000	4.200000	3423.000000
75%	22.000000	9.000000	433.000000	728.000000	6.950000	4327.000000
max	74.000000	123.000000	816.000000	1158.000000	20.800000	8170.000000
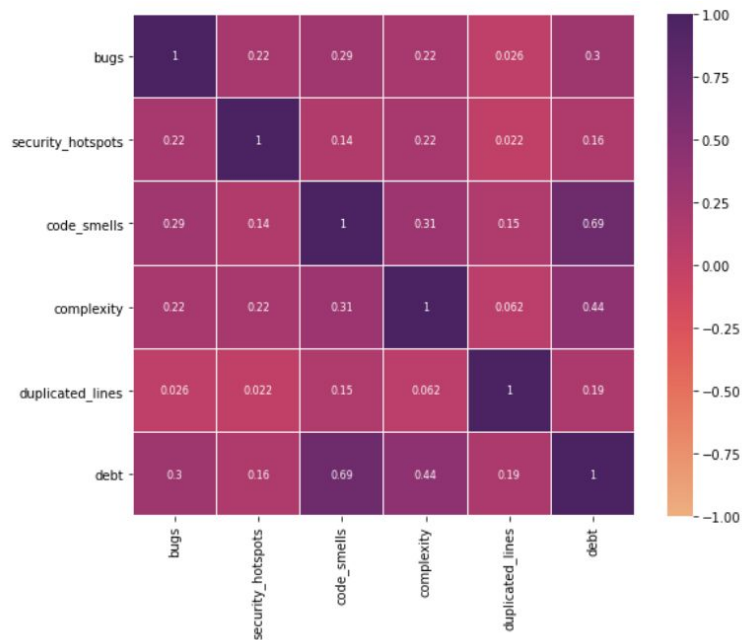
0 🐞 Bugs

Reliability **A**

0 🔒 Vulnerabilities

Security **A**

1 🛡 Security Hotspots ⦸

◯ **0.0%** Reviewed

Security Review **E**

4d 6h Debt

209 ☢ Code Smells

Maintainability **A**

◯ **0.0%**
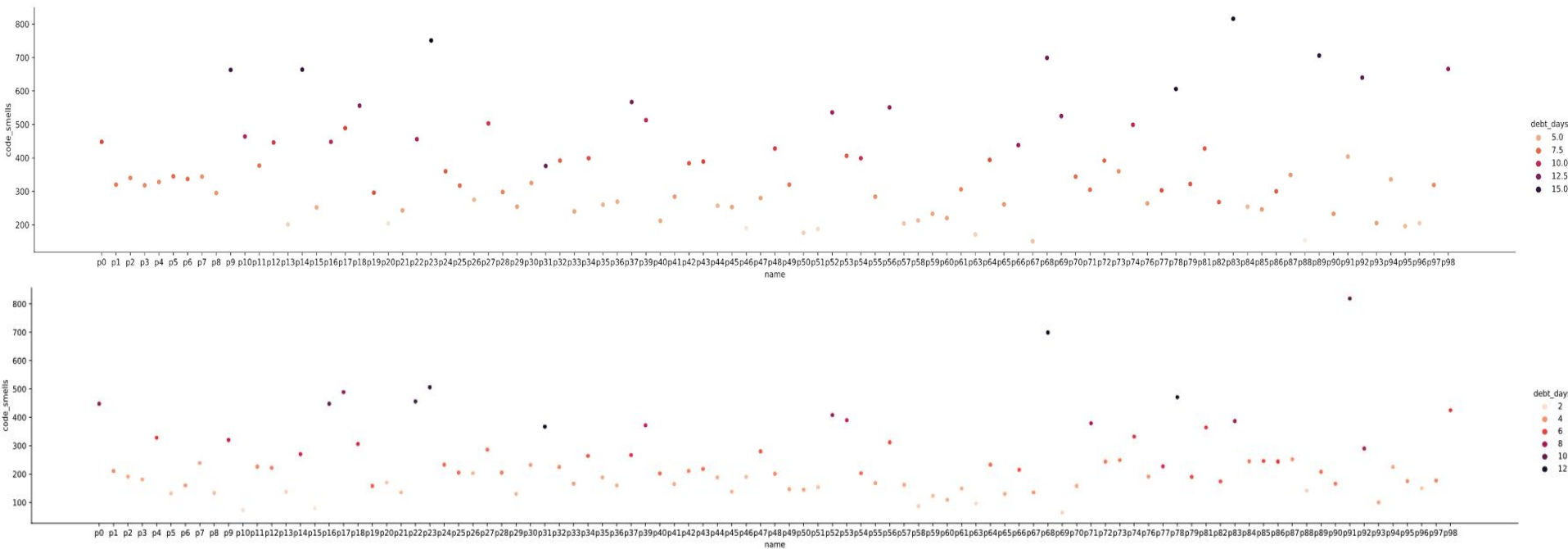Coverage on 2.8k Lines to cover

-
Unit Tests

◉ **6.4%**
Duplications on 4k Lines

19
Duplicated Blocks

Refractor Automático:

Estatísticas finais:

	bugs	security_hotspots	code_smells	complexity	duplicated_lines	debt
count	95.000000	95.000000	95.000000	95.000000	95.000000	95.000000
mean	18.378947	7.968421	264.989474	700.726316	5.546316	2583.347368
std	11.313877	13.778223	129.842416	824.505015	6.183675	1225.457872
min	0.000000	0.000000	108.000000	169.000000	0.000000	1110.000000
25%	11.000000	2.000000	173.500000	511.000000	2.500000	1770.500000
50%	17.000000	5.000000	226.000000	607.000000	4.200000	2214.000000
75%	22.000000	9.500000	315.500000	736.000000	7.150000	3028.000000
max	74.000000	123.000000	822.000000	8441.000000	50.600000	6567.000000

Tarefa 3 - Testes e Coverage
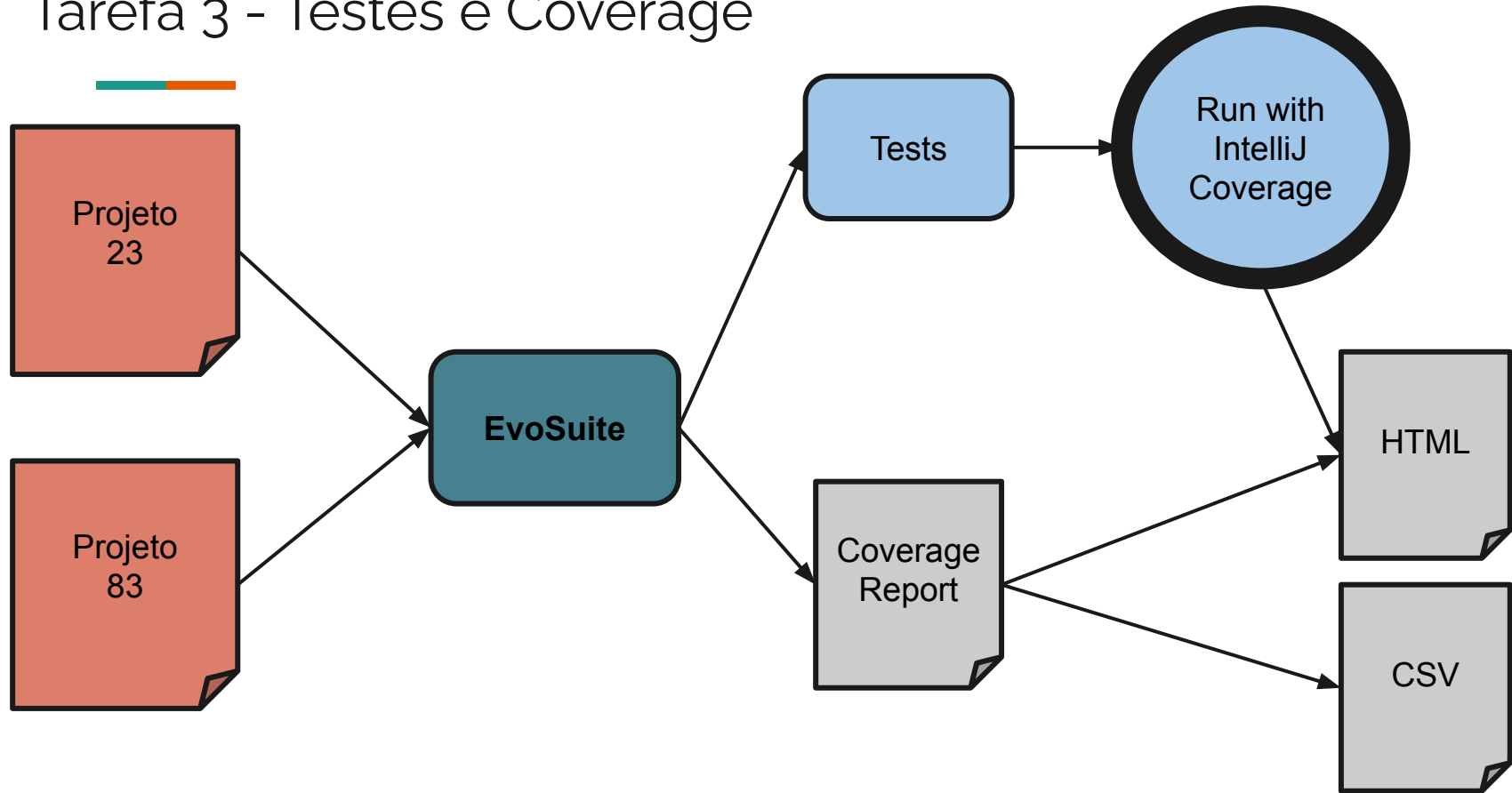
Tarefa 3 - Diferentes Coverage Reports

EVOSUITE

Run on MBP-de-Rafael.netcabo.pt

Test generation runs:

Date	Time	Coverage	Class
2021-01-11 23:27:08	UNKNOWN	61%	mPlataformas
2021-01-11 23:27:44	UNKNOWN	93%	mInicial
2021-01-11 23:27:48	UNKNOWN	100%	exCodigoDoesNotExist
2021-01-11 23:27:52	UNKNOWN	100%	exPENotAvailable
2021-01-11 23:28:30	UNKNOWN	92%	Ponto
2021-01-11 23:29:13	UNKNOWN	92%	Encomenda
2021-01-11 23:29:17	UNKNOWN	100%	exCodigoAlreadyExists
2021-01-11 23:29:21	UNKNOWN	100%	exPEAlreadyExists
2021-01-11 23:29:25	UNKNOWN	100%	exEmailAlreadyExists
2021-01-11 23:30:02	UNKNOWN	93%	cMelhorClassificada
2021-01-11 23:30:41	UNKNOWN	91%	EncomendasAceites
2021-01-11 23:31:19	UNKNOWN	93%	cTopPE
2021-01-11 23:32:03	UNKNOWN	91%	Lojas
2021-01-11 23:32:43	UNKNOWN	94%	LinhaEncomenda
2021-01-11 23:32:48	UNKNOWN	100%	exTransportadoraDoesNotExist
2021-01-11 23:32:53	UNKNOWN	100%	exLojaDoesNotExist
2021-01-11 23:32:58	UNKNOWN	100%	exNegativeValues
2021-01-11 23:33:41	UNKNOWN	92%	Utilizadores
2021-01-11 23:35:13	UNKNOWN	85%	PlataformaEntrega
2021-01-11 23:35:53	UNKNOWN	43%	mSignUp
2021-01-11 23:36:38	UNKNOWN	92%	Transportadoras
2021-01-11 23:37:22	UNKNOWN	100%	exLojaAlreadyExists
2021-01-11 23:37:27	UNKNOWN	100%	exInvalidNIF
2021-01-11 23:38:06	UNKNOWN	80%	mLogIn
2021-01-11 23:39:14	UNKNOWN	48%	TrazAqui
2021-01-11 23:39:20	UNKNOWN	100%	exEncomendaDoesNotExist
2021-01-11 23:39:26	UNKNOWN	100%	exPWIncorrect
2021-01-11 23:40:19	UNKNOWN	91%	mPrincipal
2021-01-11 23:40:25	UNKNOWN	100%	exEmailDoesNotExist
2021-01-11 23:41:03	UNKNOWN	93%	cTopU
2021-01-11 23:41:47	UNKNOWN	62%	mCliente
2021-01-11 23:42:26	UNKNOWN	91%	Voluntarios

Package	Class, %	Method, %	Line, %
<empty package>	100% (34/ 34)	100% (369/ 369)	52.9% (1477/ 2791)

Class ▲	Class, %	Method, %	Line, %
App	100% (16/ 16)	100% (16/ 16)	9.1% (98/ 1074)
Encomenda	100% (1/ 1)	100% (23/ 23)	100% (82/ 82)
EncomendasAceites	100% (1/ 1)	100% (9/ 9)	100% (26/ 26)
LinhaEncomenda	100% (1/ 1)	100% (15/ 15)	100% (49/ 49)
Lojas	100% (1/ 1)	100% (22/ 22)	100% (74/ 74)
PlataformaEntrega	100% (1/ 1)	100% (28/ 28)	96.8% (90/ 93)
Ponto	100% (1/ 1)	100% (10/ 10)	100% (28/ 28)
Transportadoras	100% (1/ 1)	100% (14/ 14)	100% (50/ 50)
TrazAqui	100% (1/ 1)	100% (82/ 82)	67.8% (358/ 528)
Utilizadores	100% (1/ 1)	100% (21/ 21)	100% (69/ 69)
Voluntarios	100% (1/ 1)	100% (7/ 7)	100% (22/ 22)
cMelhorClassificada	100% (1/ 1)	100% (2/ 2)	100% (8/ 8)
cMelhorCusto	100% (1/ 1)	100% (10/ 10)	100% (10/ 10)
cTopPE	100% (1/ 1)	100% (2/ 2)	100% (8/ 8)
cTopU	100% (1/ 1)	100% (2/ 2)	100% (8/ 8)
exCodigoAlreadyExists	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exCodigoDoesNotExist	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exEmailAlreadyExists	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exEmailDoesNotExist	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exEncomendaDoesNotExist	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exInvalidNIF	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exLojaAlreadyExists	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exLojaDoesNotExist	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exNegativeValues	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exPEAlreadyExists	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exPENotAvailable	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exPWIncorrect	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
exTransportadoraDoesNotExist	100% (1/ 1)	100% (1/ 1)	100% (2/ 2)
mCliente	100% (1/ 1)	100% (30/ 30)	71.5% (143/ 200)
mInicial	100% (1/ 1)	100% (2/ 2)	100% (15/ 15)
mLogIn	100% (1/ 1)	100% (9/ 9)	93.3% (42/ 45)
mPlataformas	100% (1/ 1)	100% (18/ 18)	72.5% (116/ 160)
mPrincipal	100% (1/ 1)	100% (28/ 28)	98.2% (109/ 111)
mSignUp	100% (1/ 1)	100% (14/ 14)	43.8% (46/ 105)

Run: All in 23_coverage

» Tests failed: 12, passed: 609 of 621 tests – 47 s 856 ms

Tarefa 3 - QuickCheck

generator.hs

Nome do ficheiro:

Número de utilizadores:

Número de voluntários:

Número de transportadoras:

Número de lojas:

Número de encomendas:

```haskell
--gerar utilizadores
genUtilizador :: Gen Utilizador
genUtilizador = do a <- genIdentificador
                   b <- genNome
                   c <- genPosX
                   d <- genPosY
                   return (Utilizador a b c d)
```

...

```haskell
--gerar encomendas
genEncomenda :: [String] -> [String] -> Gen Encomenda
genEncomenda u l = do a <- genIdentificadorE
                      b <- elements u
                      c <- elements l
                      d <- genPeso
                      p <- genLista
                      return (Encomenda a b c d p)
```

Logs

Tarefa 3 - Ficheiro exemplo de Logs

```
[1 of 1] Compiling Main
Ok, one module loaded.
*Main> main
Nome do ficheiro para guardar LOGS:
logs.csv
Número de utilizadores:
3
Número de voluntários:
2
Número de transportadoras:
1
Número de lojas:
3
Número de encomendas:
4
"Ficheiro Gerado"
*Main> █
```

```
 1 Utilizador:u86975,Jose Santos,-79.26749,-88.391846
 2 Utilizador:u371,Raquel Gomes,91.81818,-64.53058
 3 Utilizador:u19461,Talita Pimentel,-14.797928,-57.583813
 4 Voluntario:v52521,Liz Moreira,-22.515709,42.226852,209
 5 Voluntario:v27064,Ilda Nunes,-20.46785,-37.75263,258
 6 Transportadora:t57945,DHL,83.72089,85.80902,479233488,92,1.1576115
 7 Loja:l36111,Staples,-57.941757,66.22061
 8 Loja:l11437,PC Diga,-32.87092,-91.05081
 9 Loja:l44872,Continente,17.759499,-2.6969528
10 Encomenda:e15118,u371,l36111,460.94815,p10,Couve,3.0,0.3,p6,XBOX,1.0,400.0,p13,Agua,44.0,10.0
11 Aceite:e15118
12 Encomenda:e72100,u19461,l36111,499.00082,p1,Cenoura,2.0,3.0,p9,Carro,1.0,20000.0
13 Aceite:e72100
14 Encomenda:e4381,u19461,l36111,489.81827,p12,Arroz,1.0,0.4
15 Aceite:e4381
16 Encomenda:e78861,u19461,l44872,476.17508,p14,Cadeira,1.0,30.0,p12,Arroz,1.0,0.4,p1,Cenoura,2.0,3.0
17 Aceite:e78861
```

Tarefa 4 -Análise Energética
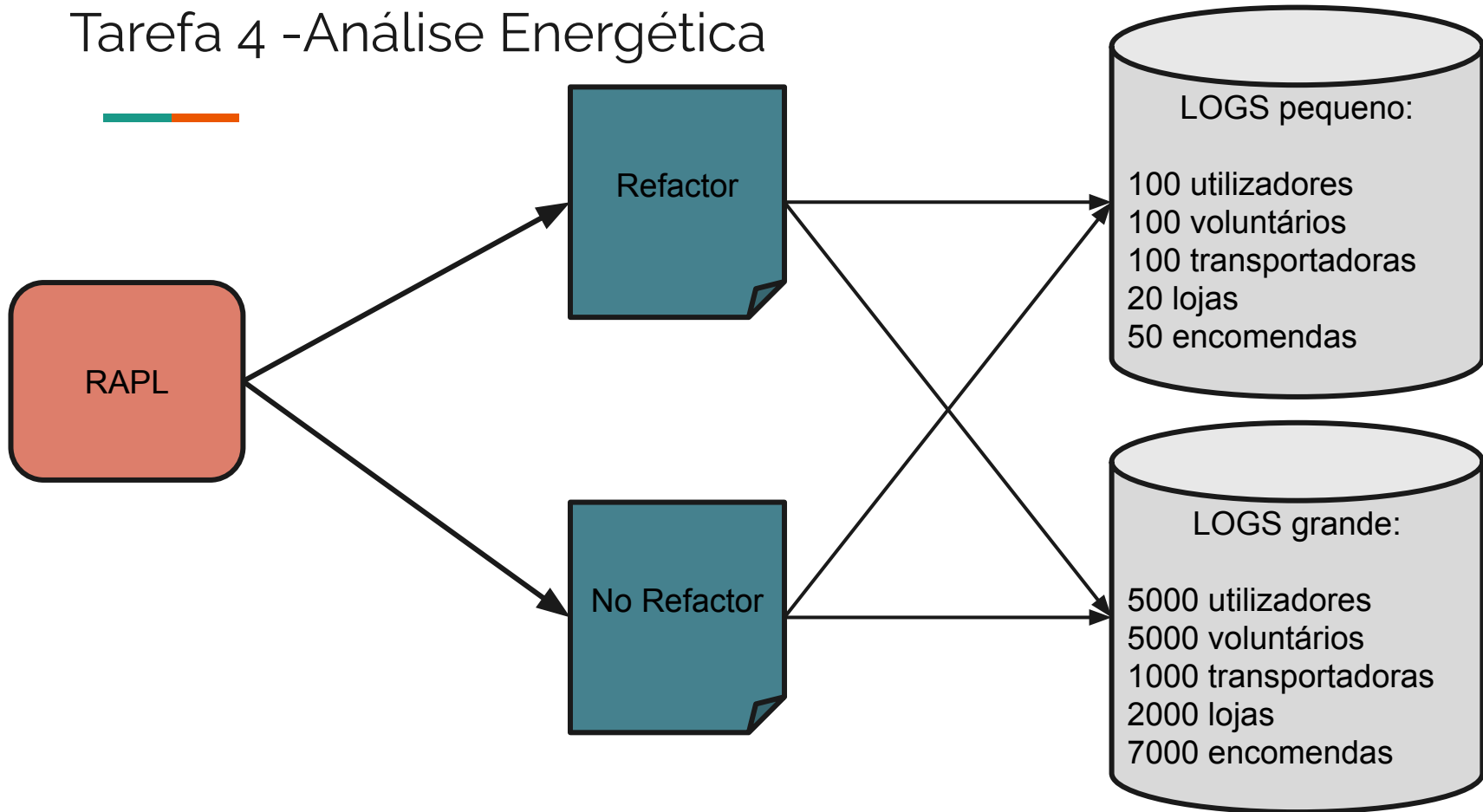
Tarefa 4 - Dados calculados pelo RAPL

CSV grande (refactor/ no refactor)	E.DRAM	E.CPU	E.PACKAGE	P.DRAM	P.CPU	P.PACKAGE	Tempo(seg)
Parsing	**0.8410 / 0.9580**	**4.8430 / 5.5848**	**7.8060 / 8.8619**	**2.1107 / 2.1642**	**12.1540 / 12.6168**	**19.5901 / 20.0202**	**0.39 / 0.44**
Login + Ver Lista de encomenda vazia	26.9628 / 31.4478	19.4017 / 19.1494	113.1036 / 127.7788	1.1287 / 1.1269	**0.8122 / 0.6862**	4.7348 / 4.5788	23.88 / 27.90
Login + Encomendar +Ver Lista de encomenda	67.0715 / 68.5652	19.5210 / 19.8070	250.4786 / 255.0977	1.0829 / 1.0838	0.3152 / 0.3130	4.0444 / 4.0323	61.93 / 63.26
Encomendar + ver Lista de Encomendas	27.8649 / 30.7603	1.4313 / 1.1871	**96.8485 / 106.3566**	1.0623 / 1.0616	0.0545 / 0.0409	3.6924 / 3.6707	26.22 / 28.97

Demo

https://youtu.be/Dfwf9XbKtC4

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