

Testing for *Diagnosis*

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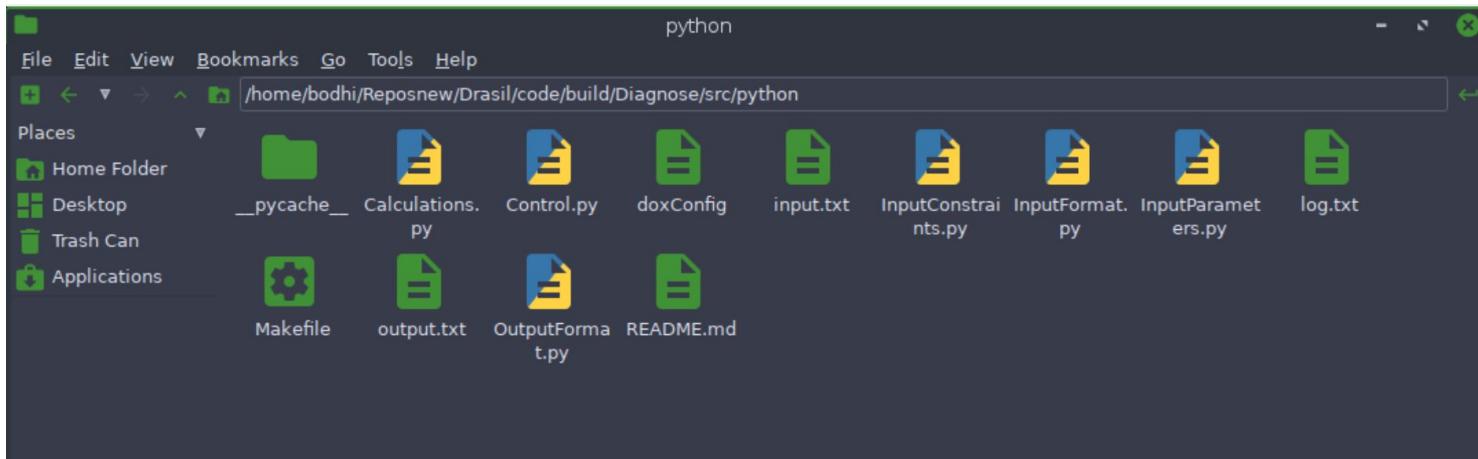
PROJECT OVERVIEW

Refname	IM:calofElimConst
Label	Calculation of elimination rate
Input	N_t, N_o, t_t
Output	k
Input Constraints	$0 < N_t < N_o$ $N_o > 0$ $t_t > 0$
Output Constraints	$k > 0$
Equation	$k = \frac{\ln(N_o) - \ln(N_t)}{t_t}$
Description	<p>k is the elimination constant (d^{-1})</p> <p>N_o is the initial viral load ($\frac{\text{mol}}{\text{mL}}$)</p> <p>$N_t$ is the viral load at time t ($\frac{\text{mol}}{\text{mL}}$)</p> <p>$t_t$ is the time at secondary test (d)</p>

Refname	IM:calofPredictedVL
Label	Calculation of elimination rate
Input	N_o, k, t_p
Output	N_p
Input Constraints	$N_o > 0$ $k > 0$ $t_p > 0$
Output Constraints	$0 < N_p < N_o$
Equation	$N_p = N_o e^{-kt_p}$
Description	<p>N_p is the predicted viral load after 30 days ($\frac{\text{mol}}{\text{mL}}$)</p> <p>$N_o$ is the initial viral load ($\frac{\text{mol}}{\text{mL}}$)</p> <p>$k$ is the elimination constant (d^{-1})</p> <p>t_p is the chosen prediction period (d)</p>

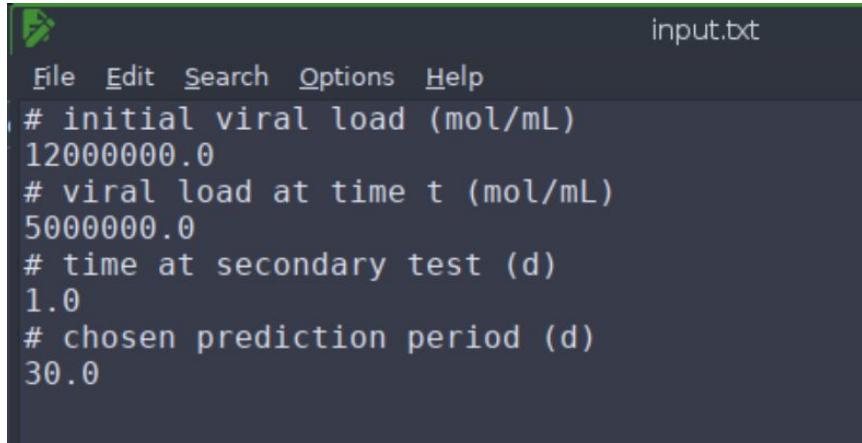
DRASIL GENERATED CODE

Running code: python3 Control.py input.txt



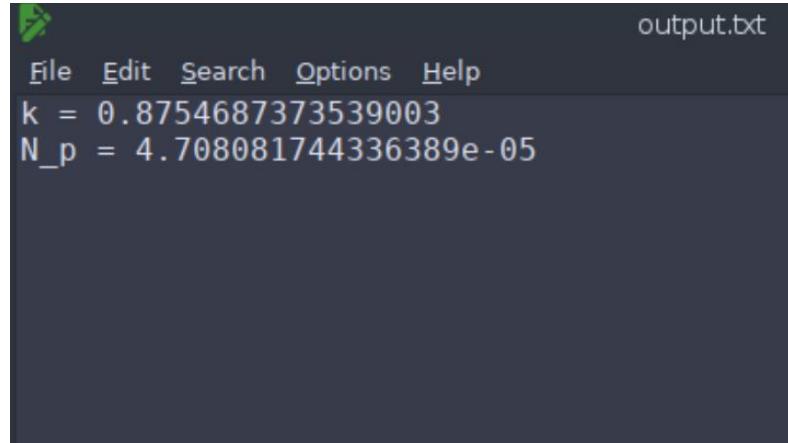
INPUT AND OUTPUT

Running code: python3 Control.py input.txt



input.txt

```
# initial viral load (mol/mL)
12000000.0
# viral load at time t (mol/mL)
5000000.0
# time at secondary test (d)
1.0
# chosen prediction period (d)
30.0
```



output.txt

```
k = 0.8754687373539003
N_p = 4.708081744336389e-05
```

TESTING

Test	Verification Tool
Static Analysis	Spyder
Linting	Spyder
Dynamic Analysis	cProfile
System Test	Blackbox testing using pbbt
Unit Test	Unittest within Spyder
Continuous Integration	Travis CI

TEST CASES

Test	N_o (mol)	N_t (mol)	t_t (s)	t_p (s)	Output
Test 1-1	10000000	5000000	1	30	-
Test-2-1	0	5000000	1	30	Exception: InputError
Test-2-2	-100000000	5000000	1	30	Exception: InputError
Test-3-1	0	5000000	1	30	Exception: InputError
Test-3-2	-100000000	5000000	1	30	Exception: InputError
Test 4-1	5000000	10000000	1	30	Exception: InputError
Test-5-1	10000000	5000000	0	30	Exception: InputError
Test-5-2	10000000	5000000	-1	30	Exception: InputError
Test-6-1	10000000	5000000	0	30	Exception: InputError
Test-6-2	10000000	5000000	-1	30	Exception: InputError
Test 7-1	10000000	5000000	30	1	Exception: InputError

Test Case: Success

Test	N_o (mol)	N_t (mol)	t_t (s)	t_p (s)	Output
Test 1-1	10000000	5000000	1	30	-

```
bodhi@bodhi-VirtualBox: ~/Reposnew/Drasil/code/build/Diagnose/src/python3 Control.py input.txt
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$ python3 Control.py input.txt
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$
```

Test Case: Failure

Test	N_o (mol)	N_t (mol)	t_t (s)	t_p (s)	Output
Test 4-1	5000000	10000000	1	30	Exception: InputError

```
bodhi@bodhi-VirtualBox: ~/Reposnew/Drasil/code/build/Diagnose/src/python3 Control.py input.txt
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$ python3 Control.py input.txt
N_t has value 5000000.0, but is expected to be between 0 and 100000.0 (N_o).
Traceback (most recent call last):
  File "Control.py", line 20, in <module>
    InputConstraints.input_constraints(inParams)
  File "/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py", line 32, in input_constraints
    raise Exception("InputError")
Exception: InputError
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$
```

LINTING

Test	Verification Tool
Linting	Spyder

IPython console

Console 1/A

```
In [2]: runfile('/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Control.py', wdir='/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python', args='input.txt')

In [3]: runfile('/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Calculations.py', wdir='/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python')

In [4]: runfile('/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py', wdir='/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python')

In [5]: runfile('/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputFormat.py', wdir='/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python')

In [6]: runfile('/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputParameters.py', wdir='/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python')

In [7]: runfile('/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/OutputFormat.py', wdir='/home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python')

In [8]:
```

bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Control.py

Global evaluation: 7.14/10 (previous run: 7.14/10) 07 Dec 2020 10:28 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Control.py

▼ ⓘ Convention (8 messages)

- [C0103] 1 : : Module name "Control" doesn't conform to snake_case naming style
- [C0111] 1 : : Missing module docstring
- [C0103] 12 : : Constant name "filename" doesn't conform to UPPER_CASE naming style
- [C0103] 13 : : Constant name "outfile" doesn't conform to UPPER_CASE naming style
- [C0103] 18 : : Constant name "inParams" doesn't conform to UPPER_CASE naming style
- [C0103] 22 : : Constant name "outfile" doesn't conform to UPPER_CASE naming style
- [C0103] 27 : : Constant name "N_p" doesn't conform to UPPER_CASE naming style
- [C0103] 28 : : Constant name "outfile" doesn't conform to UPPER_CASE naming style

ⓘ Refactor (0 message)

⚠ Warning (0 message)

✖ Error (0 message)

bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputParameters.py

Global evaluation: -15.00/10 07 Dec 2020 10:31 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputParameters.py

► ⓘ Convention (3 messages)

► ⓘ Refactor (1 message)

▼ ⚠ Warning (1 message)

- [W0104] 6 : InputParameters: Statement seems to have no effect

✖ Error (0 message)

LINTING

Test

Linting

Verification Tool

Spyder

/odhi/Reposnew/Drasil/code/build/Diagnose/src/python/Control.py ▾ Analyze Stop

Global evaluation: 7.14/10 (previous run: 7.14/10) 07 Dec 2020 10:38 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Control.py

▼ ⓘ Convention (8 messages)

- ↳ [C0103] 1 : : Module name "Control" doesn't conform to snake_case naming style
- ↳ [C0111] 1 : : Missing module docstring
- ↳ [C0103] 12 : : Constant name "filename" doesn't conform to UPPER_CASE naming style
- ↳ [C0103] 13 : : Constant name "outfile" doesn't conform to UPPER_CASE naming style
- ↳ [C0103] 18 : : Constant name "inParams" doesn't conform to UPPER_CASE naming style
- ↳ [C0103] 22 : : Constant name "outfile" doesn't conform to UPPER_CASE naming style
- ↳ [C0103] 27 : : Constant name "N_p" doesn't conform to UPPER_CASE naming style
- ↳ [C0103] 28 : : Constant name "outfile" doesn't conform to UPPER_CASE naming style

ⓘ Refactor (0 message)
 ⓘ Warning (0 message)
 ⓘ Error (0 message)

/Reposnew/Drasil/code/build/Diagnose/src/python/Calculations.py ▾ Analyze Stop

Global evaluation: 5.50/10 07 Dec 2020 10:39 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Calculations.py

▼ ⓘ Convention (9 messages)

- ↳ [C0303] 16 : : Trailing whitespace
- ↳ [C0303] 33 : : Trailing whitespace
- ↳ [C0103] 1 : : Module name "Calculations" doesn't conform to snake_case naming style
- ↳ [C0111] 1 : : Missing module docstring
- ↳ [C0103] 9 : func_k: Argument name "inParams" doesn't conform to snake_case naming style
- ↳ [C0111] 9 : func_k: Missing function docstring
- ↳ [C0103] 23 : func_N_p: Function name "func_N_p" doesn't conform to snake_case naming ...
- ↳ [C0103] 23 : func_N_p: Argument name "inParams" doesn't conform to snake_case naming...
- ↳ [C0111] 23 : func_N_p: Missing function docstring

ⓘ Refactor (0 message)
 ⓘ Warning (0 message)
 ⓘ Error (0 message)

/Reposnew/Drasil/code/build/Diagnose/src/python/InputFormat.py ▾ Analyze Stop

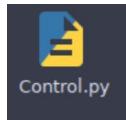
Global evaluation: 8.75/10 07 Dec 2020 10:30 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputFormat.py

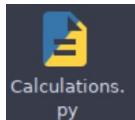
▼ ⓘ Convention (5 messages)

- ↳ [C0303] 17 : : Trailing whitespace
- ↳ [C0103] 1 : : Module name "InputFormat" doesn't conform to snake_case naming style
- ↳ [C0111] 1 : : Missing module docstring
- ↳ [C0103] 7 : get_input: Argument name "inParams" doesn't conform to snake_case naming st...
- ↳ [C0111] 7 : get_input: Missing function docstring

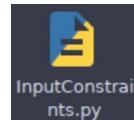
ⓘ Refactor (0 message)
 ⓘ Warning (0 message)
 ⓘ Error (0 message)



Control.py



Calculations.
py



InputConstrai
nts.py

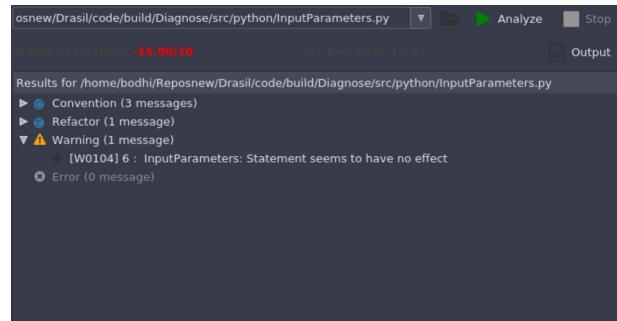
LINTING

Test

Linting

Verification Tool

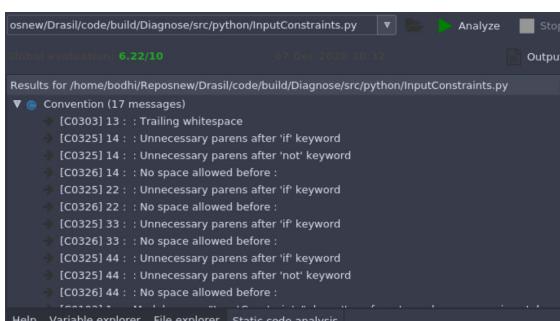
Spyder



osnew/Drasil/code/build/Diagnose/src/python/InputParameters.py ▾ Analyze Stop
Global evaluation: **15.00/10** 07 Dec 2020 10:31 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputParameters.py

▶ Convention (3 messages)
► Refactor (1 message)
▼ Warning (1 message)
 ↳ [W0104] 6 : InputParameters: Statement seems to have no effect
∅ Error (0 message)

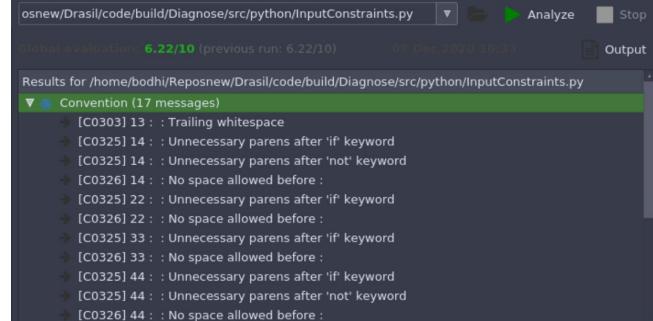


osnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py ▾ Analyze Stop
Global evaluation: **6.22/10** (previous run: 6.22/10) 07 Dec 2020 10:33 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py

▼ Convention (17 messages)
 ↳ [C0303] 13 : : Trailing whitespace
 ↳ [C0325] 14 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 14 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 14 : : No space allowed before :
 ↳ [C0325] 22 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 22 : : No space allowed before :
 ↳ [C0325] 33 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 33 : : No space allowed before :
 ↳ [C0325] 44 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 44 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 44 : : No space allowed before :
 ↳ [C0325] 13 : : Trailing whitespace
 ↳ [C0325] 14 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 14 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 14 : : No space allowed before :
 ↳ [C0325] 22 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 22 : : No space allowed before :
 ↳ [C0325] 33 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 33 : : No space allowed before :
 ↳ [C0325] 44 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 44 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 44 : : No space allowed before :

Help Variable explorer File explorer Static code analysis

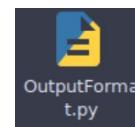
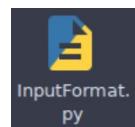


osnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py ▾ Analyze Stop
Global evaluation: **6.22/10** (previous run: 6.22/10) 07 Dec 2020 10:33 Output

Results for /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py

▼ Convention (17 messages)
 ↳ [C0303] 13 : : Trailing whitespace
 ↳ [C0325] 14 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 14 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 14 : : No space allowed before :
 ↳ [C0325] 22 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 22 : : No space allowed before :
 ↳ [C0325] 33 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 33 : : No space allowed before :
 ↳ [C0325] 44 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 44 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 44 : : No space allowed before :
 ↳ [C0325] 13 : : Trailing whitespace
 ↳ [C0325] 14 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 14 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 14 : : No space allowed before :
 ↳ [C0325] 22 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 22 : : No space allowed before :
 ↳ [C0325] 33 : : Unnecessary parens after 'if' keyword
 ↳ [C0326] 33 : : No space allowed before :
 ↳ [C0325] 44 : : Unnecessary parens after 'if' keyword
 ↳ [C0325] 44 : : Unnecessary parens after 'not' keyword
 ↳ [C0326] 44 : : No space allowed before :

Help Variable explorer File explorer Static code analysis



DYNAMIC ANALYSIS

Test	Verification Tool	cProfile : python3 -m cProfile Control.py input.txt
Dynamic Analysis	cProfile	<pre>bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python\$ python3 Control.py input.txt bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python\$ python3 -m cProfile Control.py input.txt 1032 function calls (1022 primitive calls) in 0.007 seconds Ordered by: standard name ncalls tottime percall cumtime percall filename:lineno(function) 5 0.000 0.000 0.000 0.000 <frozen importlib._bootstrap_external>:825(get_filename) 5 0.000 0.000 0.000 0.000 <frozen importlib._bootstrap_external>:830(get_data) 5 0.000 0.000 0.000 0.000 <frozen importlib._bootstrap_external>:840(path_stats) 5 0.000 0.000 0.000 0.000 <frozen importlib._bootstrap_external>:85(_path_is_mode_type) 5 0.000 0.000 0.000 0.000 <frozen importlib._bootstrap_external>:94(_path_isfile) 1 0.000 0.000 0.000 0.000 Calculations.py:23(func_N_p) 1 0.000 0.000 0.000 0.000 Calculations.py:4(<module>) 1 0.000 0.000 0.000 0.000 Calculations.py:9(func_lambda) 1 0.000 0.007 0.007 0.007 Control.py:4(<module>) 1 0.000 0.000 0.000 0.000 InputConstraints.py:6(<module>) 1 0.000 0.000 0.000 0.000 InputConstraints.py:6(input_constraints) 1 0.000 0.000 0.000 0.000 InputFormat.py:7(<module>) 1 0.000 0.000 0.000 0.000 InputFormat.py:7(get_input) 1 0.000 0.000 0.000 0.000 InputParameters.py:5(<module>) 1 0.000 0.000 0.000 0.000 InputParameters.py:5(InputParameters) 1 0.000 0.000 0.000 0.000 OutputFormat.py:7(<module>) 1 0.000 0.000 0.000 0.000 OutputFormat.py:7(write_output) 14 0.000 0.000 0.000 0.000 _bootlocale.py:23(getpreferredencoding)</pre>

DYNAMIC ANALYSIS

```

bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$ python3 Control.py input.txt
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$ python3 -m cProfile Control.py input.txt
 1032 function calls (1022 primitive calls) in 0.007 seconds

Ordered by: standard name

ncalls  tottime  percall  cumtime  percall  filename:lineno(function)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:103(release)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:143(<_init__>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:147(<_enter__>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:151(<_exit__>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:157(<get_module_lock>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:176(cb)
7/5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:211(<call_with_frames_removed>)
36  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:222(<verbose_message>)
1  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:232(<requires_builtin_wrapper>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:307(<_init__>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:311(<_enter__>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:318(<_exit__>)
24  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:321(<genexpr>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:35(<new_module>)
      6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:385(<_init__>)
10  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:403(<cached>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:416(<parent>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:424(<has_location>)
1  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:432(<spec_from_loader>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:504(<init_module_attrs>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:564(<module_from_spec>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:58(<_init__>)
6/5  0.000   0.001   0.000   0.000 <frozen importlib._bootstrap>:651(<load_unlocked>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:707(<find_spec>)
1  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:728(<create_module>)
1  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:736(<exec_module>)
1  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:753(<in_package>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:78(<acquire>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:789(<find_spec>)
16  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:843(<_enter__>)
16  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:847(<_exit__>)
6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:870(<find_spec>)

bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python
bodhi@bodhi-VirtualBox:~/Reposnew/Drasil/code/build/Diagnose/src/python$ python3 Control.py input.txt
 6  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap>:870(<find_spec>)
6/5  0.000   0.000   0.001   0.000 <frozen importlib._bootstrap>:396(<find_and_load_unlocked>)
6/5  0.000   0.000   0.001   0.000 <frozen importlib._bootstrap>:966(<find_and_load>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:1080(<path_importer_cache>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:1117(<get_spec>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:1149(<find_spec>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:1228(<get_spec>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:1233(<find_spec>)
10  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:263(<cache_from_source>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:361(<get_cached>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:393(<check_name_wrapper>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:41(<_relax_case>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:430(<validate bytecode_header>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:485(<compile bytecode>)
10  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:521(<r_long>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:524(<spec_from_file_location>)
30  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:57(<path_join>)
30  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:59(<listcomp>)
10  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:63(<path_split>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:69(<create_module>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:672(<exec_module>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:743(<get_code>)

15  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:75(<path_stat>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:800(<_init__>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:825(<get_filename>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:830(<get_data>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:85(<path_is_mode_type>)
5  0.000   0.000   0.000   0.000 <frozen importlib._bootstrap_external>:94(<path_isfile>)
1  0.000   0.000   0.000   0.000 <Calculations.py>:23(<func_N_P>)
1  0.000   0.000   0.000   0.000 <Calculations.py>:4(<module>)
1  0.000   0.000   0.000   0.000 <Calculations.py>:9(<func__>)
1  0.000   0.000   0.007   0.007 <Control.py>:4(<module>)
1  0.000   0.000   0.000   0.000 <InputConstraints.py>:5(<module>)
1  0.000   0.000   0.000   0.000 <InputConstraints.py>:6(<input_constraints>)
1  0.000   0.000   0.000   0.000 <InputFormat.py>:7(<module>)
1  0.000   0.000   0.000   0.000 <InputFormat.py>:7(<get_input>)
1  0.000   0.000   0.000   0.000 <InputParameters.py>:5(<module>)
1  0.000   0.000   0.000   0.000 <InputParameters.py>:5(<input_parameters>)
1  0.000   0.000   0.000   0.000 <InputParameters.py>:23(<getpreferredencoding>)
14  0.000   0.000   0.000   0.000 <_bootlocale.py>:23(<getpreferredencoding>)
13  0.000   0.000   0.000   0.000 <codecs.py>:185(<_init__>)
12  0.000   0.000   0.000   0.000 <codecs.py>:213(<statestate>)
1  0.000   0.000   0.000   0.000 <codecs.py>:259(<_init__>)
1  0.000   0.000   0.000   0.000 <codecs.py>:308(<_init__>)
1  0.000   0.000   0.000   0.000 <codecs.py>:318(<decode>)
1  0.000   0.000   0.000   0.000 <codecs.py>:330(<getstate>)
1  0.000   0.000   0.000   0.000 <codecs.py>:340(<setstate>)
1  0.000   0.000   0.000   0.000 <built-in method codecs.utf_8_decode>
5  0.000   0.000   0.000   0.000 <built-in method imp._fix_co_filename>
28  0.000   0.000   0.000   0.000 <built-in method imp.acquire_lock>
1  0.000   0.000   0.000   0.000 <built-in method imp.create_builtin>
1  0.000   0.000   0.000   0.000 <built-in method imp.execute_builtin>
6  0.000   0.000   0.000   0.000 <built-in method imp.is_builtin>
5  0.000   0.000   0.000   0.000 <built-in method imp.is_frozen>
28  0.000   0.000   0.000   0.000 <built-in method imp.release_lock>
14  0.000   0.000   0.000   0.000 <built-in method locale.nl_langinfo>
12  0.000   0.000   0.000   0.000 <built-in method thread.allocate_lock>
12  0.000   0.000   0.000   0.000 <built-in method thread.get_ident>
1  0.000   0.000   0.000   0.000 <built-in method builtins._build_class__>
6  0.000   0.000   0.000   0.000 <built-in method builtins.ellipsis>
6/1  0.000   0.000   0.007   0.007 <built-in method builtins.exec>
34  0.000   0.000   0.000   0.000 <built-in method builtins.getattr>
19  0.000   0.000   0.000   0.000 <built-in method builtins.hasattr>
10  0.000   0.000   0.000   0.000 <built-in method builtins.isinstance>
20  0.000   0.000   0.000   0.000 <built-in method builtins.len>
54  0.000   0.000   0.000   0.000 <built-in method builtins.print>
10  0.000   0.000   0.000   0.000 <built-in method builtins.from_bytes>
14  0.000   0.000   0.000   0.000 <built-in method io.open>
5  0.000   0.000   0.000   0.000 <built-in method marshal.loads>
1  0.000   0.000   0.000   0.000 <built-in method math.exp>
2  0.000   0.000   0.000   0.000 <built-in method math.log>
15  0.000   0.000   0.000   0.000 <built-in method posix.fspath>
5  0.000   0.000   0.000   0.000 <built-in method posix.getcwd>
15  0.000   0.000   0.000   0.000 <built-in method posix.stat>
14  0.005   0.000   0.005   0.000 <method 'close' of '_io.TextIOWrapper' objects>
1  0.000   0.000   0.000   0.000 <method 'disable' of '_lsprof.PyProfiler' objects>
5  0.000   0.000   0.000   0.000 <method 'endwith' of 'str' objects>
12  0.000   0.000   0.000   0.000 <method 'get' of 'dict' objects>
40  0.000   0.000   0.000   0.000 <method 'join' of 'str' objects>
5  0.000   0.000   0.000   0.000 <method 'read' of '_io.FileIOWrapper' objects>
8  0.000   0.000   0.000   0.000 <method 'readline' of '_io.TextIOWrapper' objects>
37  0.000   0.000   0.000   0.000 <method 'rpartition' of 'str' objects>
70  0.000   0.000   0.000   0.000 <method 'rstrip' of 'str' objects>

```

UNIT TEST

Test

Verification Tool

Unit Test

Unitest within Spyder



```
Editor - /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/test_Calculations.py
Control.py Calculations.py test_Calculations.py InputFormat.py InputParameters.j
  10 import unittest
  11 import Calculations
  12 import InputParameters
  13
  14 inParams = InputParameters.InputParameters()
  15 filename = "input.txt"
  16
  17 infile = open(filename, "r")
  18 infile.readline()
  19 inParams.N_o = float(infile.readline())
  20
  21 infile.readline()
  22 inParams.N_t = float(infile.readline())
  23
  24 infile.readline()
  25 inParams.t_t = float(infile.readline())
  26
  27 infile.readline()
  28 inParams.t_p = float(infile.readline())
  29 infile.close()
  30
  31 k = Calculations.func_k(inParams)
  32
  33 class TestCalculations(unittest.TestCase):
  34
  35     def test_func_k(self):
  36         result = Calculations.func_k(inParams)
  37         self.assertEqual(int(result), int(math.log(inParams.N_o) - math.log(inParams.N_t)) / in
  38
  39     def test_func_N_p(self):
  40         result = Calculations.func_N_p(inParams,k)
  41         self.assertEqual(int(result), int(inParams.N_o * math.exp(-k * inParams.t_p)))
  42
  43 print('complete')
  44
  45
```

```
bodhi@bodhi-VirtualBox: ~/Reposnew/Drasil/code/build/Diagnose/src/python$ python3 -m unittest test_Calculations.py
complete
.
.
.
Ran 2 tests in 0.004s
OK
```

SYSTEM TESTING

Test	Verification Tool
System Test	Blackbox testing using pbbt

Using PBBT

To install PBBT, you can use [pip](#) package manager:

```
# pip install pbbt
```

This command downloads and installs the latest version of PBBT from [Python Package Index](#). After successful installation, you should be able to import `pbbt` Python module and run `pbbt` command-line utility.

To start using PBBT, you need to create a file with input data. For example, create `input.yaml` with the following content:

```
py: |
  print "Hello, World!"
```

Next, execute PBBT in *training* mode to generate expected output data. Run:

```
$ pbbt input.yaml output.yaml --train
```

and accept new output when asked. PBBT will write output data to `output.yaml`:

```
py: print-hello-world
stdout: |
  Hello, World!
```

Now you can start PBBT in *checking* mode, in which it executes test cases and verifies that expected and actual output data coincide:

```
$ pbbt input.yaml output.yaml
```

CONTINUOUS INTEGRATION

Test	Verification Tool
Continuous Integration	Travis CI

andreamclemeno / Drasil
forked from JacquesCarette/Drasil

Code Pull requests Actions Projects Wiki Security Insights Settings

addition of unit testing

master andreamclemeno 56518e5

Travis CI / Travis CI - Branch failed 3 hours ago in 15m 5s

Build Failed

The build failed, just like the previous build.

DETAILS

This is a normal build for the master branch. You should be able to reproduce it by checking out the branch locally.

Jobs and Stages

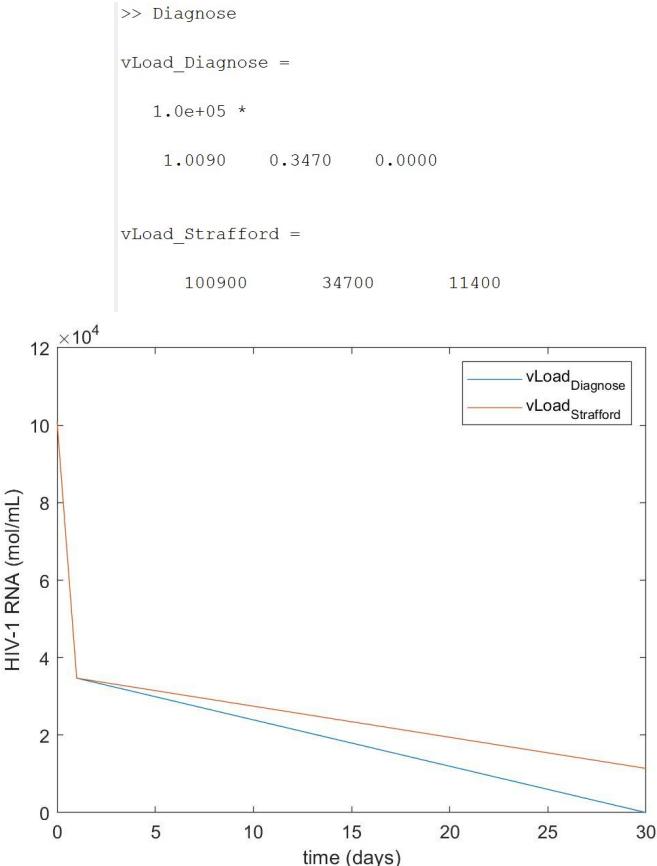
This build only has a single job.
You can use jobs to [test against multiple versions](#) of your runtime or dependencies, or to [speed up your build](#).

Build Configuration

Build Option	Setting
Language	Generic
Operating System	Linux (Xenial)

► Build Configuration

VALIDATION



pt 9

0, 216.4
5, 355.2
8, 355.4
12, 146.8

19, 100.9
29, 34.7
57, 11.4

121, 17.3
197, 90.1
280, 68.2
376, 55.3
525, 94.5
604, 34.4
645, 61.7
757, 55.9
776, 52.7

J. theor. Biol. (2000) **203**, 285–301
doi:10.1006/jtbi.2000.1076, available online at <http://www.idealibrary.com> on IDEAL®



Modeling Plasma Virus Concentration during Primary HIV Infection

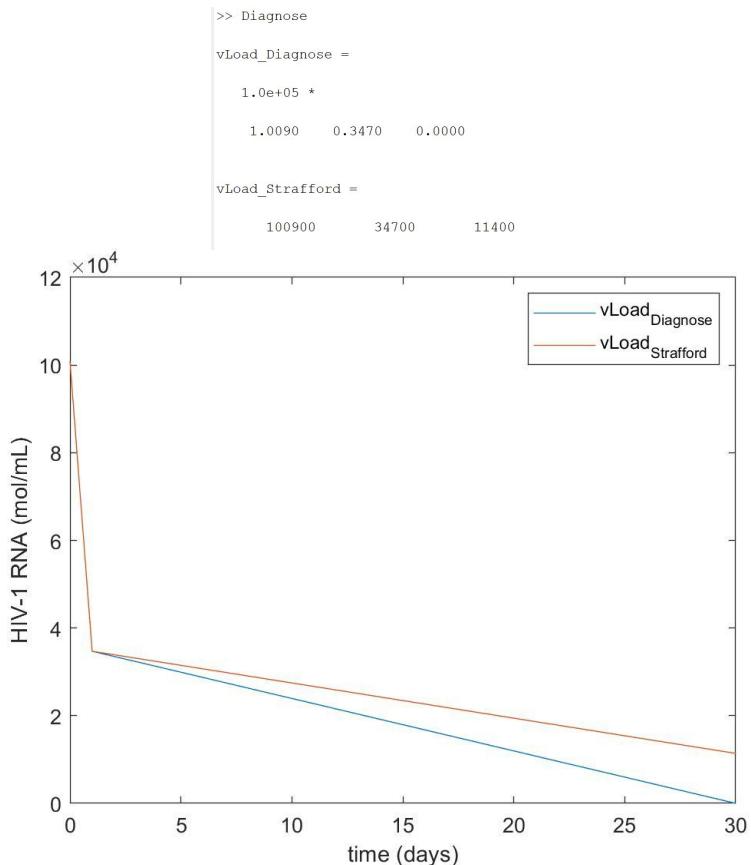
MAX A. STAFFORD*†‡, LAWRENCE COREY§, YUNZHEN CAO¶, ERIC S. DAAR||,
DAVID D. HO¶, AND ALAN S. PERELSON**

TABLE I
Virus concentration data

pt 1	pt 2	pt 3	pt 4	pt 5	pt 6	pt 7	pt 8	pt 9	pt 10
22, 27.2	3, 469.8	0, 766.8	0, 153.0	0, 228.2	0, 939.26	0, 1350.6	0, 2217.7	0, 216.4	4, 8057.2
43, 210	11, 1600	7, 947.6	5, 284.0	2, 599.2	3, 1485.0	4, 2398.6	4, 2427.9	5, 355.2	9, 9622.8
78, 85.9	15, 42.8	9, 706.2	6, 216.0	6, 2617.4	8, 701.6	9, 337.2	7, 2200.4	8, 355.4	10, 7830.0
106, 81.1	43, 41.7	15, 14.4	14, 143.0	14, 169.0	10, 564.0	12, 340.6	11, 1134.3	12, 146.8	14, 715.81
—	—	29, 2.3	21, 30.2	21, 93.7	15, 106.5	16, 202.3	14, 705.9	19, 100.9	16, 2137.9
146, 46.2	71, 12.22	36, 1.1	32, 6.4	42, 165.6	17, 11.2	19, 169.7	18, 447.8	29, 34.7	18, 121.03
183, 60.1	99, 14.17	50, 1.0	39, 4.1	—	22, 87.3	23, 141.4	21, 412.7	57, 11.4	28, 16.36
230, 82.8	129, 18.2	57, 1.8	46, 5.85	98, 127.0	24, 20.6	26, 56.48	26, 302.1	—	30, 11.79
268, 103.	197, 70.8	64, 2.1	—	203, 65.9	29, 14.78	30, 182.75	29, 118.8	121, 17.3	35, 31.75
358, 72.1	255, 16.3	—	—	329, 144.7	36, 27.5	50, 267.0	33, 248.8	197, 90.1	42, 24.05
435, 79.4	330, 81.2	—	—	—	60, 182.7	36, 173.6	280, 68.2	51, 16.257	—
489, 70.4	—	—	—	64, 6.32	—	40, 131.3	376, 55.3	—	—
519, 207.	—	—	—	273, 2.27	213, 186.3	49, 259.1	525, 94.5	84, 19.59	—
534, 42.6	—	—	—	288, 5.64	551, 89.4	—	604, 34.4	177, 41.17	—
584, 10.8	—	—	—	347, 14.55	—	56, 132.24	645, 61.7	211, 61.95	—
610, 54.2	—	—	—	430, 13.6	—	63, 103.2	757, 55.9	239, 137.77	—
687, 22.3	—	—	—	478, 13.1	—	75, 117.1	776, 52.7	—	—
778, 40.8	—	—	—	547, 5.62	—	547, 5.62	—	—	—
—	—	—	—	659, 24.24	—	—	—	—	—

Note. Data points are presented as ordered pairs with first number in each entry representing a relative time in days and the second number in each entry the virus concentration in thousands of HIV-1 RNA copies mL^{-1} . A horizontal line in a column indicates only the data points above the line were used in parameter estimation. All points were used if there is no horizontal line. The times listed for patient 9 are from 35 days following initial infection (Borrow et al., 1997). Patients (pt) 1 and 2 are patient numbers 1019 and 1113 from University of Washington study. Patients 3–9 are JSW-DAAR, CMO-DAAR, HOB-BR-SHAW, SUMA-SHAW, BORI-SHAW, INME-SHAW, and WEAU-SHAW from Aaron Diamond AIDS Research Center, respectively. Data for patient 10 are from patient DR from the Cedars-Sinai Medical Center in Los Angeles, CA.

VALIDATION



```
Editor - C:\Users\Andrea Clemeno\Desktop\Diagnose.m
Diagnose.m x +
25 test = [100900 34700 10 28];
26
27 % calculations
28 elimConst = (log(test(1)) - log(test(2)))\.(test(3));
29 predictedVL = test(1) * (exp(-1*elimConst*test(4)));
30
31 % output
32 outputs = [elimConst predictedVL];
33
34 %% graphing
35 vLoad_Diagnose = [test(1) test(2) predictedVL];
36 vLoad_Strafford = [100900 34700 11400];
37 time = [0 1 30];
38
39 figure
40 plot(time, vLoad_Diagnose);
41 hold on;
42 plot(time,vLoad_Strafford);
43
44 xlabel('time (days)');
45 ylabel('HIV-1 RNA (mol/mL)');
46 legend('vLoad_{Diagnose}', 'vLoad_{Strafford}');
47
48 %% error
49 percent error = [experimental value - theoretical value] / theoretical value x
error = (abs(vLoad_Diagnose - vLoad_Strafford)/ vLoad_Diagnose)*100
```

Command Window

New to MATLAB? See resources for [Getting Started](#).

```
error =
1.2007e-113
```

Thank you!

References

- [1] <https://github.com/andreamclemeno/CAS741-Concentration-of-Virus/blob/master/docs/SRS/SRS.pdf>
- [2] <https://jacquescarette.github.io/Drasil/>
- [3]
https://github.com/JacquesCarette/Drasil/tree/97b0fceceb522488b05ca1a2fdb12d0de1f889a8/code/stable/projectile/Projectile_C_P_NoL_B_U_V_D/src/python
- [4] Modeling Plasma Virus Concentration during Primary HIV Infection