

Testing *for Diagnosis*

Andrea Clemeno

Github Link:

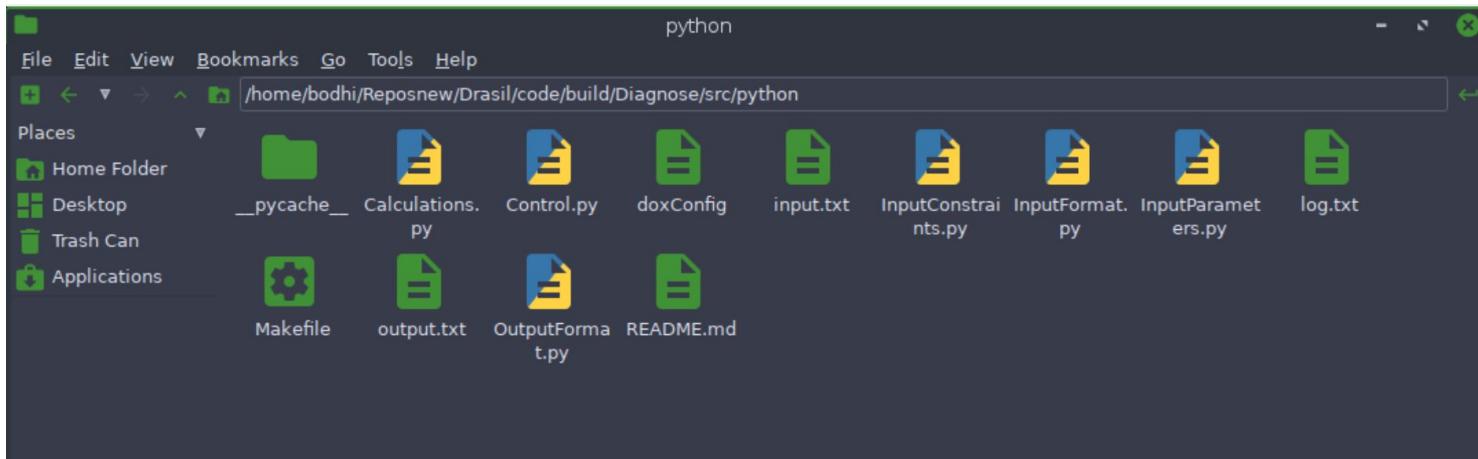
NEXT STEPS

Code generation:

1. Please refer to noPCM, or GlassBR to generate code or your project from Drasil
2. NoPCM example can be referred to, if your project requires an ODE, otherwise, you can refer to GlassBR example.
3. Navigate to C:\Drasil\code\drasil-example<project example you want to mirror either GlassBR or NoPCM>\Main.hs
4. Copy the content of Main.hs file and paste in your Main.hs project file. Keep in mind there are some elements in the file that is already in your main.hs file, so carefully delete duplicated or unwanted texts and modify other texts to suit your project.
5. Open Main.hs and modify the file to suit your project.
6. Modify your design choices
7. Update MakeFile.hs in code folder
8. Run 'make'
9. Your build folder should contain a src folder

DRASIL GENERATED CODE

Running code: python3 Control.py input.txt



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
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
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



The screenshot shows an IPython console window titled "Console 1/A". It contains the following sequence of code execution:

```
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]:
```

LINTING

Test

Linting

Verification Tool

Spyder

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

```

1 ## |File Control.py
2 # |author Andrea Clemeno
3 # |brief Controls the flow of the program
4 import sys
5
6 import Calculations
7 import InputConstraints
8 import InputFormat
9 import InputParameters
10 import OutputFormat
11
12 filename = sys.argv[1]
13 outfile = open("log.txt", "a")
14 print("var 'filename' assigned ", end="", file=outfile)
15 print(filename, end="", file=outfile)
16 print(" in module Control", file=outfile)
17 outfile.close()
18
19 InputFormat.get_input(filename, inParams)
20 InputConstraints.input_constraints(inParams)
21 λ = Calculations.fun_λ(inParams)
22 outfile = open("log.txt", "a")
23 print("var 'λ' assigned ", end="", file=outfile)
24 print(λ, end="", file=outfile)
25 print(" in module Control", file=outfile)
26 outfile.close()
27 λ = Calculations.fun_N_o(inParams, λ)
28 outfile = open("log.txt", "a")
29 print("var 'N_o' assigned ", end="", file=outfile)
30 print(N_o, end="", file=outfile)
31 print(" in module Control", file=outfile)
32 outfile.close()
33 OutputFormat.write_output(λ, N_o)
34
35

```

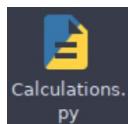


Editor - /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/Calculations.py

```

1 ## |File Calculations.py
2 # |author Andrea Clemeno
3 # |brief Provides functions for calculating the outputs
4 import math
5
6 ## |brief Calculates elimination constant ( $d^{-1}$ )
7 # |param inParams structure holding the input values
8 # |return elimination constant ( $d^{-1}$ )
9 def func_d(inParams):
10     outfile = open("log.txt", "a")
11     print("function func_d called with inputs: (", file=outfile)
12     print("inParams = ", end="", file=outfile)
13     print("Instance of InputParameters object", file=outfile)
14     print(" )", file=outfile)
15     outfile.close()
16
17     return math.log(inParams.N_o) - math.log(inParams.N_t) / inParams.t_t
18
19 ## |brief Calculates predicted viral load after 30 days (mol/mL)
20 # |param inParams structure holding the input values
21 # |return predicted viral load after 30 days (mol/mL)
22 # |return elimination constant ( $d^{-1}$ )
23 def func_N_p(inParams, λ):
24     outfile = open("log.txt", "a")
25     print("function func_N_p called with inputs: (", file=outfile)
26     print("inParams = ", end="", file=outfile)
27     print("Instance of InputParameters object", end="", file=outfile)
28     print(", ", file=outfile)
29     print("λ", end="", file=outfile)
30     print(λ, file=outfile)
31     print(" )", file=outfile)
32     outfile.close()
33
34     return inParams.N_o * math.exp(-λ * inParams.t_p)
35
36

```

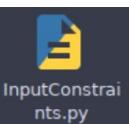


Editor - /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputConstraints.py

```

1 ## |File InputConstraints.py
2 # |author Andrea Clemeno
3 # |brief Provides the function for checking the physical constraints on the input
4 # |brief Verifies that input values satisfy the physical constraints
5 # |return None if the input values are valid, otherwise raising the input values
6 def input_constraints(inParams):
7     outfile = open("log.txt", "a")
8     print("function input_constraints called with inputs: (", file=outfile)
9     print("inParams = ", end="", file=outfile)
10    print("Instance of InputParameters object", file=outfile)
11    print(" )", file=outfile)
12    outfile.close()
13
14    if (not(inParams.N_o > 0)) :
15        print("N_o has value ", end="")
16        print(inParams.N_o, end="")
17        print(" but is expected to be ", end="")
18        print("above ", end="")
19        print(0, end="")
20
21    raise Exception("InputError")
22    if (not(0 < inParams.N_t and inParams.N_t < inParams.N_o)) :
23        print("N_t has value ", end="")
24        print(inParams.N_t, end="")
25        print(" but is expected to be ", end="")
26        print("between ", end="")
27        print(0, end="")
28        print(" and ", end="")
29        print(inParams.N_o, end="")
30        print(" (N_o)", end="")
31
32    raise Exception("InputError")
33    if (not(0 < inParams.t_t and inParams.t_t < inParams.t_p)) :
34        print("t_t has value ", end="")
35        print(inParams.t_t, end="")
36        print(" but is expected to be ", end="")
37        print("between ", end="")
38        print(0, end="")
39        print(" and ", end="")
40        print(inParams.t_p, end="")
41        print(" (t_p)", end="")
42
43    raise Exception("InputError")
44    if (not(inParams.t_p > 0)) :
45        print("t_p has value ", end="")
46        print(inParams.t_p, end="")
47        print(" but is expected to be ", end="")
48        print("above ", end="")
49        print(0, end="")
50        print(" ")
51
52    raise Exception("InputError")
53

```



LINTING

Test

Linting

Verification Tool

Spyder

Editor - /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputFormat.py

```
1 ## [file InputFormat.py
2 # | Author Andrea Cleven
3 # | brief Provides the function for reading inputs
4 ## [brief Reads input from a file with the given file name
5 # | param filename the file name to read
6 # | param inparams structure holding the input values
7 def get_inputs(filename, inParams):
8     outfile = open("log.txt", "a")
9     print("function get_inputs called with inputs: (", file=outfile)
10    print("filename = ", end="", file=outfile)
11    print("inParams = ", end="", file=outfile)
12    print(")", file=outfile)
13    print("Instance of InputParameters object", file=outfile)
14    print("N_p = ", end="", file=outfile)
15    print("N_t = ", end="", file=outfile)
16    outfile.close()
17
18    infile = open(filename, "r")
19    infile.readline()
20    inParams.N_o = float(infile.readline())
21    outfile = open("log.txt", "a")
22    print("N_o = ", inParams.N_o, " assigned ", end="", file=outfile)
23    print("inParams.N_o = ", end="", file=outfile)
24    print(" in module InputFormat", file=outfile)
25    outfile.close()
26    infile.close()
27    inParams.N_t = float(infile.readline())
28    outfile = open("log.txt", "a")
29    print("N_t = ", inParams.N_t, " assigned ", end="", file=outfile)
30    print("inParams.N_t = ", end="", file=outfile)
31    print(" in module InputFormat", file=outfile)
32    outfile.close()
33    infile.close()
34    inParams.t = float(infile.readline())
35    outfile = open("log.txt", "a")
36    print("t = ", inParams.t, " assigned ", end="", file=outfile)
37    print("inParams.t = ", end="", file=outfile)
38    print(" in module InputFormat", file=outfile)
39    outfile.close()
40    infile.close()
41    inParams.t_p = float(infile.readline())
42    outfile = open("log.txt", "a")
43    print("t_p = ", inParams.t_p, " assigned ", end="", file=outfile)
44    print("inParams.t_p = ", end="", file=outfile)
45    print(" in module InputFormat", file=outfile)
46    outfile.close()
47    infile.close()
```



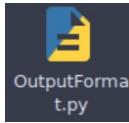
Editor - /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/InputParameters.py

```
1 ## [file InputParameters.py
2 # | Author Andrea Cleven
3 # | brief Provides the structure for holding input values
4 ## [brief Provides the structure for holding the input values
5 class InputParameters:
6     None
7
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Editor - /home/bodhi/Reposnew/Drasil/code/build/Diagnose/src/python/OutputFormat.py

```
1 ## [file OutputFormat.py
2 # | Author Andrea Cleven
3 # | brief Provides the function for writing outputs
4 ## [brief Writes the output values to output.txt
5 # | param N_p elimination constant (d-1)
6 # | param N_p predicted viral load after 30 days (mol/mL)
7 def write_output(A, N_p):
8     outfile = open("log.txt", "a")
9     print("function write_output called with inputs: (", file=outfile)
10    print("A = ", end="", file=outfile)
11    print("N_p = ", end="", file=outfile)
12    print(" ", end="", file=outfile)
13    print("N_p = ", end="", file=outfile)
14    print(N_p, file=outfile)
15    print(" ", file=outfile)
16    outfile.close()
17
18    outfile = open("output.txt", "w")
19    print(X, file=outfile)
20    print(" ", file=outfile)
21    print("N_p = ", end="", file=outfile)
22    print(N_p, file=outfile)
23    outfile.close()
24
```



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_λ) 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>:354(new_module)
      6  0.000  0.000  0.000  0.000 <frozen importlib._bootstrap>:389(<_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>:587(<module_from_spec>)
      6  0.000  0.000  0.000  0.000 <frozen importlib._bootstrap>:587(<_init__>)
6/5  0.000  0.000  0.001  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(exe_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>:783(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
 15  0.000  0.000  0.000  0.000 <frozen importlib._bootstrap_external>:75(CPathStat)
      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>:851(path_is_mode_type)
      5  0.000  0.000  0.000  0.000 <frozen importlib._bootstrap_external>:941(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: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 InputParameters.py:5(inputParameters)
      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:185(built-in method __decodes)
      5  0.000  0.000  0.000  0.000 codecs.py:213(statestate)
      28  0.000  0.000  0.000  0.000 codecs.py:259(<_init__>)
      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__>)
      6  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      14  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      1  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      12  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      1  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      12  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      1  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      12  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      1  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      1  0.000  0.000  0.000  0.000 codecs.py:330(getstate)
      6/1  0.000  0.000  0.000  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 bytes_
      14  0.000  0.000  0.000  0.000 built-in method from_bytes_
      5  0.000  0.000  0.000  0.000 built-in method io.open_
      1  0.000  0.000  0.000  0.000 built-in method marshal.loads_
      2  0.000  0.000  0.000  0.000 built-in method math.exp_
      15  0.000  0.000  0.000  0.000 built-in method math.log_
      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_
      5  0.000  0.000  0.000  0.000 method 'write' of '_io.TextIOWrapper' 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

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

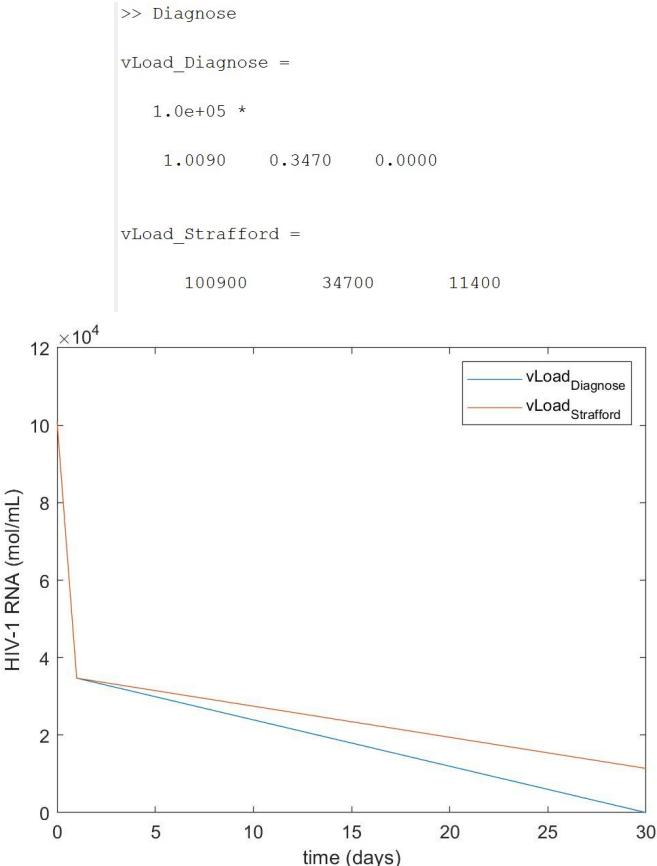
This build only has a single job.
You can use jobs to [test against multiple versions](#) of your runtime or dependencies, or to [speed up your build](#).

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**

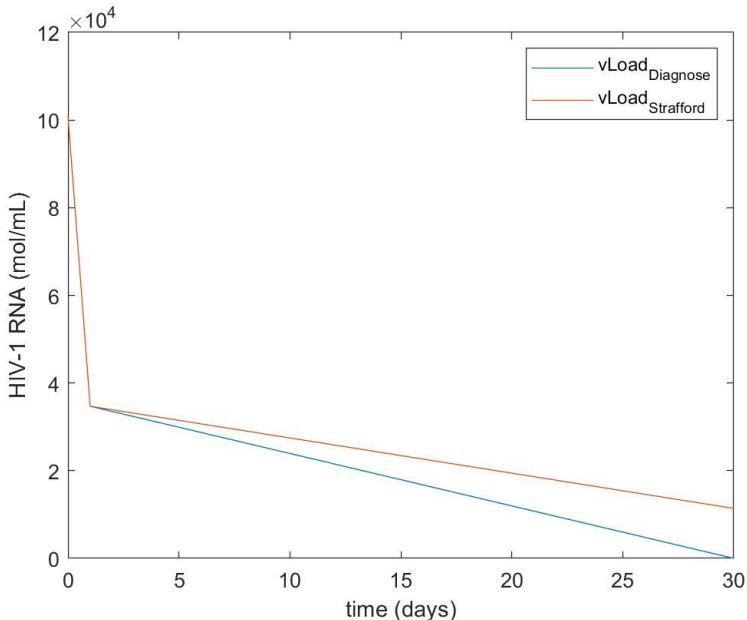
TABLE I
Virus concentration data

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

Should I include something like this? If it doesn't support my software?



The image shows a MATLAB code editor window titled "Editor - C:\Users\Andrea Clemeno\Desktop\Diagnose.m". The script contains the following code:

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

The command window below the editor shows the calculated error:

```
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