



janpeter19 / BPL_TEST2_Fedbatch

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...

[BPL_TEST2_Fedbatch / BPL_TEST2_Fedbatch_colab.ipynb](#) 

janpeter19 Created using Colab

de98979 · 2 minutes ago



2576 lines (2576 loc) · 373 KB

BPL_TEST2_Fedbatch script with PyFMI

The key library PyFMI is installed.

After the installation a small application BPL_TEST2_Fedbatch is loaded and run.
You can continue with this example if you like.

In [1]: `!lsb_release -a # Actual VM Ubuntu version used by Google`

```
No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 22.04.4 LTS
Release:        22.04
Codename:       jammy
```

In [2]: `%env PYTHONPATH=`

```
env: PYTHONPATH=
```

In [3]: `!python --version`

```
Python 3.12.12
```

In [4]: `!wget https://repo.anaconda.com/miniconda/Miniconda3-py312_25.5.1-1-Lin
!chmod +x Miniconda3-py312_25.5.1-1-Linux-x86_64.sh
!bash ./Miniconda3-py312_25.5.1-1-Linux-x86_64.sh -b -f -p /usr/local
import sys
sys.path.append('/usr/local/lib/python3.12/site-packages/')`

```
--2025-11-17 12:53:32--  https://repo.anaconda.com/miniconda/Miniconda3-
py312_25.5.1-1-Linux-x86_64.sh
Resolving repo.anaconda.com (repo.anaconda.com)... 104.16.32.241, 104.1
6.191.158, 2606:4700::6810:20f1, ...
Connecting to repo.anaconda.com (repo.anaconda.com)|104.16.32.241|:44
3... connected.
HTTP request sent, awaiting response... 200 OK
Length: 155011870 (148M) [application/octet-stream]
Saving to: 'Miniconda3-py312_25.5.1-1-Linux-x86_64.sh'
```

```
Miniconda3-py312_25 100%[=====] 147.83M 143MB/s in
1.0s
```

```
2025-11-17 12:53:33 (143 MB/s) - 'Miniconda3-py312_25.5.1-1-Linux-x86_6
4.sh' saved [155011870/155011870]
```

```
PREFIX=/usr/local
Unpacking payload ...
entry_point.py:256: DeprecationWarning: Python 3.14 will, by default, fi
lter extracted tar archives and reject files or modify their metadata. U
se the filter argument to control this behavior.
entry_point.py:256: DeprecationWarning: Python 3.14 will, by default, fi
lter extracted tar archives and reject files or modify their metadata. U
se the filter argument to control this behavior.
```

Installing base environment...

Preparing transaction: ...working... done

```
Executing transaction: ...working... done
entry_point.py:256: DeprecationWarning: Python 3.14 will, by default, fi
lter extracted tar archives and reject files or modify their metadata. U
se the filter argument to control this behavior.
installation finished.
```

```
In [5]: !conda tos accept --override-channels --channel https://repo.anaconda.com/pkgs/main  
!conda tos accept --override-channels --channel https://repo.anaconda.com/pkgs/r  
!conda update -n base -c defaults conda --yes

accepted Terms of Service for https://repo.anaconda.com/pkgs/main  
accepted Terms of Service for https://repo.anaconda.com/pkgs/r
Jupyter detected...
2 channel Terms of Service accepted
Channels:  
- defaults
Platform: linux-64
Collecting package metadata (repodata.json): - \ | / - \ | / - \ | / - \
| / - \ | done
Solving environment: - \ done

==> WARNING: A newer version of conda exists. <==  
current version: 25.5.1  
latest version: 25.9.1

Please update conda by running

$ conda update -n base -c defaults conda

## Package Plan ##

environment location: /usr/local

added / updated specs:  
- conda

The following packages will be downloaded:

      package          |          build
-----+-----  
ca-certificates-2025.11.4 | h06a4308_0    128 KB
certifi-2025.11.12        | py312h06a4308_0 154 KB
openssl-3.0.18             | hd6dcaed_0    4.5 MB
-----+-----  
                                         Total:   4.8 MB

The following packages will be UPDATED:

      ca-certificates          2025.2.25-h06a4308_0 --> 2025.11.  
4-h06a4308_0
      certifi                  2025.7.14-py312h06a4308_0 --> 2025.11.  
12-py312h06a4308_0
      openssl                 3.0.16-h5eee18b_0 --> 3.0.18-h  
d6dcaed_0
```

Downloading and Extracting Packages:

openssl-3.0.18 | 4.5 MB | : 0% 0/1 [00:00<?, ?it/s]
certifi-2025.11.12 | 154 KB | : 0% 0/1 [00:00<?, ?it/s]

```
openssl-3.0.18      | 4.5 MB    | : 0% 0.003483453807029756/1 [00:00<00:29, 29.78s/it]

ca-certificates-2025 | 128 KB    | : 12% 0.12480765421941893/1 [00:00<00:00, 1.13it/s]

ca-certificates-2025 | 128 KB    | : 100% 1.0/1 [00:00<00:00, 1.13it/s]
certifi-2025.11.12   | 154 KB    | : 10% 0.10398050365556458/1 [00:00<00:01, 1.28s/it]
certifi-2025.11.12   | 154 KB    | : 100% 1.0/1 [00:00<00:00, 1.28s/it]

ca-certificates-2025 | 128 KB    | : 100% 1.0/1 [00:00<00:00, 1.13it/s]
```

```
Preparing transaction: / done
Verifying transaction: \ | / - done
Executing transaction: | done
```

In [6]:

```
!conda --version
!python --version
```

```
conda 25.5.1
Python 3.12.11
```

In [7]:

```
!conda config --set channel_priority strict
```

In [8]:

```
!conda install -c conda-forge pyfmi --yes # Install the key package
```

```
Jupyter detected...
2 channel Terms of Service accepted
Channels:
- conda-forge
- defaults
Platform: linux-64
Collecting package metadata (repodata.json): - \ | / - \ | / - \ | / - \
| / - \ | / - \ | / - \ | / - \ | / - \ | / - \ | / - \ done
Solving environment: / - \ | / - \ done
```

```
==> WARNING: A newer version of conda exists. <==
current version: 25.5.1
latest version: 25.9.1
```

Please update conda by running

```
$ conda update -n base -c defaults conda
```

```
## Package Plan ##

environment location: /usr/local

added / updated specs:
- pyfmi
```

The following packages will be downloaded:

package	build			
_x86_64-microarch-level-3	2_broadwell	8 KB	conda-	
assimulo-3.7.2	py312ha9e6814_1	1.0 MB	conda-	
ca-certificates-2025.11.12	hbd8a1cb_0	149 KB	conda-	
conda-25.9.1	py312h7900ff3_0	1.2 MB	conda-	
fmlib-3.0.4	haa4a5bd_1	364 KB	conda-	
gmp-6.3.0	hac33072_2	449 KB	conda-	
icu-75.1	he02047a_0	11.6 MB	conda-	
libamd-3.3.3	haaf9dc3_7100102	49 KB	conda-	
libarchive-3.7.7	hadbb8c3_0	854 KB	conda-	
libblas-3.9.0	39_h4a7cf45_openblas	17 KB	con	
libbtf-2.3.2	h32481e8_7100102	27 KB	conda-	
libcAMD-3.3.3	h32481e8_7100102	46 KB	conda-	
libCBLAS-3.9.0	39_h0358290_openblas	17 KB	con	
libCOLAMD-3.3.4	h32481e8_7100102	42 KB	conda-	
libCHOLMOD-5.3.1	h59ddab4_7100102	1.1 MB	conda-	
libCOLAMD-3.3.4	h32481e8_7100102	33 KB	conda-	
libcurl-8.4.0	hca28451_0	377 KB	conda-	
libCXSPARSE-4.4.1	h32481e8_7100102	118 KB	conda-	
libexpat-2.7.1	hecca717_0	73 KB	conda-	
libgcc-15.2.0	h767d61c_7	803 KB	conda-	
libGCC-ng-15.2.0	h69a702a_7	29 KB	conda-	
libgfortran-15.2.0	h69a702a_7	29 KB	conda-	
libgfortran5-15.2.0	hcd61629_7	1.5 MB	conda-	
libomp-15.2.0	h767d61c_7	437 KB	conda-	
libiconv-1.18	h3b78370_2	772 KB	conda-	
libKLU-2.3.5	hf24d653_7100102	142 KB	conda-	
liblapack-3.9.0	39_h47877c9_openblas	17 KB	con	
libLDL-3.3.2	h32481e8_7100102	24 KB	conda-	
liblzma-5.8.1	hb9d3cd8_2	110 KB	conda-	
liblzma-devel-5.8.1	hb9d3cd8_2	430 KB	conda-	
libnghttp2-1.52.0	h61bc06f_0	608 KB	conda-	

libname	version	hash	size	conda
libnsl-2.0.1		hb9d3cd8_1	33 KB	conda
forge				
libopenblas-0.3.30		pthreads_h94d23a6_4	5.7 MB	conda
a-forge				
libparu-1.0.0		h17147ab_7100102	91 KB	conda
forge				
librbio-4.3.4		h32481e8_7100102	47 KB	conda
forge				
libsolv-0.7.35		h9463b59_0	506 KB	conda
forge				
libspex-3.2.3		had10066_7100102	79 KB	conda
forge				
libspqr-4.3.4		h852d39f_7100102	213 KB	conda
forge				
libsqlite-3.45.2		h2797004_0	837 KB	conda
forge				
libssh2-1.11.1		hcf80075_0	298 KB	conda
forge				
libstdcxx-15.2.0		h8f9b012_7	3.7 MB	conda
forge				
libstdcxx-ng-15.2.0		h4852527_7	29 KB	conda
forge				
libsuitesparseconfig-7.10.1		h92d6892_7100102	42 KB	conda
forge				
libumfpack-6.3.5		heb53515_7100102	424 KB	conda
forge				
libuuid-2.41.2		he9a06e4_0	36 KB	conda
forge				
libxcrypt-4.4.36		hd590300_1	98 KB	conda
forge				
libxml2-2.13.9		h04c0eec_0	681 KB	conda
forge				
libzlib-1.3.1		hb9d3cd8_2	60 KB	conda
forge				
lzo-2.10		h280c20c_1002	187 KB	conda
forge				
metis-5.1.0		hd0bcaf9_1007	3.7 MB	conda
forge				
minizip-4.0.10		h05a5f5f_0	91 KB	conda
forge				
mpfr-4.2.1		h90cbb55_3	620 KB	conda
forge				
numpy-2.3.5		py312h33ff503_0	8.4 MB	conda
forge				
openssl-3.6.0		h26f9b46_0	3.0 MB	conda
forge				
pcre2-10.46		h1321c63_0	1.2 MB	conda
forge				
pyfmi-2.19.0		py312h4f23490_2	5.4 MB	conda
forge				
python-3.12.2		hab00c5b_0_cpython	30.8 MB	conda
-forge				
python_abi-3.12		8_cp312	7 KB	conda
forge				
scipy-1.16.3		py312h7a1785b_1	16.0 MB	conda
forge				
sqlite-3.45.2		h2c6b66d_0	829 KB	conda
forge				
suitesparse-7.10.1		ha0f6916_7100102	12 KB	conda
forge				
sundials-7.4.0		h8bc8c85_0	979 KB	conda
forge				
tk-8.6.13		noxft_ha0e22de_103	3.1 MB	conda
-forge				
xz-5.8.1		hbcc6ac9_2	23 KB	conda

forge	xz-gpl-tools-5.8.1		hbcc6ac9_2	33 KB	conda-
forge	xz-tools-5.8.1		hb9d3cd8_2	94 KB	conda-
forge	zlib-1.3.1		hb9d3cd8_2	90 KB	conda-
forge	zstandard-0.25.0		py312h5253ce2_1	456 KB	conda-
forge	zstd-1.5.7		hb8e6e7a_2	554 KB	conda-
forge					
			Total:	110.5 MB	

The following NEW packages will be INSTALLED:

_x86_64-microarch~	conda-forge/noarch::_x86_64-microarch-level-3-2_bro				
adwell					
assimulo	conda-forge/linux-64::assimulo-3.7.2-py312ha9e6814_				
1					
fmilib	conda-forge/linux-64::fmilib-3.0.4-haa4a5bd_1				
gmp	conda-forge/linux-64::gmp-6.3.0-hac33072_2				
libamd	conda-forge/linux-64::libamd-3.3.3-haaf9dc3_7100102				
libblas	conda-forge/linux-64::libblas-3.9.0-39_h4a7cf45_ope				
nbblas					
libbtf	conda-forge/linux-64::libbtf-2.3.2-h32481e8_7100102				
libcamd	conda-forge/linux-64::libcamd-3.3.3-h32481e8_710010				
2					
libcblas	conda-forge/linux-64::libcblas-3.9.0-39_h0358290_op				
enblas					
libccolamd	conda-forge/linux-64::libccolamd-3.3.4-h32481e8_710				
0102					
libcholmod	conda-forge/linux-64::libcholmod-5.3.1-h59ddab4_710				
0102					
libcolamd	conda-forge/linux-64::libcolamd-3.3.4-h32481e8_7100				
102					
libcxsparse	conda-forge/linux-64::libcxsparse-4.4.1-h32481e8_71				
00102					
libexpat	conda-forge/linux-64::libexpat-2.7.1-hecca717_0				
libgcc	conda-forge/linux-64::libgcc-15.2.0-h767d61c_7				
libgfortran	conda-forge/linux-64::libgfortran-15.2.0-h69a702a_7				
libgfortran5	conda-forge/linux-64::libgfortran5-15.2.0-hcd61629_				
7					
libiconv	conda-forge/linux-64::libiconv-1.18-h3b78370_2				
libklu	conda-forge/linux-64::libklu-2.3.5-hf24d653_7100102				
liblapack	conda-forge/linux-64::liblapack-3.9.0-39_h47877c9_o				
penblas					
libldl	conda-forge/linux-64::libldl-3.3.2-h32481e8_7100102				
liblzma	conda-forge/linux-64::liblzma-5.8.1-hb9d3cd8_2				
liblzma-devel	conda-forge/linux-64::liblzma-devel-5.8.1-hb9d3cd8_				
2					
libnsl	conda-forge/linux-64::libnsl-2.0.1-hb9d3cd8_1				
libopenblas	conda-forge/linux-64::libopenblas-0.3.30-pthreads_h				
94d23a6_4					
libparu	conda-forge/linux-64::libparu-1.0.0-h17147ab_710010				
2					
librbio	conda-forge/linux-64::librbio-4.3.4-h32481e8_710010				
2					
libspex	conda-forge/linux-64::libspex-3.2.3-had10066_710010				
2					
libspqr	conda-forge/linux-64::libspqr-4.3.4-h852d39f_710010				
2					
libsqli	conda-forge/linux-64::libsqli-3.45.2-h2797004_0				
te					
libstdcxx	conda-forge/linux-64::libstdcxx-15.2.0-h8f9b012_7				

```
BPL_TEST2_Fedbatch/BPL_TEST2_Fedbatch_colab.ipynb at main · janpeter19/BPL_TEST2_Fedbatch
  ↳ suitesparsecon~ conda-forge/linux-64::suitesparsecontig-/.10.1-n
92d6892_7100102
  libumfpack      conda-forge/linux-64::libumfpack-6.3.5-heb53515_710
  0102
    libcrypt       conda-forge/linux-64::libcrypt-4.4.36-hd590300_1
    libzlib        conda-forge/linux-64::libzlib-1.3.1-hb9d3cd8_2
    lzo            conda-forge/linux-64::lzo-2.10-h280c20c_1002
    metis          conda-forge/linux-64::metis-5.1.0-hd0bcf9_1007
    minizip        conda-forge/linux-64::minizip-4.0.10-h05a5f5f_0
    mpfr           conda-forge/linux-64::mpfr-4.2.1-h90ccb55_3
    numpy          conda-forge/linux-64::numpy-2.3.5-py312h33ff503_0
    pyfmi          conda-forge/linux-64::pyfmi-2.19.0-py312h4f23490_2
    python_abi     conda-forge/noarch::python_abi-3.12-8_cp312
    scipy          conda-forge/linux-64::scipy-1.16.3-py312h7a1785b_1
    suitesparse    conda-forge/linux-64::suitesparse-7.10.1-ha0f6916_7
  100102
    sundials       conda-forge/linux-64::sundials-7.4.0-h8bc8c85_0
    xz-gpl-tools   conda-forge/linux-64::xz-gpl-tools-5.8.1-hbcc6ac9_2
    xz-tools        conda-forge/linux-64::xz-tools-5.8.1-hb9d3cd8_2
```

The following packages will be UPDATED:

```
  ca-certificates  pkgs/main/linux-64::ca-certificates-2~ --> conda-forge/noarch::ca-certificates-2025.11.12-hbd8a1cb_0
  conda           pkgs/main::conda-25.5.1-py312h06a4308~ --> conda-forge::conda-25.9.1-py312h7900ff3_0
  icu             pkgs/main::icu-73.1-h6a678d5_0 --> conda-forge::icu-75.1-he02047a_0
  libgcc-ng       pkgs/main::libgcc-ng-11.2.0-h1234567_1 --> conda-forge::libgcc-ng-15.2.0-h69a702a_7
  libgomp         pkgs/main::libgomp-11.2.0-h1234567_1 --> conda-forge::libgomp-15.2.0-h767d61c_7
  libsolv         pkgs/main::libsolv-0.7.30-he621ea3_1 --> conda-forge::libsolv-0.7.35-h9463b59_0
  libstdcxx-ng    pkgs/main::libstdcxx-ng-11.2.0-h12345~ --> conda-forge::libstdcxx-ng-15.2.0-h4852527_7
  libuuid         pkgs/main::libuuid-1.41.5-h5eee18b_0 --> conda-forge::libuuid-2.41.2-he9a06e4_0
  libxml2         pkgs/main::libxml2-2.13.8-hfdd30dd_0 --> conda-forge::libxml2-2.13.9-h04c0eec_0
  openssl         pkgs/main::openssl-3.0.18-hd6dcaed_0 --> conda-forge::openssl-3.6.0-h26f9b46_0
  pcre2           pkgs/main::pcre2-10.42-hebb0a14_1 --> conda-forge::pcre2-10.46-h1321c63_0
  xz              pkgs/main::xz-5.6.4-h5eee18b_1 --> conda-forge::xz-5.8.1-hbcc6ac9_2
  zlib            pkgs/main::zlib-1.2.13-h5eee18b_1 --> conda-forge::zlib-1.3.1-hb9d3cd8_2
  zstandard       pkgs/main::zstandard-0.23.0-py312h2c3~ --> conda-forge::zstandard-0.25.0-py312h5253ce2_1
  zstd            pkgs/main::zstd-1.5.6-hc292b87_0 --> conda-forge::zstd-1.5.7-hb8e6e7a_2
```

The following packages will be SUPERSEDED by a higher-priority channel:

```
  libarchive       pkgs/main::libarchive-3.7.7-hfab0078_0 --> conda-forge::libarchive-3.7.7-hadbb8c3_0
  libcurl          pkgs/main::libcurl-8.14.1-h31d0fb7_0 --> conda-forge::libcurl-8.4.0-hca28451_0
  libnghttp2       pkgs/main::libnghttp2-1.57.0-h2d74bed~ --> conda-forge::libnghttp2-1.52.0-h61bc06f_0
  libssh2          pkgs/main::libssh2-1.11.1-h251f7ec_0 --> conda-forge::libssh2-1.11.1-hcf80075_0
  python           pkgs/main::python-3.12.11-h22baa00_0 --> conda-forge::python-3.12.2-hab00c5b_0 cpython
```

```
- sqlite          pkgs/main::sqlite-3.50.2-hb25bd0a_1 --> conda-forge::sqlite-3.45.2-h2c6b66d_0
    tk            pkgs/main::tk-8.6.14-h993c535_1 --> conda-forge::tk-8.6.13-noxft_ha0e22de_103
```

Downloading and Extracting Packages:

```
python-3.12.2      | 30.8 MB | : 0% 0/1 [00:00<?, ?it/s]
scipy-1.16.3       | 16.0 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
icu-75.1           | 11.6 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
numpy-2.3.5         | 8.4 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
libopenblas-0.3.30   | 5.7 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
pyfmi-2.19.0        | 5.4 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
metis-5.1.0          | 3.7 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
libstdcxx-15.2.0     | 3.7 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
tk-8.6.13            | 3.1 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
openssl-3.6.0         | 3.0 MB | : 0% 0/1 [00:00<?, ?it/s]
```

```
libgfortran5-15.2.0   | 1.5 MB | : 0% 0/1 [00:00<?, ?it/s]
```

pcre2-10.46 | 1.2 MB | : 0% 0/1 [00:00<?, ?it/s]

conda-25.9.1 | 1.2 MB | : 0% 0/1 [00:00<?, ?it/s]

libcholmod-5.3.1 | 1.1 MB | : 0% 0/1 [00:00<?, ?it/s]

assimulo-3.7.2 | 1.0 MB | : 0% 0/1 [00:00<?, ?it/s]

sundials-7.4.0 | 979 KB | : 0% 0/1 [00:00<?, ?it/s]

libarchive-3.7.7 | 854 KB | : 0% 0/1 [00:00<?, ?it/s]

libssqlite-3.45.2 | 837 KB | : 0% 0/1 [00:00<?, ?it/s]

sqlite-3.45.2 | 829 KB | : 0% 0/1 [00:00<?, ?it/s]

... (more hidden) ...

libopenblas-0.3.30	5.7 MB	: 0% 0.0027638610991105005/1 [00:00<0:38, 38.79s/it]
numpy-2.3.5	8.4 MB	: 0% 0.0018574586419555738/1 [00:00<01:00, 60.85s/it]
scipy-1.16.3	16.0 MB	: 0% 0.0009762383327632055/1 [00:00<02:13, 133.30s/it]
python-3.12.2	30.8 MB	: 0% 0.0005070463002532972/1 [00:00<05:10, 310.55s/it]
libopenblas-0.3.30	5.7 MB	: 42% 0.4228707481639065/1 [00:00<0:00, 2.41it/s]
numpy-2.3.5	8.4 MB	: 29% 0.2860486308611584/1 [00:00<0:00, 1.59it/s]
scipy-1.16.3	16.0 MB	: 11% 0.10836245493671581/1 [00:00<0:01, 1.77s/it]
python-3.12.2	30.8 MB	: 4% 0.04309893552153026/1 [00:00<0:04, 4.92s/it]
libopenblas-0.3.30	5.7 MB	: 85% 0.845741496327813/1 [00:00<0:00, 3.22it/s]
numpy-2.3.5	8.4 MB	: 61% 0.6129613518453394/1 [00:00<0:00, 2.33it/s]
scipy-1.16.3	16.0 MB	: 29% 0.28506159316685603/1 [00:00<0:00, 1.07it/s]
python-3.12.2	30.8 MB	: 13% 0.126254528763071/1 [00:00<0:01, 2.19s/it]
numpy-2.3.5	8.4 MB	: 85% 0.8544309752995639/1 [00:00<0:00, 2.27it/s]
scipy-1.16.3	16.0 MB	: 48% 0.4764043063884443/1 [00:00<0:00, 1.37it/s]
python-3.12.2	30.8 MB	: 23% 0.22664969621322387/1 [00:00<0:01, 1.52s/it]
libopenblas-0.3.30	5.7 MB	: 100% 1.0/1 [00:00<00:00, 3.22it/s]
scipy-1.16.3	16.0 MB	: 65% 0.6452935379564788/1 [00:00<0:00, 1.48it/s]
python-3.12.2	30.8 MB	: 30% 0.2976361782486855/1 [00:00<0:00, 1.48it/s]

pyfmi-2.19.0 <03:19, 200.31s/it]	5.4 MB	:	0% 0.0029053508888593343/1 [00:00
python-3.12.2 0:00, 1.35s/it]	30.8 MB	:	39% 0.3883974659940257/1 [00:00<0

pyfmi-2.19.0 0:00, 1.05s/it]	5.4 MB	:	49% 0.4851935984395088/1 [00:00<0
scipy-1.16.3 00, 1.53it/s]	16.0 MB	:	96% 0.964523472770047/1 [00:00<00:

python-3.12.2 0:00, 1.40s/it]	30.8 MB	:	47% 0.46546850363252684/1 [00:00<0
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pyfmi-2.19.0 0:00, 1.70it/s]	5.4 MB	:	92% 0.9239015826572683/1 [00:00<0
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metis-5.1.0 03:12, 193.62s/it]	3.7 MB	:	0% 0.004175799528999174/1 [00:00<
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metis-5.1.0 0:00, 1.27it/s]	3.7 MB	:	86% 0.8643905025028291/1 [00:01<0
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python-3.12.2 0:00, 1.73s/it]	30.8 MB	:	61% 0.6064273751029435/1 [00:01<0
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icu-75.1	11.6 MB	:	100% 1.0/1 [00:01<00:00, 1.85it/s]
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libstdc++-15.2.0 04:21, 262.92s/it]	3.7 MB	:	0% 0.004202891078065675/1 [00:01<
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metis-5.1.0	3.7 MB	: 100% 1.0/1 [00:01<00:00, 1.27it/s]
python-3.12.2	30.8 MB	: 68% 0.675385671937392/1 [00:01<00:00, 1.64s/it]
openssl-3.6.0	3.0 MB	: 1% 0.005175966758061148/1 [00:01<03:47, 228.68s/it]
libstdcxx-15.2.0	3.7 MB	: 67% 0.672462572490508/1 [00:01<00:00, 1.30s/it]
python-3.12.2	30.8 MB	: 75% 0.7468792002731068/1 [00:01<00:00, 1.57s/it]
python-3.12.2	30.8 MB	: 81% 0.813809311906542/1 [00:01<00:00, 1.63s/it]
scipy-1.16.3	16.0 MB	: 100% 1.0/1 [00:01<00:00, 1.53it/s]
tk-8.6.13	3.1 MB	: 100% 1.0/1 [00:01<00:00, 1.09s/it]

libstdcxx-15.2.0 | 3.7 MB | : 100% 1.0/1 [00:01<00:00, 1.30s/it]

openssl-3.6.0 | 3.0 MB | : 100% 1.0/1 [00:01<00:00, 1.07s/it]

python-3.12.2 | 30.8 MB | : 88% 0.8776971457384575/1 [00:01<00:00, 1.71s/it]

pcre2-10.46 | 1.2 MB | : 1% 0.013549711911490212/1 [00:01<01:49, 111.21s/it]

libgfortran5-15.2.0 | 1.5 MB | : 1% 0.01041736872424111/1 [00:01<02:23, 144.86s/it]

libcholmod-5.3.1 | 1.1 MB | : 1% 0.014870549794649543/1 [00:01<01:43, 104.71s/it]

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conda-25.9.1      | 1.2 MB      | : 1% 0.013581689919010553/1 [00:01<01:53, 115.01s/it]
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python-3.12.2      | 30.8 MB      | : 97% 0.9715007112853175/1 [00:01<0:00, 1.48s/it]
```

```
libgfortran5-15.2.0 | 1.5 MB      | : 100% 1.0/1 [00:01<00:00, 1.18s/it]
```

```
libgfortran5-15.2.0 | 1.5 MB      | : 100% 1.0/1 [00:01<00:00, 1.18s/it]
```

```
libcholmod-5.3.1    | 1.1 MB      | : 100% 1.0/1 [00:01<00:00, 1.20s/it]
```

conda-25.9.1 | 1.2 MB | : 48% 0.47535914716536937/1 [00:01<00:01, 2.53s/it]

assimulo-3.7.2 | 1.0 MB | : 2% 0.01548722757452472/1 [00:01<01:47, 109.30s/it]

sundials-7.4.0 | 979 KB | : 2% 0.016346533744657245/1 [00:01<01:42, 104.22s/it]

conda-25.9.1 | 1.2 MB | : 100% 1.0/1 [00:01<00:00, 2.53s/it]

```
libarchive-3.7.7      | 854 KB      | : 2% 0.01874125650150248/1 [00:01<0  
1:29, 91.57s/it]
```

```
assimulo-3.7.2       | 1.0 MB      | : 100% 1.0/1 [00:01<00:00, 109.30s/i  
t]
```

```
libssqlite-3.45.2     | 837 KB      | : 2% 0.019106950643098627/1 [00:01<  
01:30, 92.68s/it]
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```
libarchive-3.7.7      | 854 KB      | : 100% 1.0/1 [00:01<00:00, 91.57s/it]
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sundials-7.4.0 | 979 KB | : 100% 1.0/1 [00:01<00:00, 1.30s/it]

sundials-7.4.0 | 979 KB | : 100% 1.0/1 [00:01<00:00, 1.30s/it]

libssqlite-3.45.2 | 837 KB | : 100% 1.0/1 [00:01<00:00, 92.68s/it]

libopenblas-0.3.30 | 5.7 MB | : 100% 1.0/1 [00:01<00:00, 3.22it/s]

sqlite-3.45.2 | 829 KB | : 2% 0.019311190212394806/1 [00:01<01:33, 95.52s/it]

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sqlite-3.45.2 | 829 KB | : 100% 1.0/1 [00:01<00:00, 95.52s/it]

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python-3.12.2 | 30.8 MB | : 100% 1.0/1 [00:02<00:00, 1.48s/it]

numpy-2.3.5 | 8.4 MB | : 100% 1.0/1 [00:03<00:00, 2.27it/s]

i686-75_1 | 11.6 MB | : 100% 1.0/1 [00:05<00:00, 1.25it/s]

metis-5.1.0 | 3.7 MB | : 100% 1.0/1 [00:05<00:00, 1.27it/s]

tk-8.6.13 | 3.1 MB | : 100% 1.0/1 [00:06<00:00, 1.09s/it]

libstdc++-15.2.0 | 3.7 MB | : 100% 1.0/1 [00:06<00:00, 1.30s/it]

openssl-3.6.0 | 3.0 MB | : 100% 1.0/1 [00:06<00:00, 1.07s/it]

pcre2-10.46 | 1.2 MB | : 100% 1.0/1 [00:06<00:00, 6.41s/it]

pcre2-10.46 | 1.2 MB | : 100% 1.0/1 [00:06<00:00, 6.41s/it]

libgfortran5-15.2.0 | 1.5 MB | : 100% 1.0/1 [00:07<00:00, 1.18s/it]

libcholmod-5.3.1	1.1 MB	: 100% 1.0/1 [00:07<00:00, 1.20s/it]
scipy-1.16.3	16.0 MB	: 100% 1.0/1 [00:07<00:00, 1.53it/s]

conda-25.9.1	1.2 MB	: 100% 1.0/1 [00:07<00:00, 8.09s/it]
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libarchive-3.7.7 | 854 KB | : 100% 1.0/1 [00:07<00:00, 7.42s/it]

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libssqlite-3.45.2 | 837 KB | : 100% 1.0/1 [00:07<00:00, 7.47s/it]

sqlite-3.45.2 | 829 KB | : 100% 1.0/1 [00:08<00:00, 7.50s/it]

sqlite-3.45.2 | 829 KB | : 100% 1.0/1 [00:08<00:00, 7.50s/it]

sundials-7.4.0 | 979 KB | : 100% 1.0/1 [00:08<00:00, 1.30s/it]

```
... (more hidden) ...
```

```
python-3.12.2      | 30.8 MB      | : 100% 1.0/1 [00:11<00:00,  1.48s/it]
```




main ▾

[BPL_TEST2_Fedbatch](#) / [BPL_TEST2_Fedbatch_colab.ipynb](#)

↑ Top

[Preview](#)[Code](#)[Blame](#)

Raw




```
Preparing transaction: / - \ done  
Verifying transaction: / - \ | / - \ | / - \ | / - \ | / - \ | / - \ | / - done  
Executing transaction: | / - \ | / - \ | done
```

BPL TEST2 Fedbatch setup

Now specific installation and the run simulations. Start with connecting to Github. Then upload the two files:

- FMU - BPL_TEST2_Fedbatch_linux_om_me.fmu
 - Setup-file - BPL_TEST2_Fedbatch_explore.me.py

In [9]:

```
%%bash  
git clone https://github.com/janpeter19/BPI_TEST2_Fedbatch
```

Cloning into 'BPL TEST2 Fedbatch'...

To [10]:

```
%cd BPL_TEST2_Fedbatch
```

```
/content/BPL_TEST2_Fedbatch
```

In [11]: `run -i BPL_TEST2_Fedbatch_explore.py`

Linux – run FMU pre-compiled OpenModelica

Model for the process has been setup. Key commands:

- `par()` – change of parameters and initial values
- `init()` – change initial values only
- `simu()` – simulate and plot
- `newplot()` – make a new plot
- `show()` – show plot from previous simulation
- `disp()` – display parameters and initial values from the last simulation
- `describe()` – describe culture, broth, parameters, variables with values/units

Note that both `disp()` and `describe()` takes values from the last simulation and the command `process_diagram()` brings up the main configuration

Brief information about a command by `help()`, eg `help(simu)`

Key system information is listed with the command `system_info()`

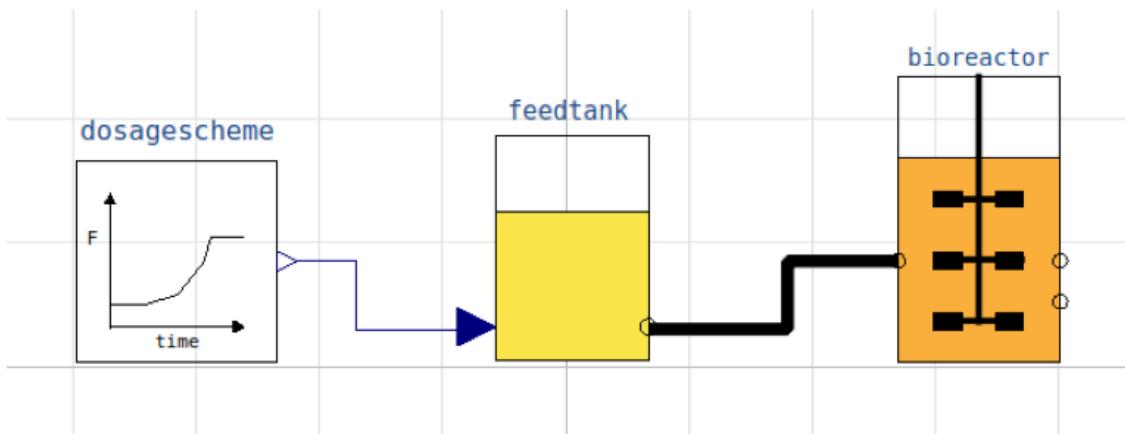
In [12]: `%matplotlib inline`
`plt.rcParams['figure.figsize'] = [25/2.54, 20/2.54]`

In [13]: `import warnings`
`warnings.filterwarnings("ignore")`

BPL_TEST2_Fedbatch - demo

In [14]: `process_diagram()`

No `processDiagram.png` file in the FMU, but try the file on disk.



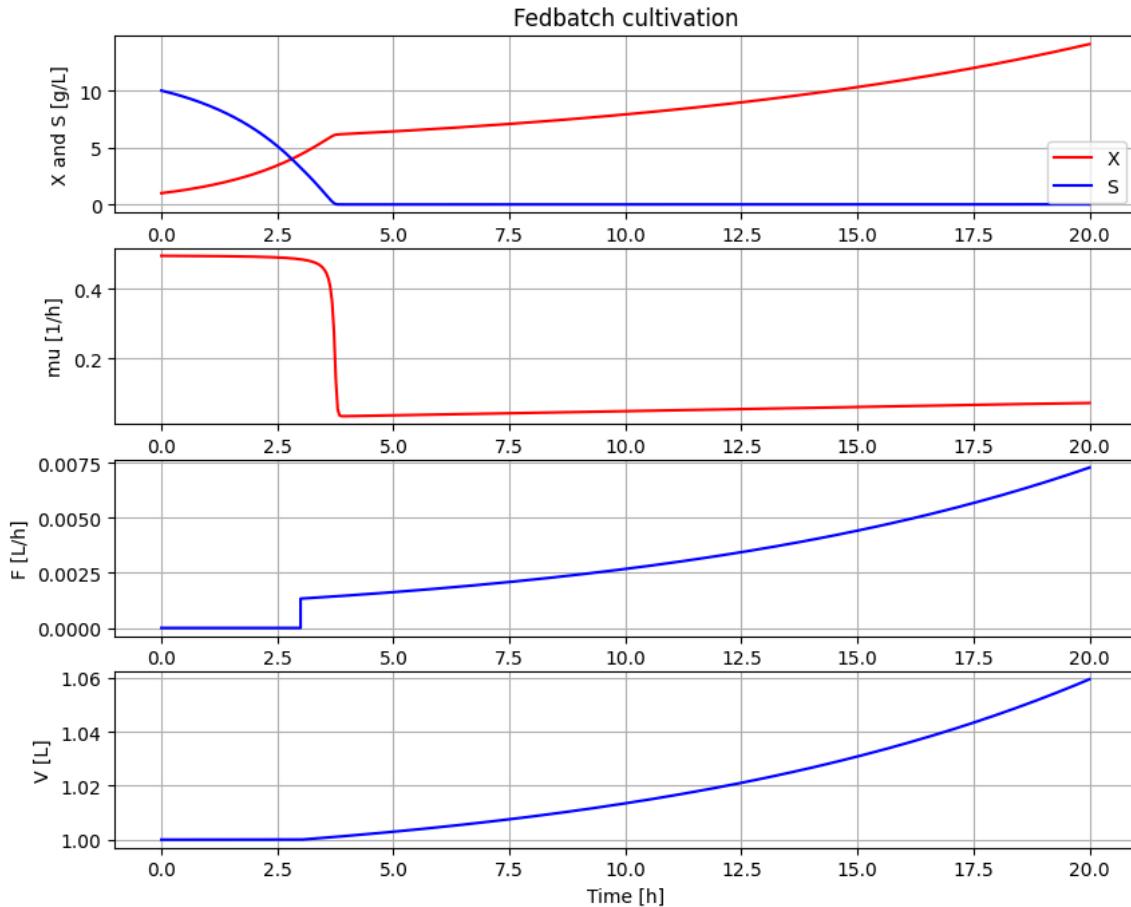
In [15]: `describe('culture'); print(); #describe('liquidphase')`

Simplified text book model – only substrate S and cell concentration X

In [16]: `# Simulation with default values of the process`

```
newplot(plotType='TimeSeries')
simu(20)
```

Could not find cannot import name 'dopri5' from 'assimulo.lib' (/usr/local/lib/python3.12/site-packages/assimulo/lib/_init__.py)
 Could not find cannot import name 'rodas' from 'assimulo.lib' (/usr/local/lib/python3.12/site-packages/assimulo/lib/_init__.py)
 Could not find cannot import name 'odassl' from 'assimulo.lib' (/usr/local/lib/python3.12/site-packages/assimulo/lib/_init__.py)
 Could not find ODEPACK functions.
 Could not find RADAR5
 Could not find GLIMDA.



In [17]:

```
# Let us display and then save the feedprofile
disp('dosagescheme')
```

```
F_start : 0.0
mu_feed : 0.1
```