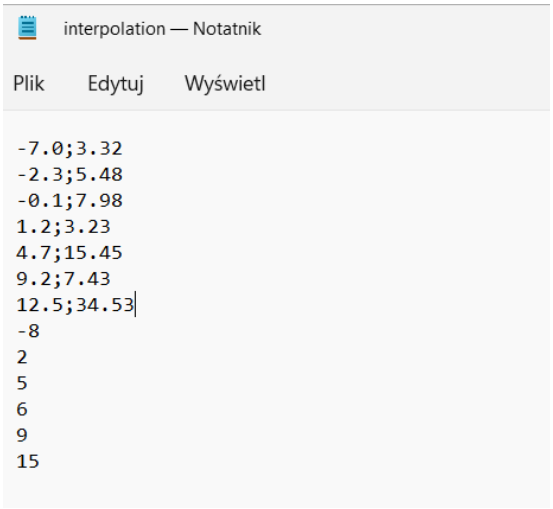
Sprawozdanie

Dobre praktyki programowania

Lab 12: Python + Native

Wykonał: Mateusz Urbańczyk

Stworzyłem plik z danymi.



Plik ten zawiera współrzędne x i y, rozdzielone ‘;’ oraz współrzędne x, dla których będą liczone współrzędne y przy pomocy aproksymacji wielomianem Newtona.

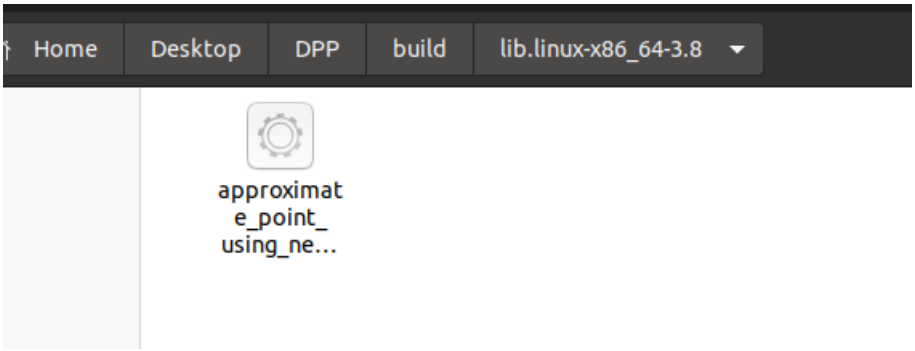
Stworzyłem skrypt setup.py.

Skrypt ten służy do skompilowania do kodu bajtowego pliku NewtonInterpolation.cpp, w którym znajduje się funkcja aproksymująca.

Skompilowałem plik przy pomocy komendy python3 setup.py build.

```
mateusz@mateusz-VirtualBox:~/Desktop/DPP$ python3 setup.py build
running build
running build_ext
building 'approximate_point_using_newton_polynomial' extension
x86_64-linux-gnu-gcc -pthread -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwr
apv -O2 -Wall -g -fstack-protector-strong -Wformat -Werror=format-security -g -f
wrapv -O2 -g -fstack-protector-strong -Wformat -Werror=format-security -Wdate-ti
me -D_FORTIFY_SOURCE=2 -fPIC -I/usr/include/python3.8 -c NewtonInterpolationPoly
nomial.cpp -o build/temp.linux-x86_64-3.8/NewtonInterpolationPolynomial.o
x86_64-linux-gnu-g++ -pthread -shared -Wl,-O1 -Wl,-Bsymbolic-functions -Wl,-Bsym
bolic-functions -Wl,-z,relro -g -fwrapv -O2 -Wl,-Bsymbolic-functions -Wl,-z,relr
o -g -fwrapv -O2 -g -fstack-protector-strong -Wformat -Werror=format-security -W
date-time -D_FORTIFY_SOURCE=2 build/temp.linux-x86_64-3.8/NewtonInterpolationPol
ynomial.o -o build/lib.linux-x86_64-3.8/approximate_point_using_newton_polynomia
l.cpython-38-x86_64-linux-gnu.so
```

W wyniku pojawił się plik z rozszerzeniem .so.



Wyniki aproksymacji:

```
mateusz@mateusz-VirtualBox:~/Desktop/DPP$ python3 main.py
Newton approximate for -8.0: 123.5943229903817
Newton approximate for 2.0: 1.9228464688915194
Newton approximate for 5.0: 17.943799519664395
Newton approximate for 6.0: 25.361618643506255
Newton approximate for 9.0: 10.706945022632874
Newton approximate for 15.0: 689.51818979774
mateusz@mateusz-VirtualBox:~/Desktop/DPP$
```

Zainstalowałem pyinstaller.

```
mateusz@mateusz-VirtualBox:~/Desktop/DPP$ pip install pyinstaller
Collecting pyinstaller
  Downloading pyinstaller-5.1-py3-none-manylinux2014_x86_64.whl (547 kB)
     |                                | 547 kB 2.4 MB/s
Requirement already satisfied: setuptools in /usr/lib/python3/dist-packages (fro
m pyinstaller) (45.2.0)
Collecting pyinstaller-hooks-contrib>=2021.4
  Downloading pyinstaller_hooks_contrib-2022.6-py2.py3-none-any.whl (231 kB)
     |                                | 231 kB 2.4 MB/s
Collecting altgraph
  Downloading altgraph-0.17.2-py2.py3-none-any.whl (21 kB)
Installing collected packages: pyinstaller-hooks-contrib, altgraph, pyinstaller
  WARNING: The scripts pyi-archive_viewer, pyi-bindepend, pyi-grab_version, pyi-
makespec, pyi-set_version and pyinstaller are installed in '/home/mateusz/.local
/bin' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warn
ing, use --no-warn-script-location.
Successfully installed altgraph-0.17.2 pyinstaller-5.1 pyinstaller-hooks-contrib
-2022.6
mateusz@mateusz-VirtualBox:~/Desktop/DPP$
```

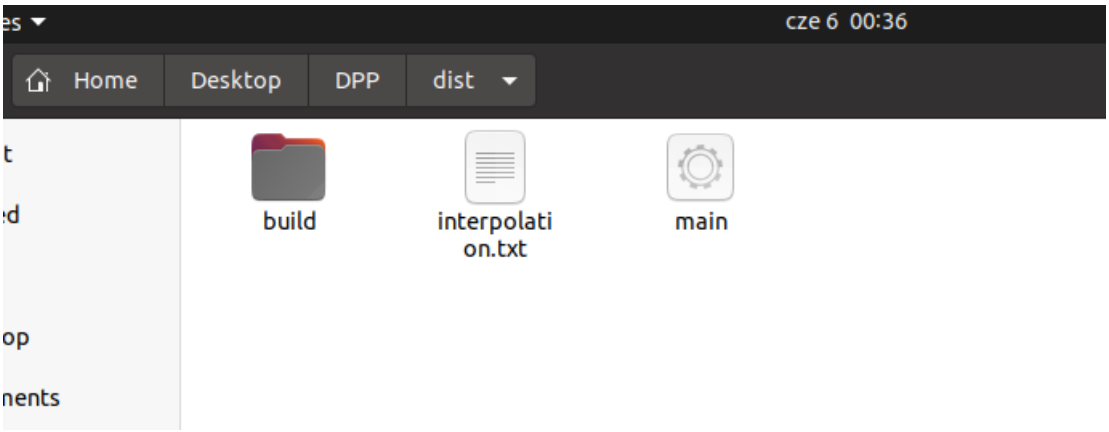
Zainstalowałem potrzebny pakiet upx.

```
mateusz@mateusz-VirtualBox:~/Desktop/DPP$ sudo apt-get install -y upx
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'upx-ucl' instead of 'upx'
The following additional packages will be installed:
  libucl1
The following NEW packages will be installed:
  libucl1 upx-ucl
0 upgraded, 2 newly installed, 0 to remove and 67 not upgraded.
Need to get 417 kB of archives.
After this operation, 2 158 kB of additional disk space will be used.
Get:1 http://pl.archive.ubuntu.com/ubuntu focal/universe amd64 libucl1 amd64 1.0
3+repack-5 [25,0 kB]
Get:2 http://pl.archive.ubuntu.com/ubuntu focal/universe amd64 upx-ucl amd64 3.9
5-2build1 [392 kB]
Fetched 417 kB in 1s (632 kB/s)
Selecting previously unselected package libucl1:amd64.
(Reading database ... 164877 files and directories currently installed.)
Preparing to unpack .../libucl1_1.03+repack-5_amd64.deb ...
Unpacking libucl1:amd64 (1.03+repack-5)
```

Zamroziłem aplikację przy pomocy pyinstaller.

```
mateusz@mateusz-VirtualBox:~/Desktop/DPP$ python3 -m PyInstaller -F  main.py
101 INFO: PyInstaller: 5.1
101 INFO: Python: 3.8.10
120 INFO: Platform: Linux-5.13.0-41-generic-x86_64-with-glibc2.29
121 INFO: wrote /home/mateusz/Desktop/DPP/main.spec
133 INFO: UPX is available.
135 INFO: Extending PYTHONPATH with paths
['/home/mateusz/Desktop/DPP']
546 INFO: checking Analysis
554 INFO: Building because /home/mateusz/Desktop/DPP/main.py changed
554 INFO: Initializing module dependency graph...
556 INFO: Caching module graph hooks...
569 INFO: Analyzing base_library.zip ...
5052 INFO: Processing pre-find module path hook distutils from '/home/mateusz/.l
ocal/lib/python3.8/site-packages/PyInstaller/hooks/pre_find_module_path/hook-dis
tutils.py'.
5053 INFO: distutils: retargeting to non-venv dir '/usr/lib/python3.8'
```

Dodałem ręcznie folder build oraz plik interpolation.txt.



Efekt uruchomienia zamrożonej aplikacji:

```
mateusz@mateusz-VirtualBox:~/Desktop/DPP/dist$ ./main
Newton interpolation
Newton approximate for -8.0: 123.5943229903817
Newton approximate for 2.0: 1.9228464688915194
Newton approximate for 5.0: 17.943799519664395
Newton approximate for 6.0: 25.361618643506255
Newton approximate for 9.0: 10.706945022632874
Newton approximate for 15.0: 689.51818979774
Smateusz@mateusz-VirtualBox:~/Desktop/DPP/dist$ s
```