

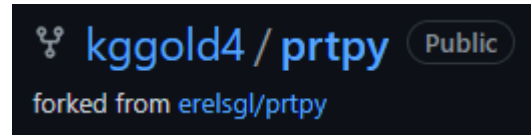
מטלה 5 - מחקר

קורס: תכנות אלגוריתמים מחקרניים

מגיש: כפיר גולדפרב

משימות הכנה:

1. בוצע fork לספרייה prtpy:



2. בוצע clone לספרייה:

```
PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy> git clone https://github.com/kggold4/prtpy.git
Cloning into 'prtpy'...
remote: Enumerating objects: 440, done.
remote: Counting objects: 100% (72/72), done.
remote: Compressing objects: 100% (14/14), done.
remote: Total 440 (delta 67), reused 58 (delta 58), pack-reused 368
Receiving objects: 100% (440/440), 92.17 KiB | 646.00 KiB/s, done.
Resolving deltas: 100% (276/276), done.
```

3. כניסה לתיקייה:

```
PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy> cd prtpy
```

4. יצירת סביבה וירטואלית:

```
PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\myvenv> virtual
env .myvenv
created virtual environment CPython3.8.8.final.0-64 in 762ms
creator CPythonWindows(dest=D:\Projects\Development\Courses\Python\Programming Research Algorithms\
Research\Ex5\myvenv\myvenv, clear=False, no_vcs_ignore=False, global=False)
seeder FromAppData(download=False, pip=bundle, setuptools=bundle, wheel=bundle, via=copy, app_data_d
ir=C:\Users\Kfir Goldfarb\AppData\Local\pypa\virtualenv)
added seed packages: pip==22.0.4, setuptools==62.1.0, wheel==0.37.1
activators BashActivator,BatchActivator,FishActivator,NushellActivator,PowerShellActivator,PythonAct
ivator
```

(יש הרבה פקודות שעשיתי אחסוך את מכאן)

5. התקנה של הספרייה:

```
PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy\prtpy> pip install -e .

Obtaining file:///D:/Projects/Development/Courses/Python/Programming%20Research%20Algorithms/Research/Ex5/clone%20prtpy/prtpy
Installing build dependencies ... done
Getting requirements to build wheel ... done
Preparing wheel metadata ... done
Requirement already satisfied: mip in c:\programdata\anaconda3\lib\site-packages (from prtpy==0.7.0) (1.13.0)
Requirement already satisfied: numpy>=1.21.3 in c:\programdata\anaconda3\lib\site-packages (from prtpy==0.7.0) (1.22.3)
Requirement already satisfied: scipy>=1.6.1 in c:\programdata\anaconda3\lib\site-packages (from prtpy==0.7.0) (1.8.0)
Requirement already satisfied: cffi in c:\programdata\anaconda3\lib\site-packages (from mip->prtpy==0.7.0) (1.14.5)
Requirement already satisfied: pycparser in c:\programdata\anaconda3\lib\site-packages (from cffi->mip->prtpy==0.7.0) (2.20)
Installing collected packages: prtpy
Running setup.py develop for prtpy
Successfully installed prtpy
```

```
PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy\prtpy> pip install -r requirements.txt
Requirement already satisfied: numpy>=1.21.3 in c:\programdata\anaconda3\lib\site-packages (from -r requirements.txt (line 1)) (1.22.3)
Requirement already satisfied: scipy>=1.6.1 in c:\programdata\anaconda3\lib\site-packages (from -r requirements.txt (line 2)) (1.8.0)
Requirement already satisfied: mip in c:\programdata\anaconda3\lib\site-packages (from -r requirements.txt (line 3)) (1.13.0)
Requirement already satisfied: cffi in c:\programdata\anaconda3\lib\site-packages (from mip->-r requirements.txt (line 3)) (1.14.5)
Requirement already satisfied: pycparser in c:\programdata\anaconda3\lib\site-packages (from cffi->mip->-r requirements.txt (line 3)) (2.20)
```

6. בדיקות:

```

PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy\prtpy> pytest
===== test session starts =====
platform win32 -- Python 3.8.8, pytest-6.2.3, py-1.10.0, pluggy-0.13.1
rootdir: D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy\prtpy, configfile: pyproject.toml
plugins: anyio-2.2.0
collected 22 items

examples\maximin_share_demo.py . [ 4%]
prtpy\bins.py . [ 13%]
prtpy\objectives.py . [ 18%]
prtpy\packing\_init_.py . [ 22%]
prtpy\packing\cflz_covering.py . [ 31%]
prtpy\packing\first_fit.py . [ 40%]
prtpy\packing\greedy_covering.py . [ 45%]
prtpy\partitioning\_init_.py . [ 50%]
prtpy\partitioning\balanced.py . [ 54%]
prtpy\partitioning\complete_greedy.py . [ 59%]
prtpy\partitioning\dp.py . [ 63%]
prtpy\partitioning\greedy.py . [ 68%]
prtpy\partitioning\ilp.py . [ 72%]
prtpy\partitioning\multifit.py . [ 77%]
prtpy\partitioning\roundrobin.py . [ 81%]
tests\test_packing_algorithms.py . [ 90%]
tests\test_partition_algorithms.py . [100%]

===== warnings summary =====
C:\ProgramData\Anaconda3\lib\site-packages\pyreadline\py3k_compat.py:8
C:\ProgramData\Anaconda3\lib\site-packages\pyreadline\py3k_compat.py:8: DeprecationWarning: Using or importing the ABCs from 'collections' instead of from 'collections.abc' is deprecated since Python
3.9, it will stop working in 3.10
  return isinstance(x, collections.Callable)

-- Docs: https://docs.pytest.org/en/stable/warnings.html
===== 22 passed, 1 warning in 39.88s =====
PS D:\Projects\Development\Courses\Python\Programming Research Algorithms\Research\Ex5\clone prtpy\prtpy>

```

קישורים:

קישור ל fork שעשיתי – <https://github.com/kggold4/prtpy>

כתובות:

אלגוריתמים (חתימות והסברים):

1. <https://github.com/kggold4/prtpy/blob/main/prtpy/partitioning/kk.py>
2. <https://github.com/kggold4/prtpy/blob/main/prtpy/partitioning/ckk.py>
3. <https://github.com/kggold4/prtpy/blob/main/prtpy/partitioning/rnp.py>
4. <https://github.com/kggold4/prtpy/blob/main/prtpy/partitioning/irnp.py>

בדיקות יחידה –

ב-module שעשיתי fork אליו:

https://github.com/kggold4/prtpy/blob/main/tests/test_partition_algorithms.py

הבדיקות היחידה שאני עשיתי בנפרד (הבדיקות יחידה שיש ב-module שעשיתי fork אליו) שונות מאוד ממה שאני עשיתי ומאוד גנריות לכל האלגוריתמים שיש שם (אמורות לעבוד גם על שלי) ולכן כרגע הבדיקות שעשיתי מופרדות מהספריה הזאת ואולי בהמשך אשלב בניהם בצורה מותאמת):

https://github.com/kggold4/programming-research-algorithms-assignments/blob/main/Research/Ex5/tests/test_algorithms.py