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FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

PYTHON FOR DUMMIES

SSHT invites – 26th januari

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Computers

should...

- improve efficiency,
- reduce human error,
- automate the mundane,
- simplify the complex,
- and accelerate research.

But scientists aren't trained to use them effectively.

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DISCLAIMER

- After this session you will not be able to program in Python. The only goal is to get you started as researcher in using Python
- This session does not make a difference between researchers with programming experience and reseachers with no programming experience

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CONTENT

- Why Python?
- How to learn Python ?
- How to install Python?
- Python examples:
  - Using Ipython
  - Using PyCharm
  - Using Jupyter Notebooks

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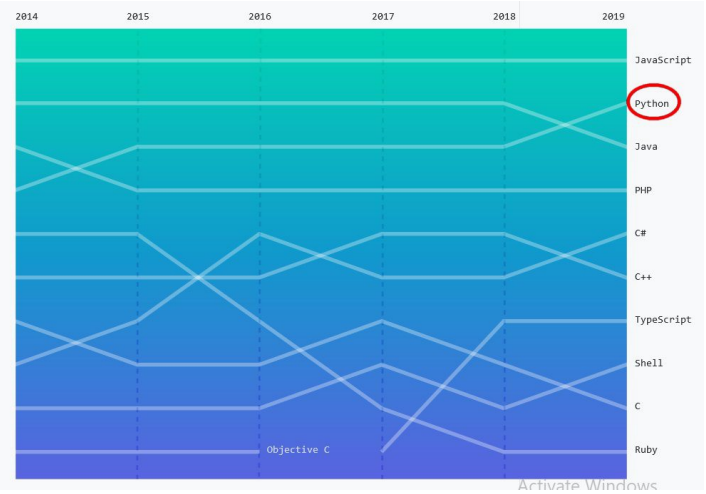
WHY PYTHON (IN GENERAL)?

- Easier than other programming languages
- Open source
- Highly productive, elegant, simple, yet powerful
- Vitamines included
- Rankings:
  - PopularitY of Programming Language Index: 1st
  - GitHub repositories contributions: 2nd

Worldwide, Jan 2021 compared to a year ago:

Rank	Change	Language	Share	Trend
1		Python	30.44 %	+1.2 %
2		Java	16.76 %	-2.0 %
3		JavaScript	8.44 %	+0.3 %
4		C#	6.53 %	-0.7 %
5	↑	C/C++	6.33 %	+0.3 %
6	↓	PHP	6.05 %	-0.2 %
7		R	3.87 %	+0.1 %
8		Objective-C	3.71 %	+1.2 %
9		Swift	2.14 %	-0.3 %
10		TypeScript	1.78 %	-0.0 %
11		Matlab	1.74 %	-0.1 %



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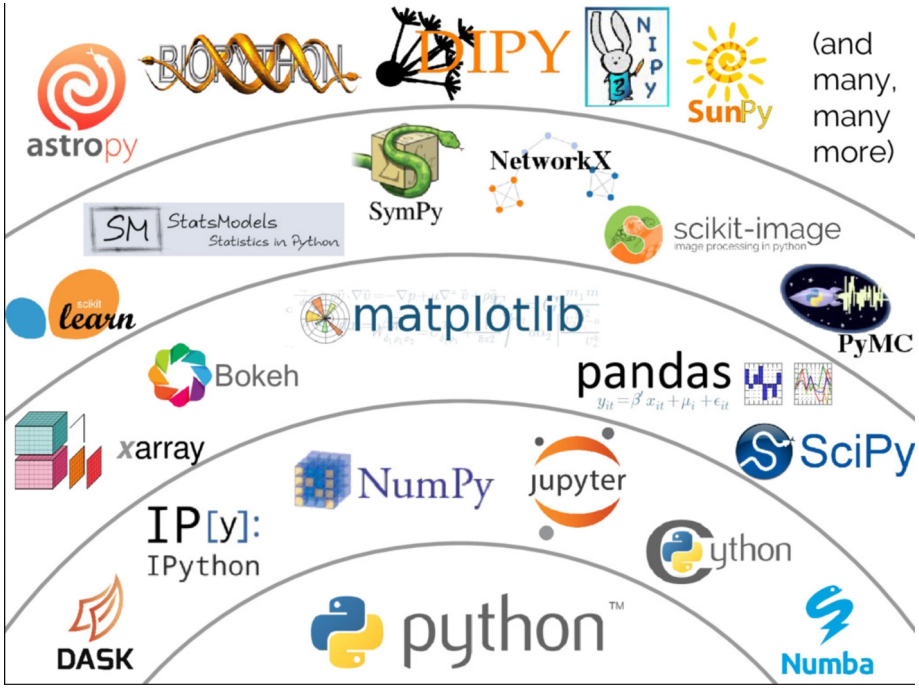
WHY PYTHON (FOR RESEARCH)?

- Python has built-in support for scientific computing
  - SciPy
  - NumPy
  - Matplotlib
- Python has bridges to MATLAB
- Python has very good input/output options
- Python has strong support for task automation



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HOW TO LEARN PYTHON

- UGent resources:
  - University wide Course Programming: https://studiegids.ugent.be/2020/EN/studiefiches/C003080.pdf
  - Dodona platform: https://dodona.ugent.be
  - Online Dodona Course: De Programmeursleerling
- Other resources:
  - Datacamp
  - MOOCs:
    - Harvard course on EDx: https://www.edx.org/course/using-python-for-research
    - MIT cours on Edx: https://www.edx.org/course/introduction-to-computer-science-and-programming-7
  - Pearson Textbook: The practice of computing using Python
  - Online Textbooks
  - Podcasts

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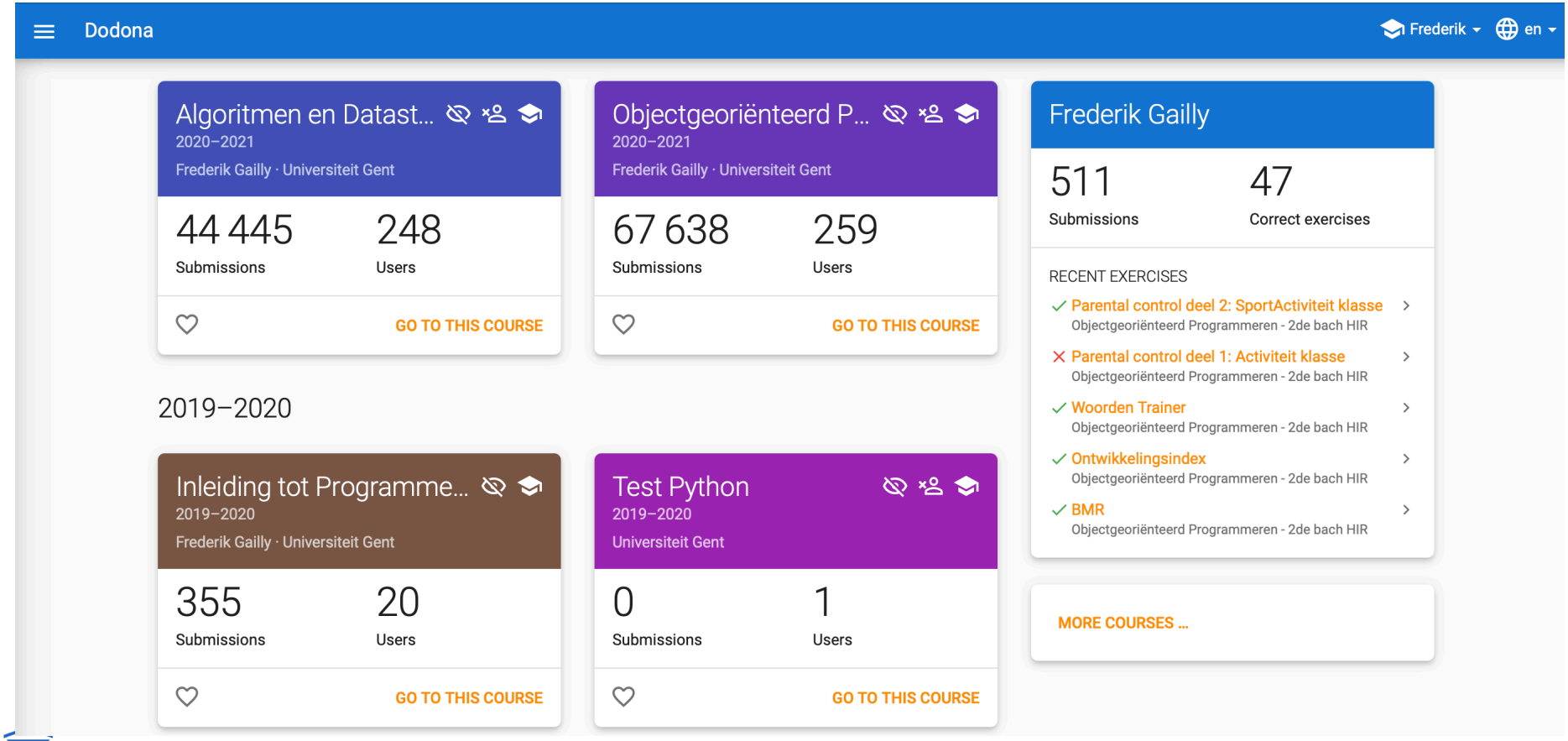
DEMONSTRATION DODONA



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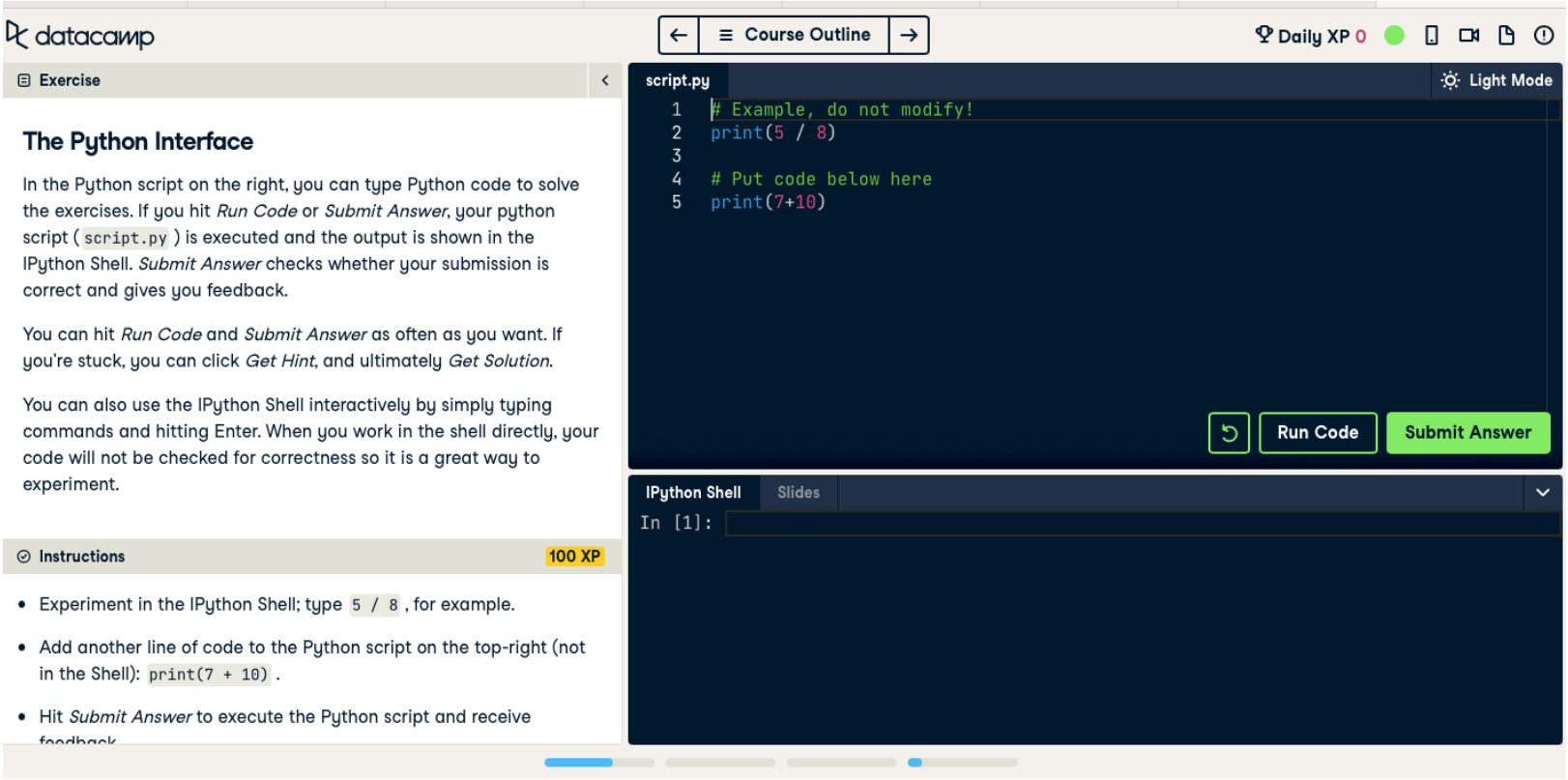
DEMONTRATION DATACAMP



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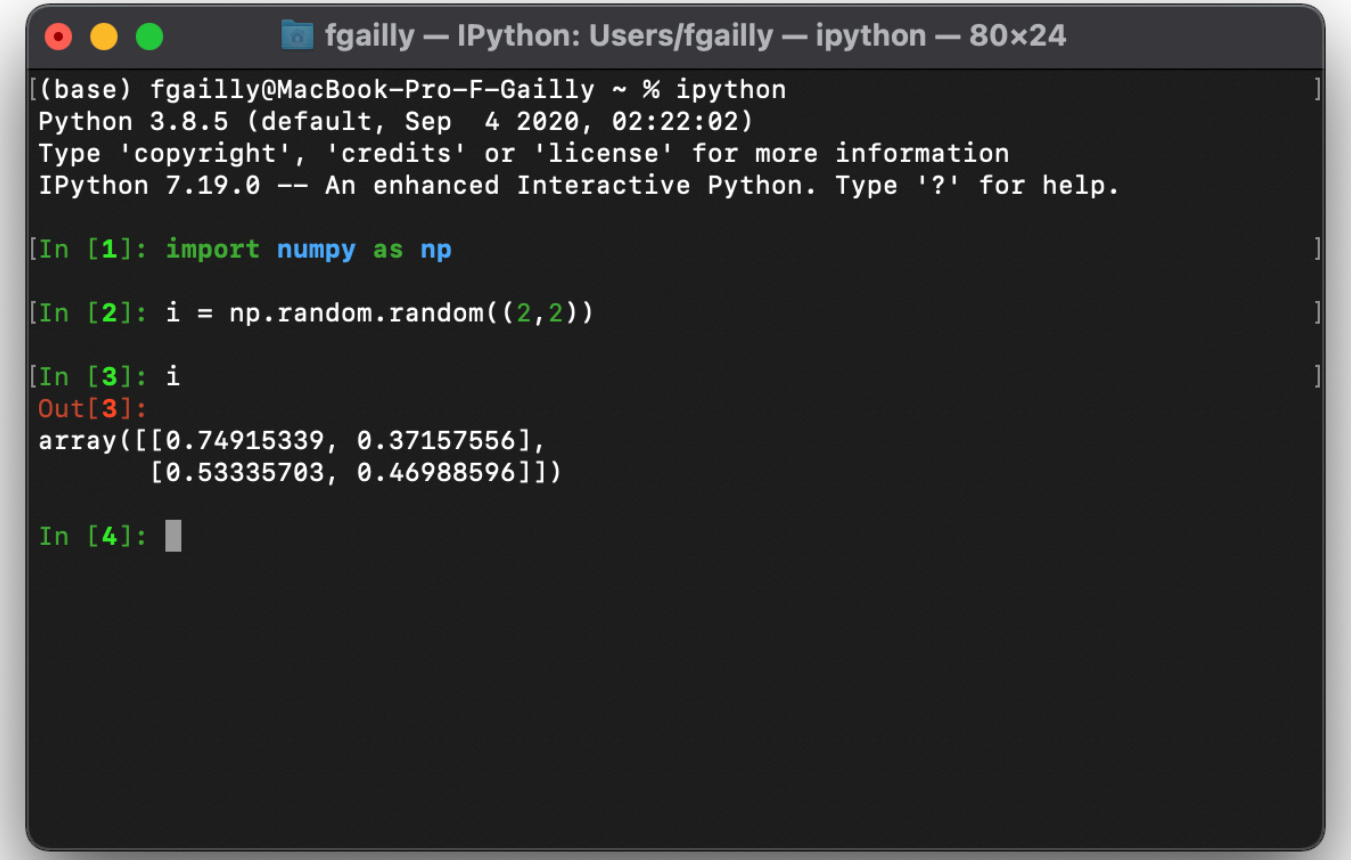
INSTALLING A PYTHON ENVIRONMENT

- https://www.python.org/downloads/
- Python interpreter: iPython
- Python editors:
  - Spyder
  - PyCharm (Academic Version)
  - Visual Studio Code
- Anaconda:
  - Distribution Python and R for scientific computing
  - Simplies package management and deployment (conda)
  - Includes Anaconda Navigator
    - Allows users to launch applications and manage conda packages
    - Default applications: JupyterLab, Jupyter Notebook, QTConsole, Spyder, Glue, Orange, RStudio and Visual Code studio

PYTHON EXAMPLE USING IPYTHON



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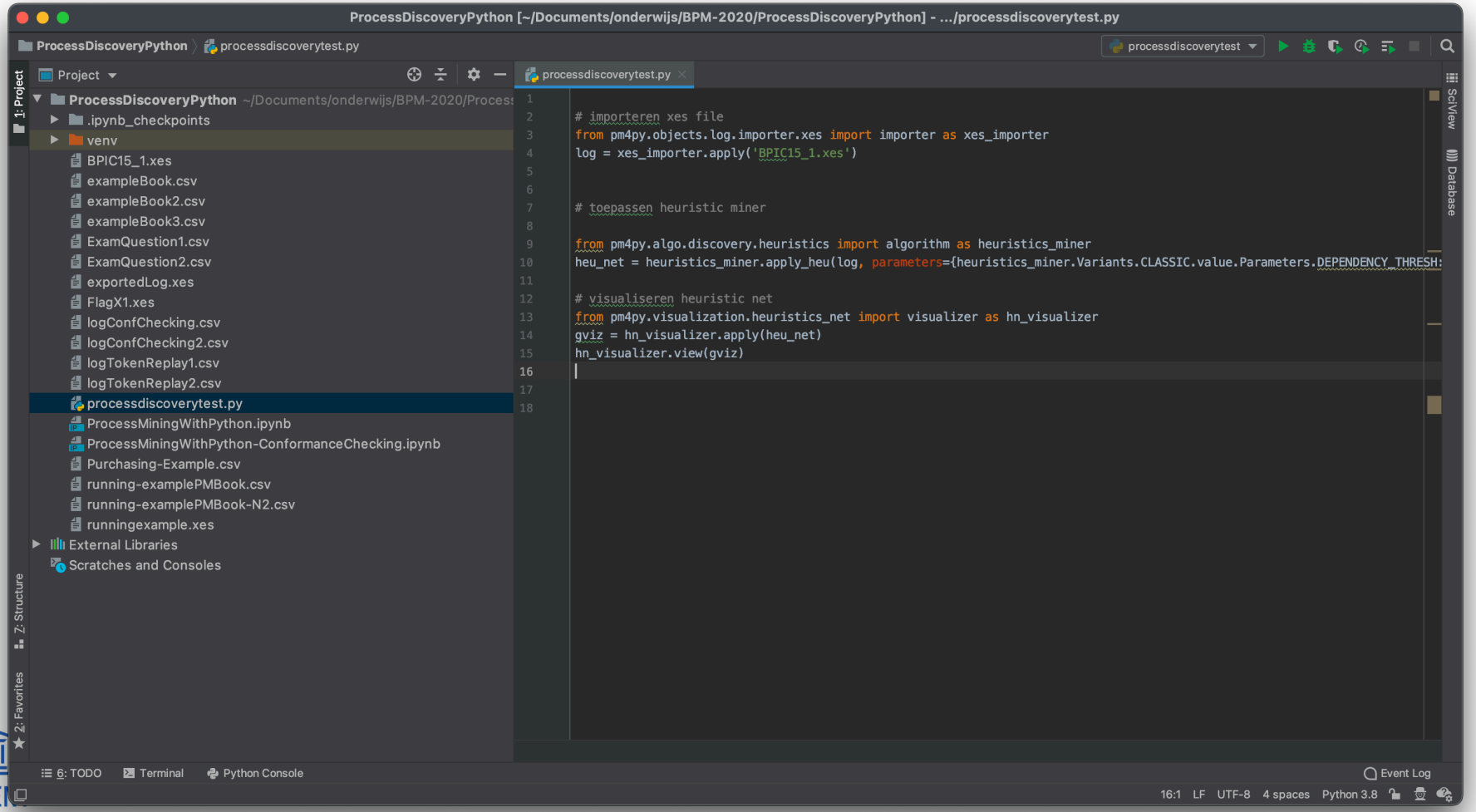
PYTHON EXAMPLE USING PYCHARM



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JUPYTER NOTEBOOKS

- Free, open-source, interactive web tool
- Computational notebook
- Combines in one document
  - Software code
  - Computational output
  - Explanatory tekst
  - Multimedia resources
- Support different languages: JUlia, PYThon, R
- Vision: Move computer to the data instead of data to the computer

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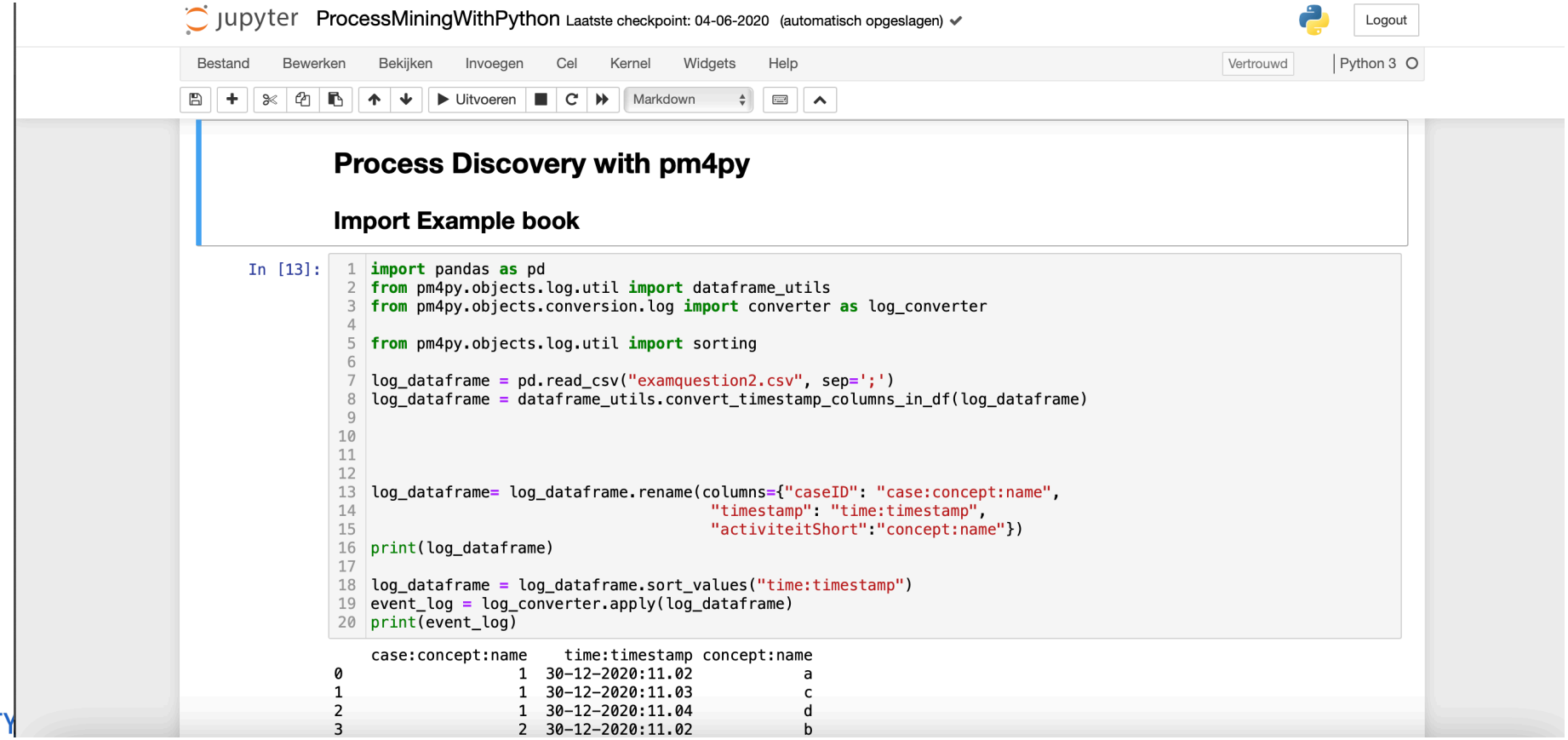
PYTHON EXAMPLE USING JUPYTER NOTEBOOKS



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QUESTIONS ???

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RECIPE FOR PROGRAMMING SUCCESS
BY PETER NORVIG (DIRECTOR OF RESEARCH AT GOOGLE)

- Get interested in programming
- Program. The best kind of learning is learning by doing
- Talk with other programmers, read other programs
- Optional: Go to College
- Work on projects with other programmers
- Work on projects after other programmers
- Learn at least a half dozen programming languages
- Remember that there is a “computer” in computer science
- Get involved in language standardization
- Have the good sense to get off the language standardization effort as quickly as possible.

NEXT STEPS

- Version control using git/github
- Machine learning
- Advanced visualisations

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