

# DATA SCIENCE FUNDAMENTALS

## WEEK 1, LESSON 1

Hay Kranen  
Monday September 24th 2018



# TODAY'S PROGRAMME

8.30	-	9.15	Introduction
9.15	-	9.30	Break
9.30	-	10.00	About the course
10.00	-	10.30	Let's start programming
10.30	-	11.00	Math, print(), variables
11.00	-	11.15	Quiz
11.15	-	11.45	Types, input()
11.45	-	12.00	Quiz
12.00	-	12.15	Assignment

JAY KRANEN

HOW I GOT INTO CODING



\*\*\*\*\* COMMODORE 64 BASIC V2 \*\*\*\*\*  
64K RAM SYSTEM 38911 BASIC BYTES FREE  
READY.





File Edit View Search Run Debug Options

Help

GORILLA.BAS

## Q B a s i c   G o r i l l a s

Copyright (C) Microsoft Corporation 1990

```
' Your mission is to hit your opponent with the exploding banana  
' by varying the angle and power of your throw, taking into account  
' wind speed, gravity, and the city skyline.  
  
' Speed of this game is determined by the constant SPEEDCONST. If the  
' program is too slow or too fast adjust the "CONST SPEEDCONST = 500" line  
' below. The larger the number the faster the game will go.  
  
' To run this game, press Shift+F5.  
  
' To exit QBasic, press Alt, F, X.  
  
' To get help on a BASIC keyword, move the cursor to the keyword and press  
' F1 or click the right mouse button.
```

Immediate

<Shift+F1=Help> <F6=Window> <F2=Subs> <F5=Run> <F8=Step>

N 00001:001



Bestand Bewerken Beeld Zoeken Uitvoeren Debug Opties Help

KITT98.BAS

```
' Operation K.I.T.T.  
' version 2.0 ('98)  
' Programmed by Husky and Kermit  
' ***** nieuw in deze versie *****  
' nu met SUB,dus overzichtelijker  
' ook bijdrage van Mister Jonas  
' GEWELDIGE nieuw manier van aantal tekens in zin!  
' TSJAKKA karakter werkt eindelijk goed,  
' enige probleem is dat er alleen nog karakter is  
' 28-7-97,kleine bijdrage...  
' 29-7-97,SUB 'auto' geprogrammeerd!  
' 29-7-97,KITT geheel opnieuw geprogrammeerd en upgegraded!!!!!!  
' 1-9-97,Wat extra dingen enzo  
' 20-9-97, 'leer' mode werkt nu! (geloof ik :)  
' 25(?)-9-97, Leer mode werkt nu echt!  
' /-\ op 25-7-97 deed ie 't niet echt,maar nu wel dus ja....  
' |  
' 7-10-97 Jonas Says: Leermode doet het nog steeds niet!
```

Direct

<Shift+F1=Help> <F6=Venster> <F2=Sub's> <F5=Uitvoeren> <F8=Stap>



bykr.org

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*For more artwork*

**DutchArt**  
all art is abstract

**John Kranen**  
**Baer Hornix** 

*To receive a free photocopy  
of a painting click [here](#)*

Each artist (from the primitive through Rembrandt and van Gogh until now) abstracts his/her theme and creates in that way a new reality. This process of [abstraction](#) is a unique and essential part of art. The distinction that one makes in visual art is that between [figurative](#) and [non-figurative](#) art. The tools used by artists in this abstraction-process have always been the same [throughout the centuries](#): originality, individualism, knowledge, imagination, integrity, creativity, inspiration, etc. Click [here](#) to continue

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van gogh, rembrandt, musea in art, a  
musea, virtual musea, magritte, rene  
paintings, drawings, art, van gogh,  
drawings, vg, entertainment, musea,  
rembrandt, modern art, abstract art,  
virtual musea, magritte, rene magritte,  
abstract art, figurative art, non-figurative  
art, fine, known, DirectArt

**DirectArt**

to receive a free photocopy  
of a painting, click [here](#)

---

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?



abstract, virtual gallery, virtual, gallery, paintings, drawings, art, van gogh, rembrandt, modern art, abstract art, figurative art, non-figurative art, figurative, non-figurative, art, modern art, abstract, abstract paintings, abstract drawings, vg, entertainment, musea, virtual musea, magritte, rene magritte, pipe, kranen, hornix, art, art, abstract art, figurative art, gallery, abstract, art, modern art, abstract art, abstract, virtual gallery, virtual, gallery, paintings, drawings, art, van gogh, rembrandt, modern art, abstract art, figurative art, non-figurative art, figurative, non-figurative, art, modern art, abstract, abstract paintings, abstract drawings, abstract, virtual gallery, virtual, gallery, paintings, drawings, art, van gogh, rembrandt, modern art, abstract art, figurative art, non-figurative art, figurative, non-figurative, art, modern art, abstract, abstract paintings, abstract drawings, vg, entertainment, musea, virtual musea, magritte, rene magritte, pipe, kranen, hornix, art, art, abstract art, abstract, virtual gallery, virtual, gallery, paintings, drawings, art, van gogh, rembrandt, modern art, abstract art, figurative art, non-figurative art, figurative, non-figurative, art, modern art, abstract, abstract paintings, abstract drawings, vg, entertainment, musea, virtual musea, magritte, rene magritte, pipe, kranen, hornix, art, art, abstract art,

*avans*



de Volkskrant

vpro

KB

nationaal  
archief



Hackastory



3voor12.vpro.nl

zoek

home      nieuws      festivals  
luisterpaal      video      albums  
radio      dj sets      lokaal

vpro 3voor12 npo

home / luisterpaal / albums

Maak jouw afspeellijst met de play- en plusknoppen die je in de site ziet.

Met de play-knop speel je een audio- of video- fragment direct af

Met de plus-knop plaats je iets onderin je tijdelijke afspeellijst

Hoe werkt dit?

Bekijk deze video.

Escondido  
Walking With A Stranger  
Kill Canyon  
Duo, Jessica Maros, Tyler James, Nashville, In 1 dag opgenomen,

DJ Sandeman  
Song16  
Diversen  
Jaarmix, Diverse artiesten, Song16, 16 december, TivoliVredenburg, Artwork door Studio Pino

Tamara Woestenburg  
The Colony  
Tamara Woestenburg  
Singer-songwriter, Rotterdam, Debuut, Harry Merry

Duke Hugh Canvas  
Rhythm Section  
Jazz, Broken beats, House, Soul, Groningen

Off The Cross  
Divided Kingdom  
OTC

The Micronaut  
Forms  
Acker

Expanding Universe  
Footloose  
Next Phase

Little Steve and the Big Beat  
Another Man

feedback



nl.wikipedia.org

Husky Overleg Kladblok Voorkeuren Beta Volglijst Bijdragen Afmelden

Artikel Overleg Lezen Bewerken Brontekst bewerken Geschiedenis Meer ▾ Doorzoek Wikipedia

# Hogeschool Utrecht

De Hogeschool van Utrecht (HvU) ontstond in 1988 door een fusie van enkele hogescholen in de stad en provincie Utrecht. Per 1 september 2005 fuseerde de HvU met de Driebergs Hogeschool De Horst. Tegelijkertijd wijzigde de Hogeschool van Utrecht haar naam in Hogeschool Utrecht (HU).

**Inhoud [verbergen]**

- 1 Medewerkers
- 2 Studenten
- 3 Instituten en Kenniscentra
- 4 Internationaal
- 5 Locaties
- 6 College van bestuur
- 7 Externe link

## Medewerkers [ bewerken | brontekst bewerken ]

Eind 2016 waren 3.397 medewerkers in dienst. Hiervan waren 2316 medewerkers onderwijsend/onderzoekend en 1097 medewerkers ondersteunend personeel. Van het onderwijsend personeel had dat jaar 88% een mastertitel en was 11% gepromoveerd. Eind 2016 werkten er 46 lectoren aan praktijkgericht onderzoek. In dat jaar waren 446 docenten en andere onderzoekers betrokken bij het praktijkgericht onderzoek, terwijl 108 medewerkers promotieonderzoek verrichten.

## Studenten [ bewerken | brontekst bewerken ]

Hogeschool Utrecht (HU University of Applied Sciences Utrecht) is een kennisorganisatie met 27.785 voltijd bachelorstudenten, 3.739 deeltijd bachelorstudenten en 3.273 masterstudenten (peildatum: 31 december 2016).

**Hogeschool Utrecht**

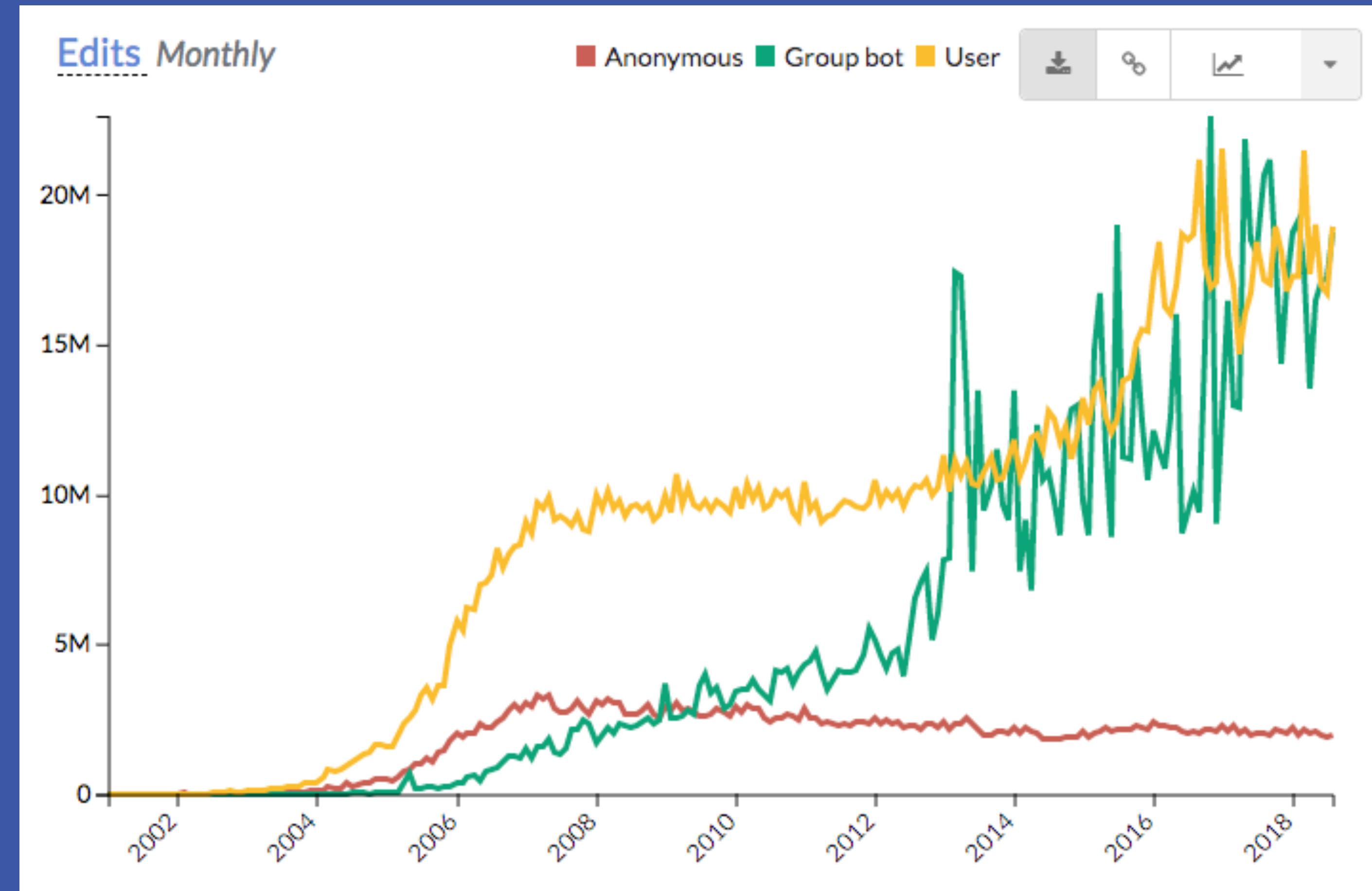


het gebouw op de Padualaan 97 (Utrecht Science Park)

**Algemeen**

Afkorting	HU
Locatie	Utrecht en Amersfoort, Nederland
Opricht	1988
Type	Hogeschool
Voorzitter raad van bestuur	Jan Bogerd MBA
Studenten	34.941 peildatum 31 december 2016
Website	<a href="http://www.hu.nl/">http://www.hu.nl/</a>

Portaal  Onderwijs



**Over 3.5 billion edits since 2001**  
**Around 50% is done by bots**

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# Category:Nederlandsche vogelen van Nozeman en Sepp

From Wikimedia Commons, the free media repository

Images of Birds of the Netherlands from 1770-1829. For background info see <http://www.kb.nl/themas/boekkunst-en-geillustreerde-boeken/nederlandsche-vogelen-van-nozeman-en-sepp> (in Dutch)

- Usage of these images on Wikimedia websites

## Pages in category "Nederlandsche vogelen van Nozeman en Sepp"

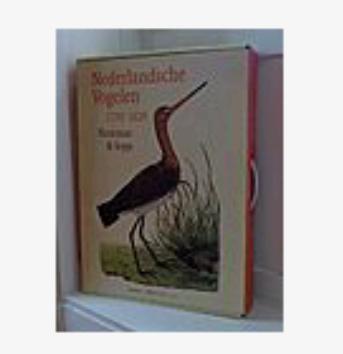
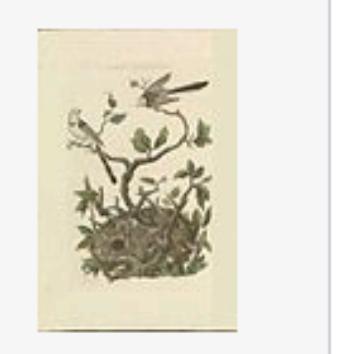
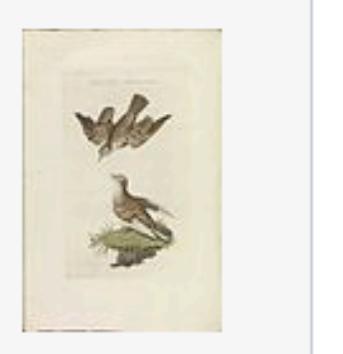
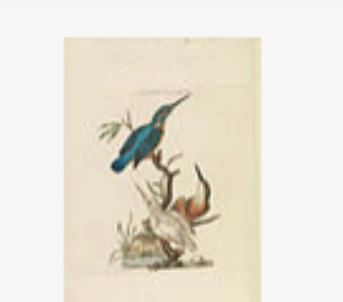
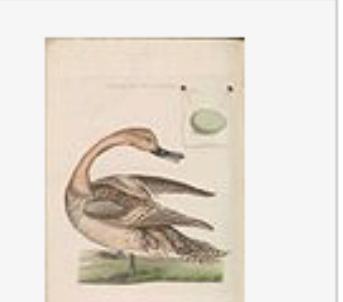
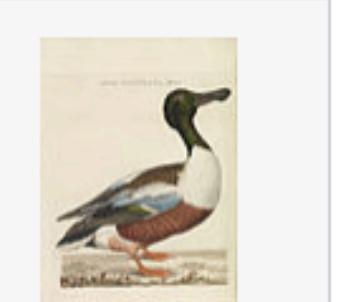
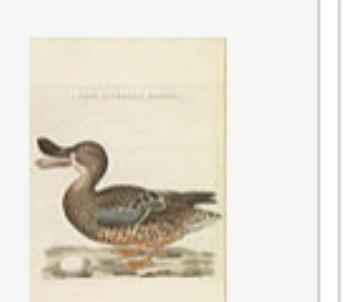
The following 6 pages are in this category, out of 6 total.

- Nederlandsche vogelen
- Nederlandsche vogelen/Vol. 1
- Nederlandsche vogelen/Vol. 2
- Nederlandsche vogelen/Vol. 3
- Nederlandsche vogelen/Vol. 4
- Nederlandsche vogelen/Vol. 5

## Media in category "Nederlandsche vogelen van Nozeman en Sepp"

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(previous page) (next page)

Image	File Name	Description	Dimensions	Size
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Dutch birds by Nozeman and Sepp [Hide]

 18th century Dutch book with images of birds

Instance of book

Publisher Jan Christiaan Sepp

Author Cornelius Nozeman

Illustrator Christiaan Andreas Sepp

Collection Koninklijke Bibliotheek

Inception 2nd millennium (1770, 1829)

Authority control [Hide]

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## Global edit counts (approximate):

<a href="#">nl.wikipedia.org:</a>	9,115
<a href="#">commons.wikimedia.org:</a>	4,949
► <a href="#">www.wikidata.org:</a>	4,038
<a href="#">en.wikipedia.org:</a>	2,174
<a href="#">nl.wikimedia.org:</a>	779
<a href="#">meta.wikimedia.org:</a>	184
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<a href="#">www.mediawiki.org:</a>	45
<a href="#">wikimania2014.wikimedia.org:</a>	35
<a href="#">test.wikipedia.org:</a>	31
<b>Other projects:</b>	110
<b>All projects:</b>	<b>21,508</b>

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<a href="#">commons.wikimedia.org</a> :	18,277
<a href="#">nl.wikipedia.org</a> :	887
<a href="#">test.wikidata.org</a> :	120
<a href="#">login.wikimedia.org</a> :	0
<a href="#">en.wikipedia.org</a> :	0
<a href="#">en.wikisource.org</a> :	0
<a href="#">meta.wikimedia.org</a> :	0
<b>Other projects:</b>	0
<b>All projects:</b>	<b>82,503</b>



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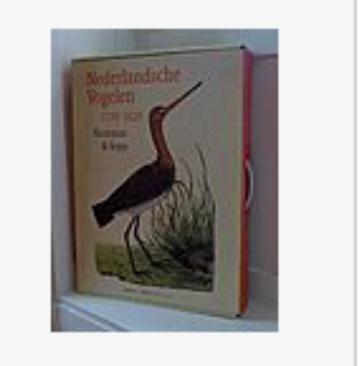
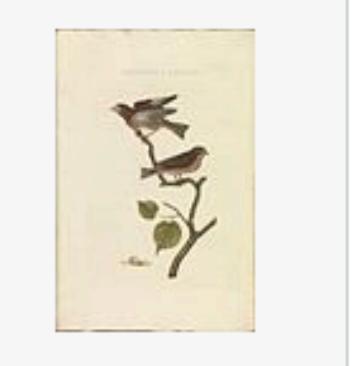
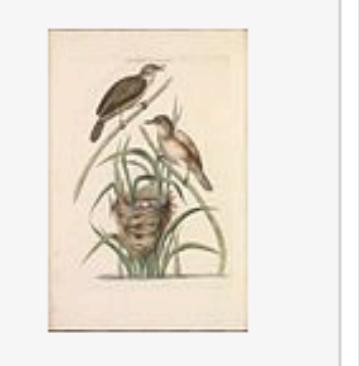
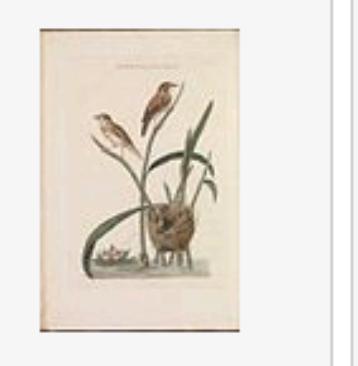
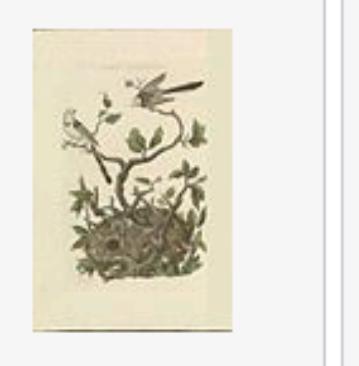
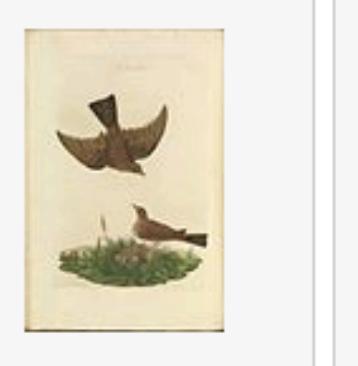
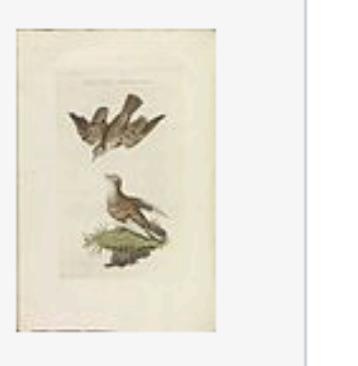
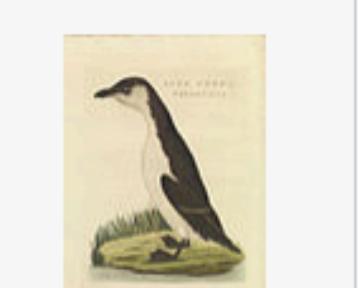
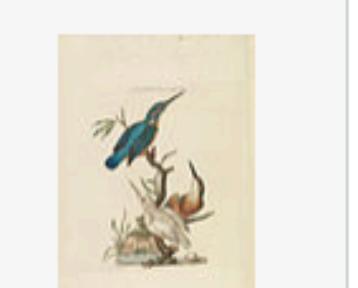
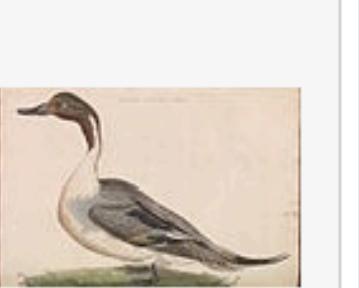
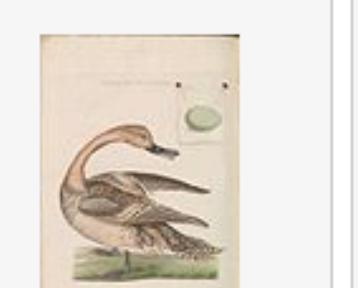
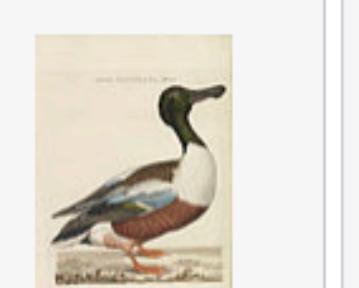
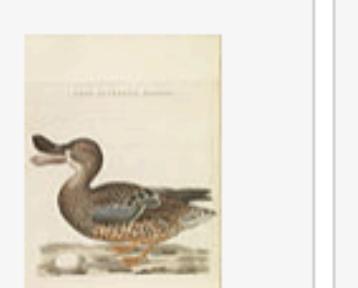
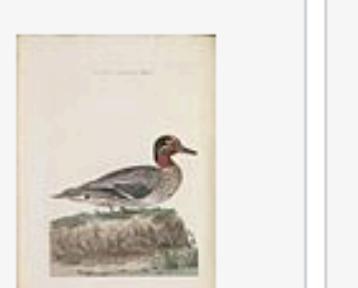
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Dutch birds by Nozeman and Sepp [Hide]

 18th century Dutch book with images of birds

Instance of book

Publisher Jan Christiaan Sepp

Author Cornelius Nozeman

Illustrator Christiaan Andreas Sepp

Collection Koninklijke Bibliotheek

Inception 2nd millennium (1770, 1829)

Authority control [Hide]

Reasonator · Scholia · Statistics

```
◀ ▶ kb-vogels.py ×
1 #!/usr/bin/python
2 # -*- coding: utf-8 -*-
3 import json, pywikibot, sys, os, glob, unicodecsv as csv
4 from jinja2 import Environment, PackageLoader, FileSystemLoader
5
6 FILENAME = "Nederlandse vogelen (KB) - %s (%s).jpg"
7
8 class UploadRobot:
9     def __init__(self):
10         self.targetSite = pywikibot.Site('commons', 'commons')
11         self.targetSite.forceLogin()
12         self.PATH = os.path.realpath(
13             os.path.join(
14                 os.getcwd(), os.path.dirname(__file__))
15             )
16         )
17
18     def get_template(self):
19         env = Environment(
20             block_start_string='<%',
21             block_end_string='%>',
22             variable_start_string='<=%',
23             variable_end_string='%>',
24             trim_blocks = True,
25             lstrip_blocks = True
26         )
27
28         tmpl = open(self.PATH + '/kb-vogels/template.html').read()
29
30         return env.from_string(tmpl)
31
32     def upload(self, data):
33         pagename = FILENAME % (data["latin_name_clean"], data["id"])
34         wikitext = self.template.render(data).strip()
35         filename = self.PATH + "/kb-vogels/img/" + data["id"] + ".jpg"
36
37         if data["id"] == "016f":
38             print wikitext
39             sys.exit()
40         else:
41             return
42
43         site = self.targetSite
44         imagepage = pywikibot.ImagePage(site, pagename) # normalizes filename
45         imagepage.text = wikitext
46
47         pywikibot.output(u'(%s) Uploading file %s to %s via API....' % (data["plate"], pagename, site))
48
```

ANOTHER  
EXAMPLE



marktplaats.nl

Marktplaats Help en info Veilig handelen Berichten Meldingen Inloggen Plaats advertentie

ps4 Spelcomputers | Sony PlayStation 4 Postcode Alle afstanden... Zoek

**Controllers**

- Zonder controller (12)
- Met 1 controller (112)
- Met 2 controllers (38)
- Met 3 controllers of meer (6)

**Levering**

- Ophalen (73)
- Verzenden (1)
- Ophalen of Verzenden (72)

**Eigenschappen**

- Met games (115)

**Aangeboden sinds**

- Vandaag (28)
- Gisteren (49)
- Een week (119)
- Altijd (204)



**Spelcomputers en Games** Spelcomputers | Sony PlayStation 4 Conditie: Zo goed als nieuw Verwijder filters

**Ps4 slim 500gb, met controller**  
Play station 4 slim met 1 controller en hdmi kabel. Ik verkoop deze ps4 omdat ik er geen tijd meer voor heb.

€ 225,00 ineke  
Vandaag Oldebroek, GE



Zo goed als nieuw

**PS4 + Controller + 3 Games + headset**  
Tijd geleden een ps4 aangeschaft maar zit toch meer op lol (pc games) dan ps4. Vandaar dat het wordt verkocht met 3 spellen, orginele ...

€ 350,00 Ischa  
Vandaag Almere, FL



Zo goed als nieuw Ophalen

**PS4 Slim 1TB Limited Edition Gran Turismo+2Controller zgan**  
Te koop z.g.a.n ps4 slim 1tb limited edition gran turismo in doos. 2 Limited edition controller 12 spellen gran turismo sport day one ...

€ 450,00 M.B  
Vandaag Arcen, LI



Zo goed als nieuw

**PS4 PRO Star Wars BFII edition**  
Hierbij verkoop ik mijn (bijna) niet gebruikte playstation 4 star wars editie (1tb, en custom look). De bundel bevat de playstation ...

€ 400,00 mitchell de wit  
Vandaag Almere, FL



A screenshot of a code editor window titled "parse.py". The window has a dark theme with syntax highlighting. The code is written in Python and uses BeautifulSoup to parse an XML file, calculate statistical measures, and print them to the console.

parse.py

x

```
1 import pandas as pd
2 from sys import argv
3 from bs4 import BeautifulSoup
4
5 if len(argv) != 2:
6     exit("Give filename")
7
8 with open(argv[1]) as f:
9     soup = BeautifulSoup(f.read(), "lxml")
10
11 prices = soup.select(".price span")
12 prices = [p.get_text().strip().replace("€\xa0", "") for p in prices]
13
14 def convert(p):
15     try:
16         price = float(p.replace(".", "").replace(",", "."))
17     except:
18         return None
19     else:
20         return price
21
22 series = pd.Series([convert(p) for p in prices if convert(p)])
23 print(series.describe())
24 print()
25 std = round(series.std())
26 mean = round(series.mean())
27 print(f"{mean - std} - {mean} - {mean + std}")
```

```
[hay@haybook:~/Data/datasets/consoles $ python parse.py ps4.html
count      62.000000
mean      285.297097
std       104.509972
min      22.990000
25%     242.500000
50%     300.000000
75%     350.000000
max     500.000000
dtype: float64
```

180 - 285 - 390

```
hay@haybook:~/Data/datasets/consoles $
```

```
[hay@haybook:~/Data/datasets/consoles $ python parse.py wii.html
count      77.000000
mean       59.935065
std        16.582598
min        20.000000
25%        50.000000
50%        65.000000
75%        75.000000
max        80.000000
dtype: float64
```



43 - 60 - 77

```
hay@haybook:~/Data/datasets/consoles $ █
```

```
[hay@haybook:~/Data/datasets/consoles $ python parse.py starlet.html
count      52.000000
mean       763.442308
std        236.500335
min        59.000000
25%       699.000000
50%       849.500000
75%       900.000000
max       999.000000
dtype: float64
```

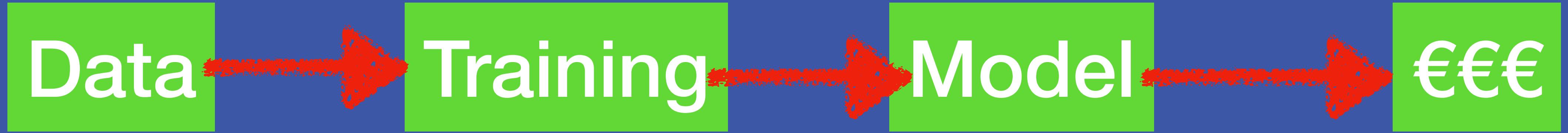
526 - 763 - 1000

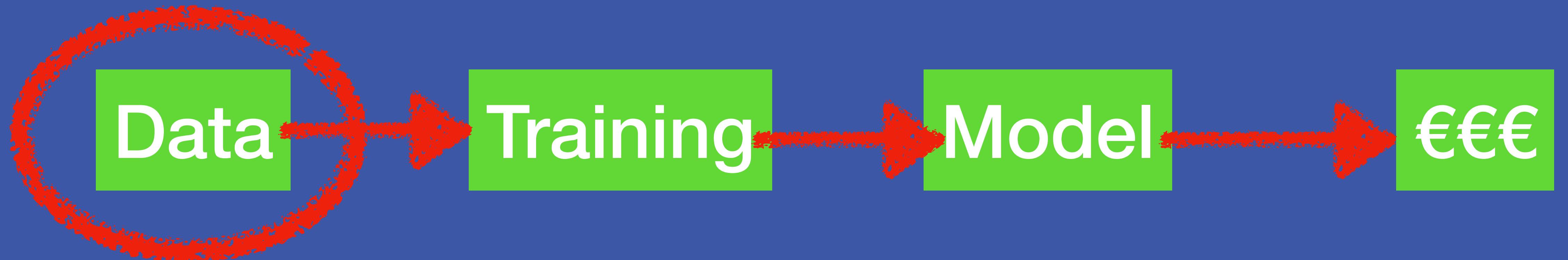
```
hay@haybook:~/Data/datasets/consoles $
```



# Artificial Intelligence







Data

Data

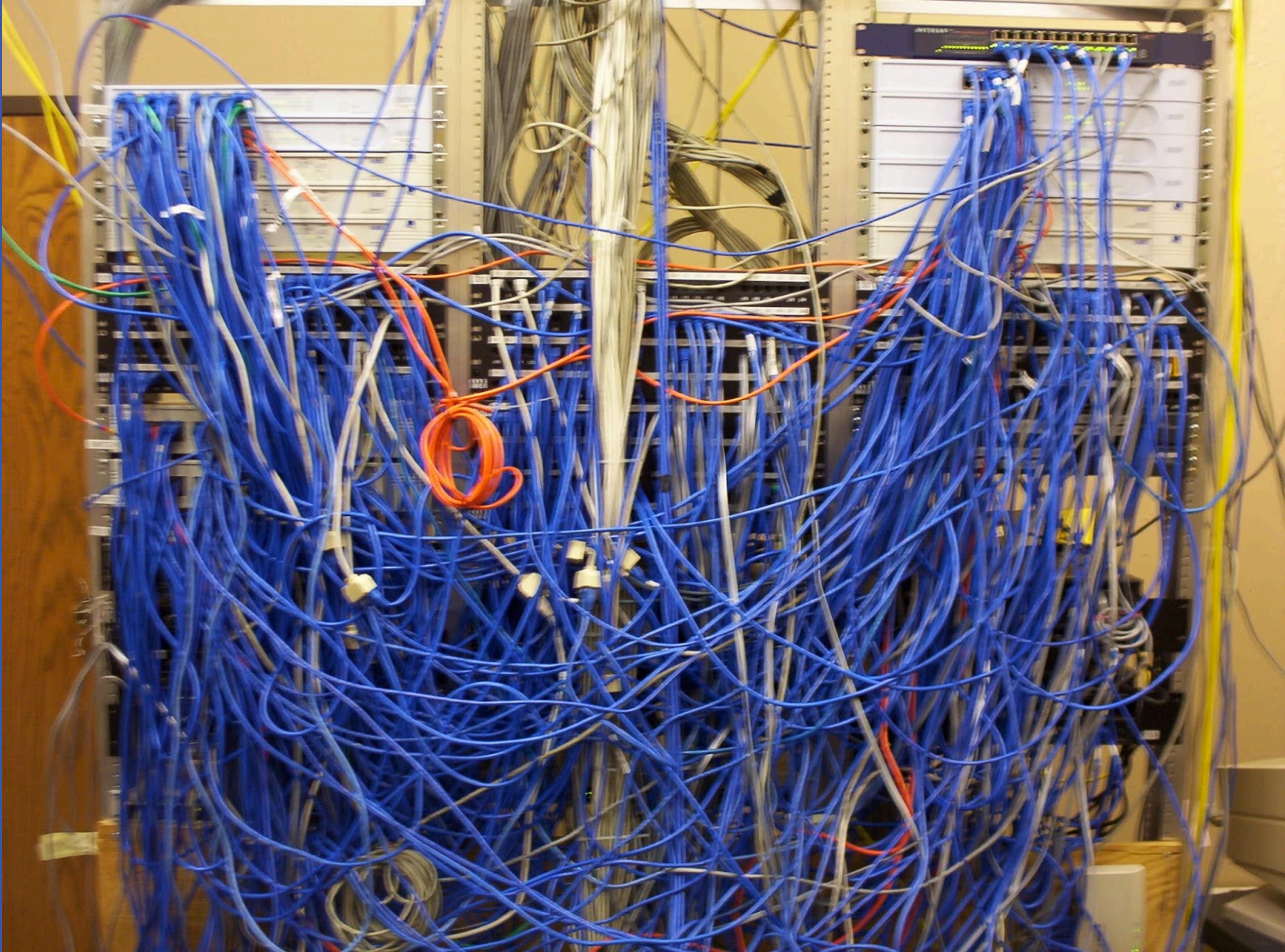
Data

Data

Data

Data







# PROGRAMMING LANGUAGES



[YouTube.com/JoshDarnit](https://www.youtube.com/JoshDarnit)

Instructions  
Not a natural language!  
Detailed recipe  
Frustration

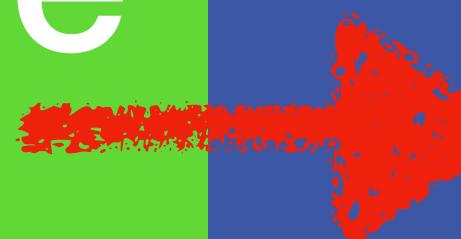
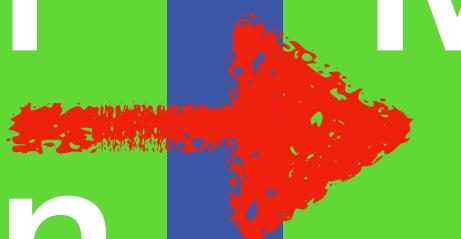
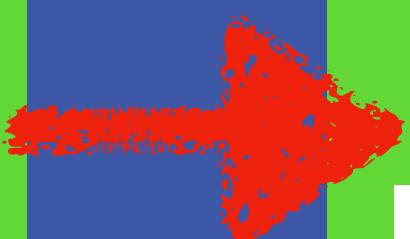
*Patience and determination is the most important skill a programmer should have*

Code

Compilation  
Interpretation

Machine  
code

Execution





Java

C

Python

C++

Visual Basic .NET

C#

PHP

JavaScript

SQL

Objective-C



Ecosystem

Language

Popularity

Documentation

Application

Support

Tools

Image

# Why Python?

Excellent balance

Very popular and widely used (#3 worldwide)

General purpose language

Accessible for beginners (compared to Java or C)

Excellent for data processing

Good tooling



ANOTHER REASON



Dan Stroud / CC-BY-SA (<https://en.wikipedia.org/wiki/File:Guido-portrait-2014-curvves.jpg>)

# Downsides of Python

Documentation tends to be complex

Difficult to create a website (compared to PHP)

Slow

Dynamically typed

Questionable for really big projects

Package and version management is hairy

Python 2 vs 3 confusion

# **Downsides of Python**

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Python 2 vs 3 confusion

3.7.0 Documentation » English 3.7.0 Documentation » modules | index

# Python 3.7.0 documentation

Welcome! This is the documentation for Python 3.7.0.

**Parts of the documentation:**

- What's new in Python 3.7?**  
*or all "What's new" documents since 2.0*
- Tutorial**  
*start here*
- Library Reference**  
*keep this under your pillow*
- Language Reference**  
*describes syntax and language elements*
- Python Setup and Usage**  
*how to use Python on different platforms*
- Python HOWTOs**  
*in-depth documents on specific topics*
- Installing Python Modules**  
*installing from the Python Package Index & other sources*
- Distributing Python Modules**  
*publishing modules for installation by others*
- Extending and Embedding**  
*tutorial for C/C++ programmers*
- Python/C API**  
*reference for C/C++ programmers*
- FAQs**  
*frequently asked questions (with answers!)*

Python » English 3.7.0 Documentation » The Python Standard Library » Numeric and Mathematical Modules »

previous | next | modules | index

Quick search | Go |

## Table Of Contents

- random — Generate pseudo-random numbers
  - Bookkeeping functions
  - Functions for integers
  - Functions for sequences
  - Real-valued distributions
  - Alternative Generator
  - Notes on Reproducibility
  - Examples and Recipes

« Previous topic

[fractions](#) — Rational numbers

Next topic [statistics](#) — Mathematical statistics functions

This Page

[Report a Bug](#)

[Show Source](#)

# random — Generate pseudo-random numbers

[Source code: Lib/random.py](#)

---

This module implements pseudo-random number generators for various distributions.

For integers, there is uniform selection from a range. For sequences, there is uniform selection of a random element, a function to generate a random permutation of a list in-place, and a function for random sampling without replacement.

On the real line, there are functions to compute uniform, normal (Gaussian), lognormal, negative exponential, gamma, and beta distributions. For generating distributions of angles, the von Mises distribution is available.

Almost all module functions depend on the basic function `random()`, which generates a random float uniformly in the semi-open range [0.0, 1.0). Python uses the Mersenne Twister as the core generator. It produces 53-bit precision floats and has a period of  $2^{19937}-1$ . The underlying implementation in C is both fast and threadsafe. The Mersenne Twister is one of the most extensively tested random number generators in existence. However, being completely deterministic, it is not suitable for all purposes, and is completely unsuitable for cryptographic purposes.

The functions supplied by this module are actually bound methods of a hidden instance of the `random.Random` class. You can instantiate your own instances of `Random` to get generators that don't share state.

Class `Random` can also be subclassed if you want to use a different basic generator of your own devising: in that case, override the `random()`, `seed()`, `getstate()`, and `setstate()` methods.

© 2017 Python Software Foundation

The screenshot shows a web browser window displaying the PHP Manual page for the `rand` function. The URL in the address bar is `php.net`. The page has a dark theme with a blue header bar containing links for `php`, `Downloads`, `Documentation` (which is the active tab), `Get Involved`, and `Help`. A search bar is located in the top right corner. The main content area shows the `rand` function documentation, including its synopsis, description, and usage examples. A sidebar on the right lists other `Math Functions`.

**Documentation**

`rand`

(PHP 4, PHP 5, PHP 7)

`rand` — Generate a random integer

**Description**

```
int rand ( void )
```

```
int rand ( int $min , int $max )
```

If called without the optional `min`, `max` arguments `rand()` returns a pseudo-random integer between 0 and `getrandmax()`. If you want a random number between 5 and 15 (inclusive), for example, use `rand(5, 15)`.

**Caution** This function does not generate cryptographically secure values, and should not be used for cryptographic purposes. If you need a cryptographically secure value, consider using `random_int()`, `random_bytes()`, or `openssl_random_pseudo_bytes()` instead.

**Math Functions**

- `abs`
- `acos`
- `acosh`
- `asin`
- `asinh`
- `atan2`
- `atan`
- `atanh`
- `base_convert`
- `bindec`
- `ceil`
- `cos`
- `cosh`
- `decbin`
- `dechex`
- `decotc`
- `deg2rad`
- `exp`
- `expm1`
- `floor`
- `fmod`
- `getrandmax`
- `hexdec`
- `hypot`

The Google logo is displayed in its signature multi-colored font. The letters are bold and rounded. The colors used are blue for 'G', red for 'o', yellow for 'o', blue for 'g', red for 'l', and green for 'e'. The logo is centered on a white rectangular background, which is itself centered on a dark blue background.

Google





python scrape site stackoverflow



# Web scraping with Python

I'd like to grab daily sunrise/sunset times from a web site. Is it possible to scrape web content with Python? what are the modules used? Is there any tutorial available?

172

python screen-scraping

share edit close flag

185

## 12 Answers

active

oldest

votes

Use urllib2 in combination with the brilliant [BeautifulSoup](#) library:

181

```
import urllib2
from BeautifulSoup import BeautifulSoup
# or if you're using BeautifulSoup4:
# from bs4 import BeautifulSoup

soup = BeautifulSoup(urllib2.urlopen('http://example.com').read()

for row in soup('table', {'class': 'spad'})[0].tbody('tr'):
    tds = row('td')
    print tds[0].string, tds[1].string
    # will print date and sunrise
```

share improve this answer

edited Jan 22 '16 at 8:51

THE COURSE

*Write your own social network*

Week	Assignment	Subjects
1	Registration	Getting and processing user data
2	Storing	Reading and writing data from files
3	API	Getting data from web API's
4	Dataset	Advanced data processing and visualisations
5	Scraping	Scraping data from semistructured websites

## *Your tools*

The book

Github: examples, data and slides

learn.hu.nl

Slack

Anaconda Jupyter Lab

Jupyter Notebook

Terminal

O'REILLY®

2nd Edition

# Python for Data Analysis

DATA WRANGLING WITH PANDAS,  
NUMPY, AND IPYTHON



powered by



Wes McKinney

github.com

Features Business Explore Marketplace Pricing Search Sign in or Sign up

hay / hu-dsf

Code Issues 0 Pull requests 0 Projects 0 Insights Watch 1 Star 1 Fork 0

Branch: master ▾ hu-dsf / notebooks / Create new file Find file History

hay Completely rewrote the examples in week 4 because we're using Reddit ... ... Latest commit efee5a7 7 days ago

..

examples-1.ipynb	Adding exercises for week 4	2 months ago
examples-2.ipynb	Adding exercises for week 4	2 months ago
examples-3.ipynb	Adding exercises for week 4	2 months ago
examples-4.ipynb	Completely rewrote the examples in week 4 because we're using Reddit ...	7 days ago
examples-5.ipynb	Adding examples-5	2 months ago
footballers.csv	Adding first two exercise notebooks	3 months ago
footballers.json	Adding exercises-3	3 months ago
footballers.txt	Adding first two exercise notebooks	3 months ago
politicians.csv	Adding first two exercise notebooks	3 months ago
rooms-utrecht.html	Adding examples-5	2 months ago
svb-names-2014.csv	Adding exercises for week 4	2 months ago
temperatures-average.csv	Adding exercises for week 4	2 months ago

# Data Science Fundamentals

Home ► My courses ► Data Science Fundamentals

[Turn editing on](#)

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- ▶ General information
- ▶ Week 1
- ▶ Week 2
- ▶ Week 3
- ▶ Week 4
- ▶ Week 5

## ADMINISTRATION

- ▼ Course administration
  - [Edit settings](#)
  - [Turn editing on](#)
  - ▶ Users
  - [Filters](#)
  - ▶ Reports
  - [Gradebook setup](#)
  - ▶ Badges

## General information



### Student's manual - READ THIS FIRST

This manual contains all the relevant information for this course. Please read carefully.



### Github repo with examples and exercises

## Master Data-driven Design 2018-2019

### Block A

#### Designing for a Digital Society

<i>Concept</i>	Philosophy of a Digital Society	<i>Integral Assignment A</i>
<i>Tech</i>	Data Science Fundamentals	
<i>Human</i>	New Media Psychology	

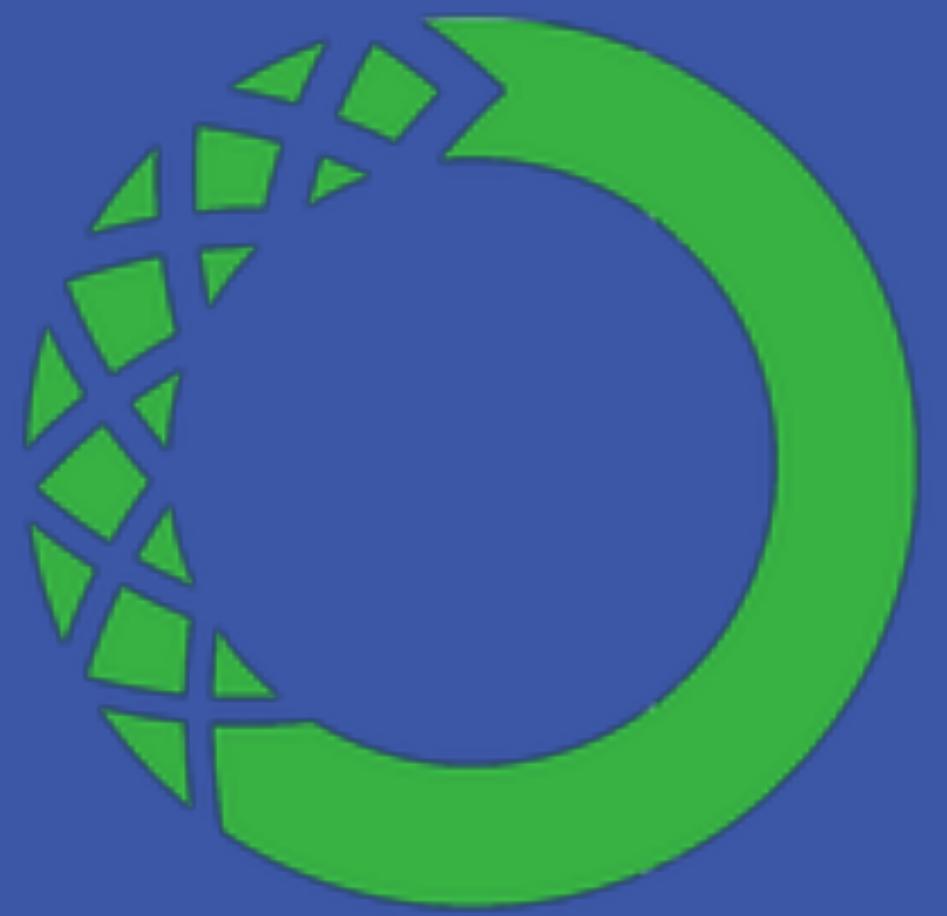
## Week 1



#datasciencefund

hay.kranen@hu.nl

# THE TOOLS



ANACONDA®

Anaconda Navigator

Sign in to Anaconda Cloud

Home

Environments

Learning

Community

Documentation

Developer Blog

Feedback

Twitter

YouTube

Github

Applications on base (root) Channels Refresh

lab jupyterlab 0.32.1 An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture. Launch

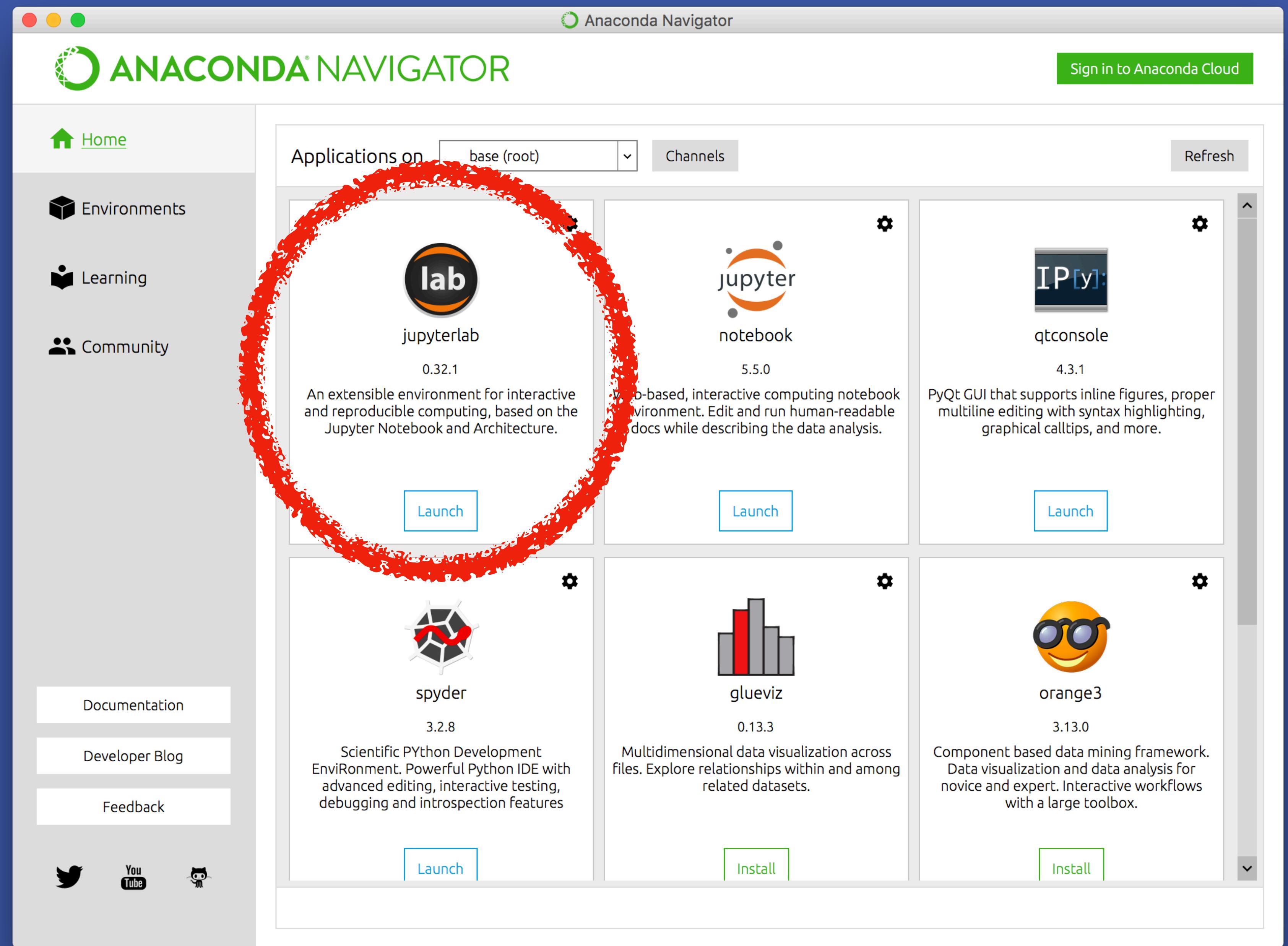
jupyter notebook 5.5.0 Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis. Launch

IP[y]: qtconsole 4.3.1 PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more. Launch

spyder 3.2.8 Scientific PYthon Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features Launch

glueviz 0.13.3 Multidimensional data visualization across files. Explore relationships within and among related datasets. Install

orange3 3.13.0 Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows with a large toolbox. Install



DEMO

BASIC MATH,  
VARIABLES AND  
THE PRINT()  
STATEMENT

# What happens when you run this program?

```
goodbye = "hello"  
hello = "goodbye"  
text = hello + goodbye  
print(text)
```

- a** It prints “hellogoodbye”
- b** It gives an error
- c** It prints “goodbyehello”
- d** It prints “goodbye” and then “hello”

C  
THE INPUT  
FUNCTION AND  
TYPE CONVERSION

Type	Example	Conversion function
Integer	42	<code>int()</code>
Float	3.14	<code>float()</code>
String	"Hello, World"	<code>str()</code>
Boolean	True	<code>bool()</code>

Type	Example	Conversion function
Integer	42	int()
Float	3.14	float()

What happens when you input '19.5' to this program?

```
temperature = input("What is today's temperature?")
temperature_int = int(temperature)
```

- a It prints 19
- b It prints 20
- c It gives an error
- d It prints 19.5

# Build your own MyFitnessPal



The screen shows the 'Diary' section for Tuesday, November 19, 2013. At the top, it shows the daily breakdown: GOAL (1,800), FOOD (1,753), EXERCISE (240), NET (1,513), and REMAINING (287). Below this is a detailed meal log for 'Dinner': Briney Caesar Salad Dressing (514 cal). The diary also includes sections for 'Quinoa Casar Salad' and 'Wine'.

Category	Description	Calories
Food	Briney Caesar Salad Dressing	122
Food	Quinoa Casar Salad	274
Exercise	Wine	Red Table Wine, 5 oz



# Nutritional values for a single Oreo cookie

Calories	50
Fat	2.3g
Carbs	8.3g
Sugar	4.7g



Source: <https://www.fitbit.com/foods/Oreo+Cookie/16421>

**Assign nutritional values to variables**

**Ask user for number of cookies**

**Calculate user values based on number of cookies**

**Print values to the user**

