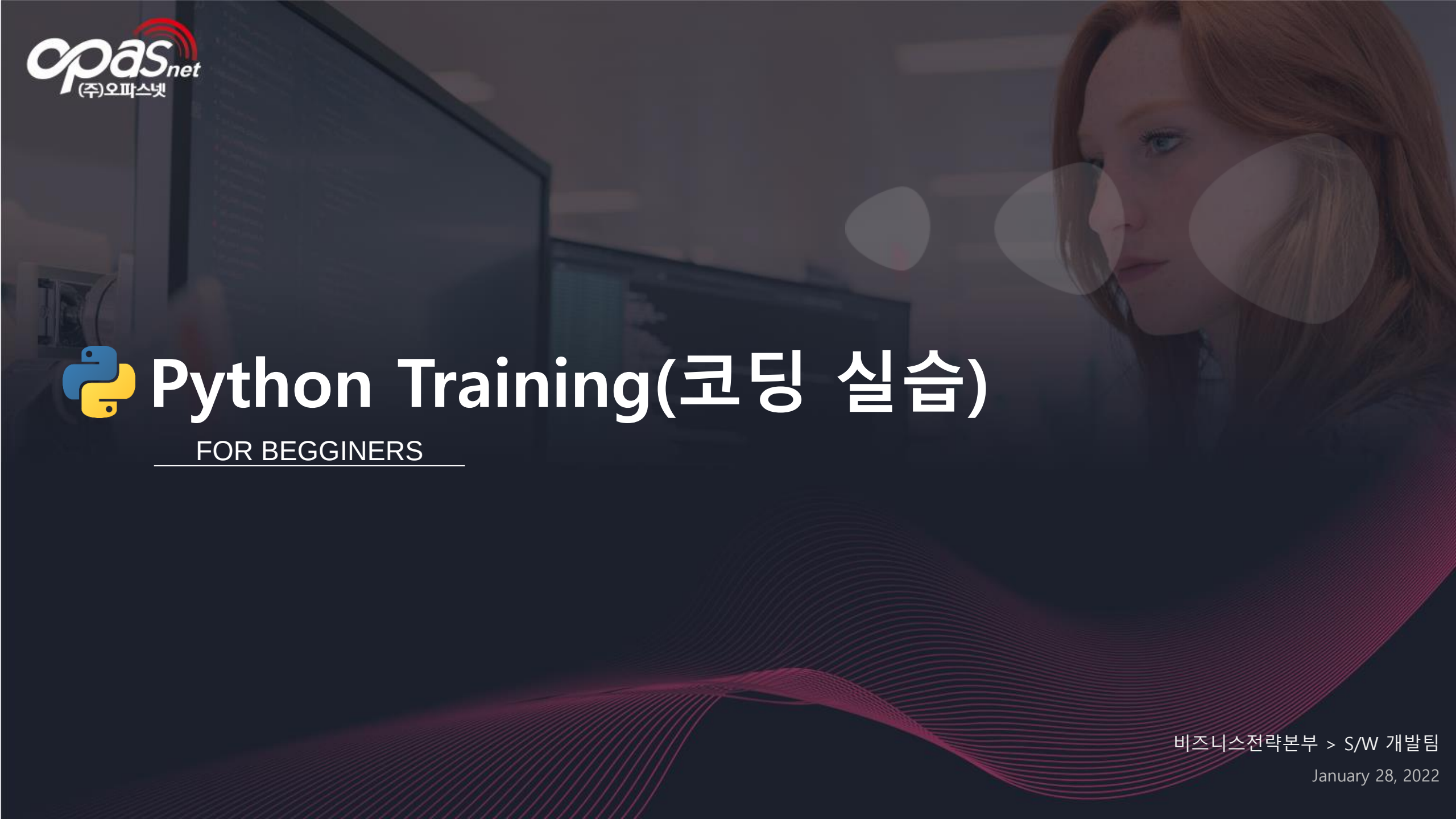


Python Training(코딩 실습)

FOR BEGGINERS

비즈니스전략본부 > S/W 개발팀

January 28, 2022

Contents

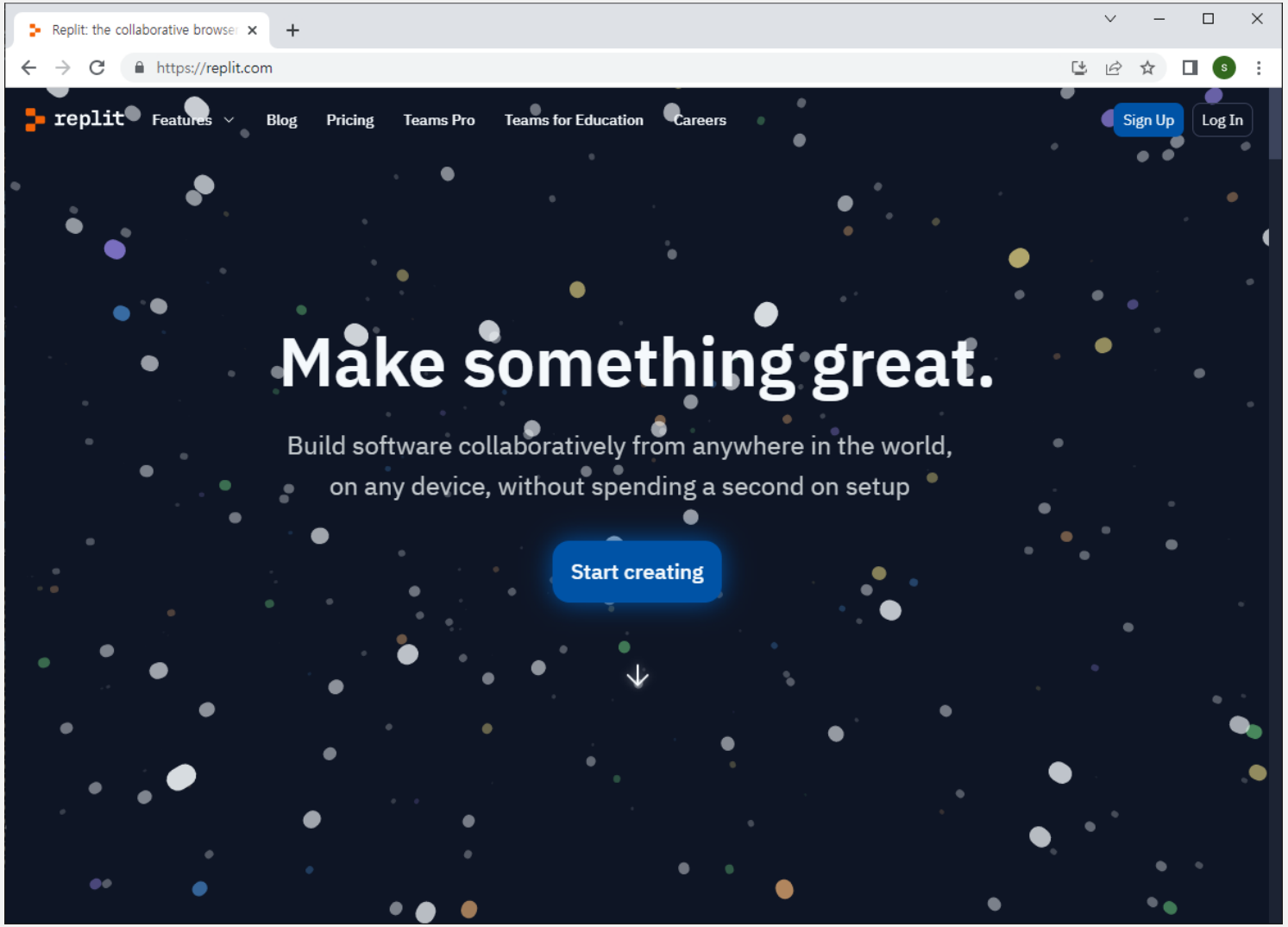
1. replit 가입 및 실행
2. 코드 작성

01
Chapter

Python installation

replit 가입 및 실행

replit

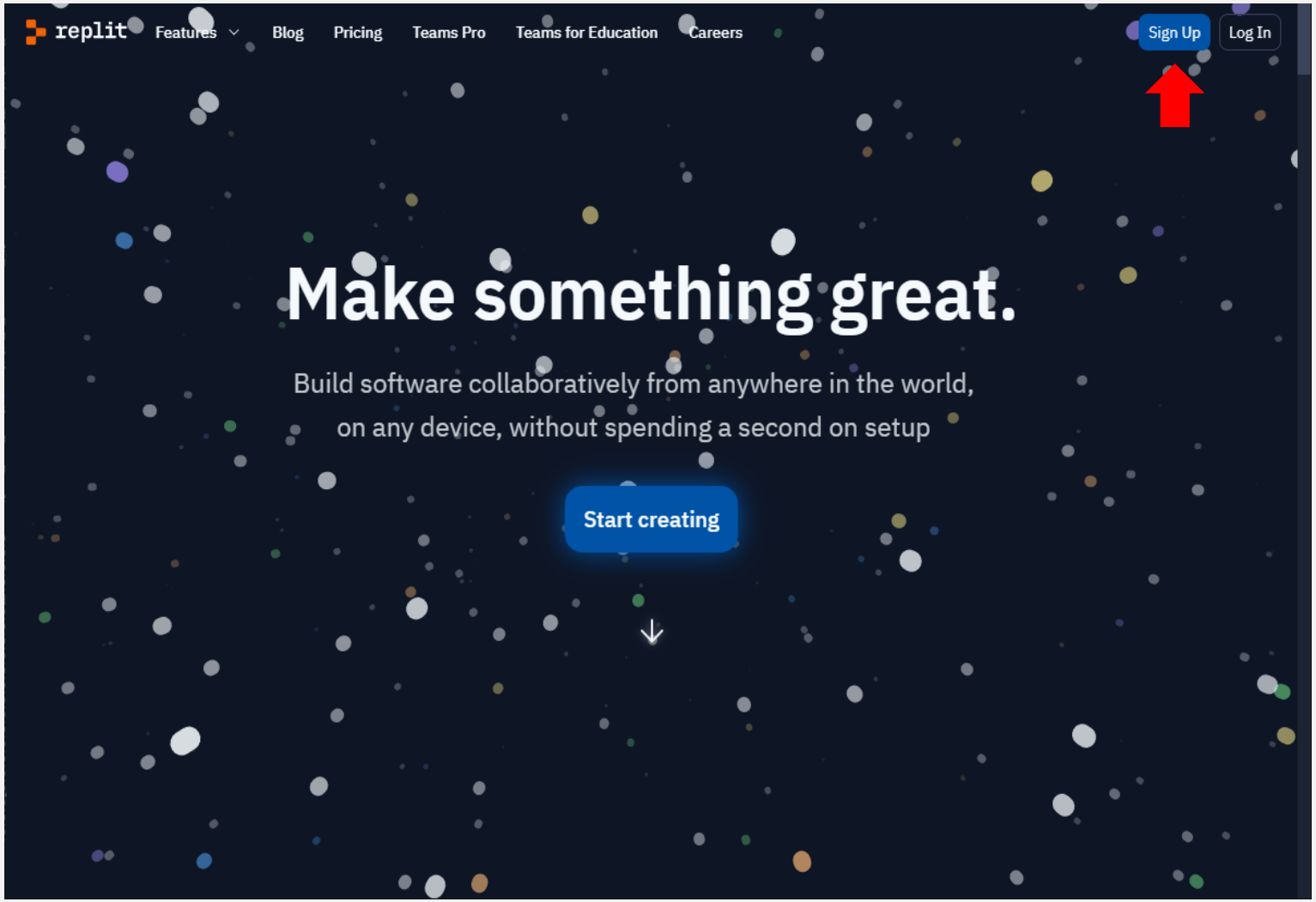


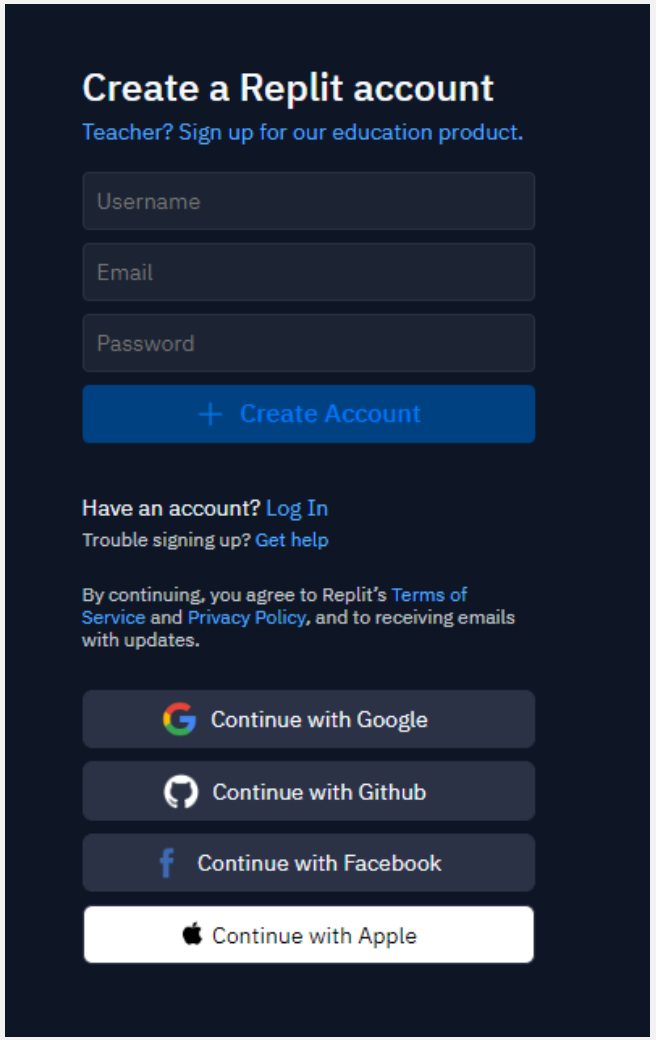
replit

- 클라우드 기반 프로그래밍 환경
- 개발환경 세팅 없이 회원가입만 하면 사용 가능

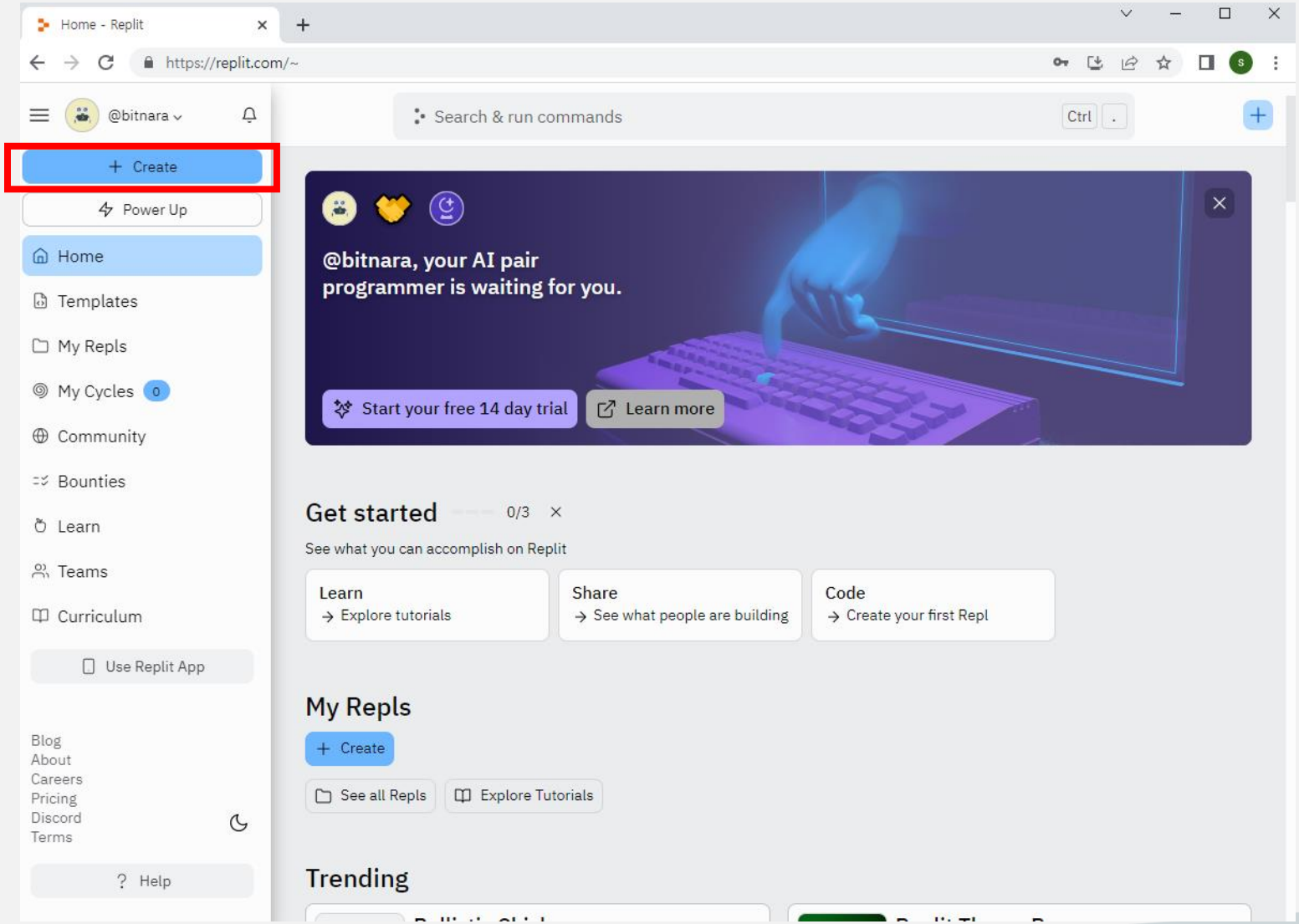
https://replit.com/

replit 회원가입

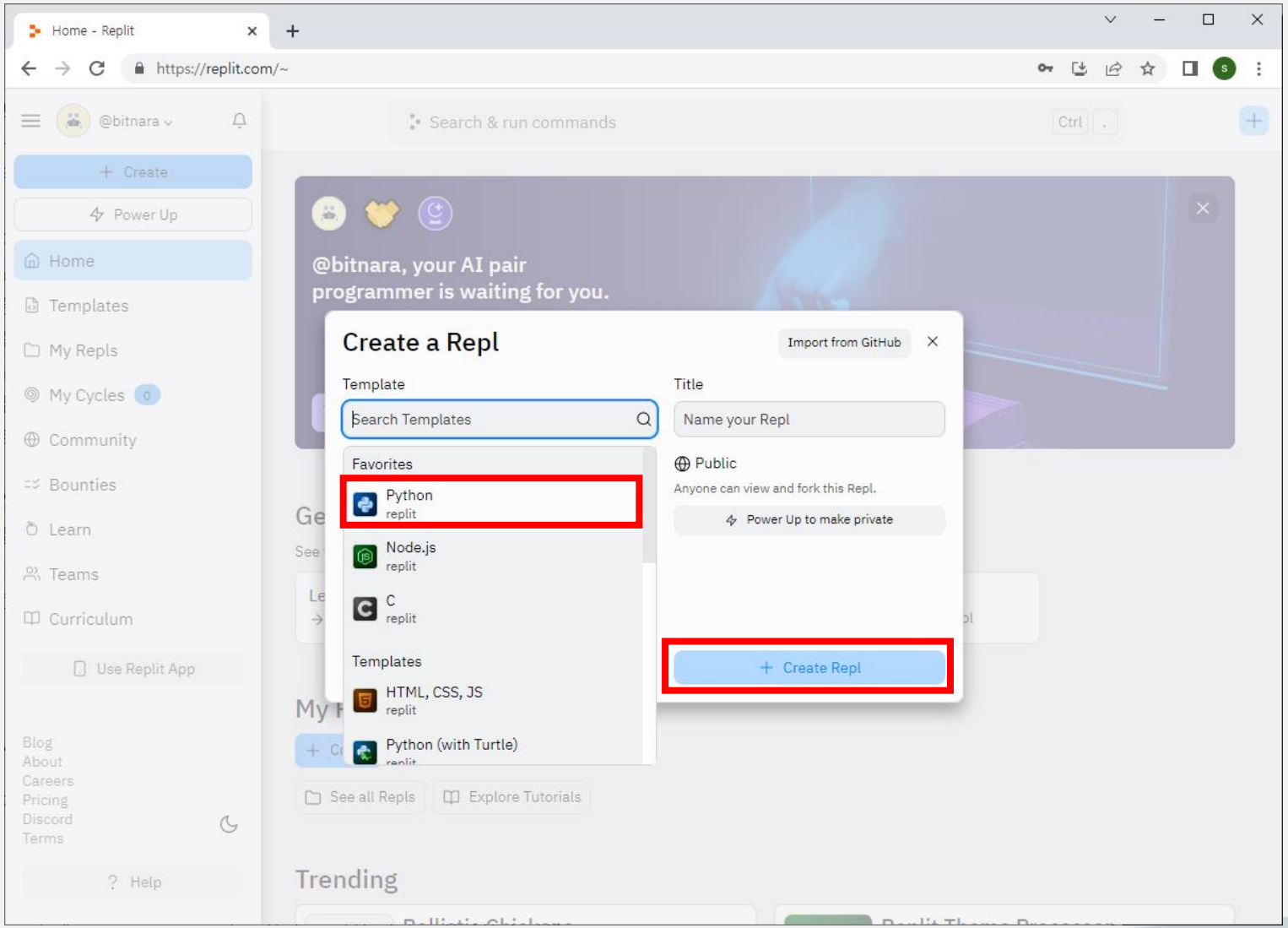

replit
Features
Blog
Pricing
Teams Pro
Teams for Education
Careers
Sign Up
Log In
Make something great.
Build software collaboratively from anywhere in the world,
on any device, without spending a second on setup
Start creating


Create a Replit account
Teacher? Sign up for our education product.
Username
Email
Password
Create Account
Have an account? Log In
Trouble signing up? Get help
By continuing, you agree to Replit's Terms of Service and Privacy Policy, and to receiving emails with updates.
Continue with Google
Continue with Github
Continue with Facebook
Continue with Apple

replit 실행

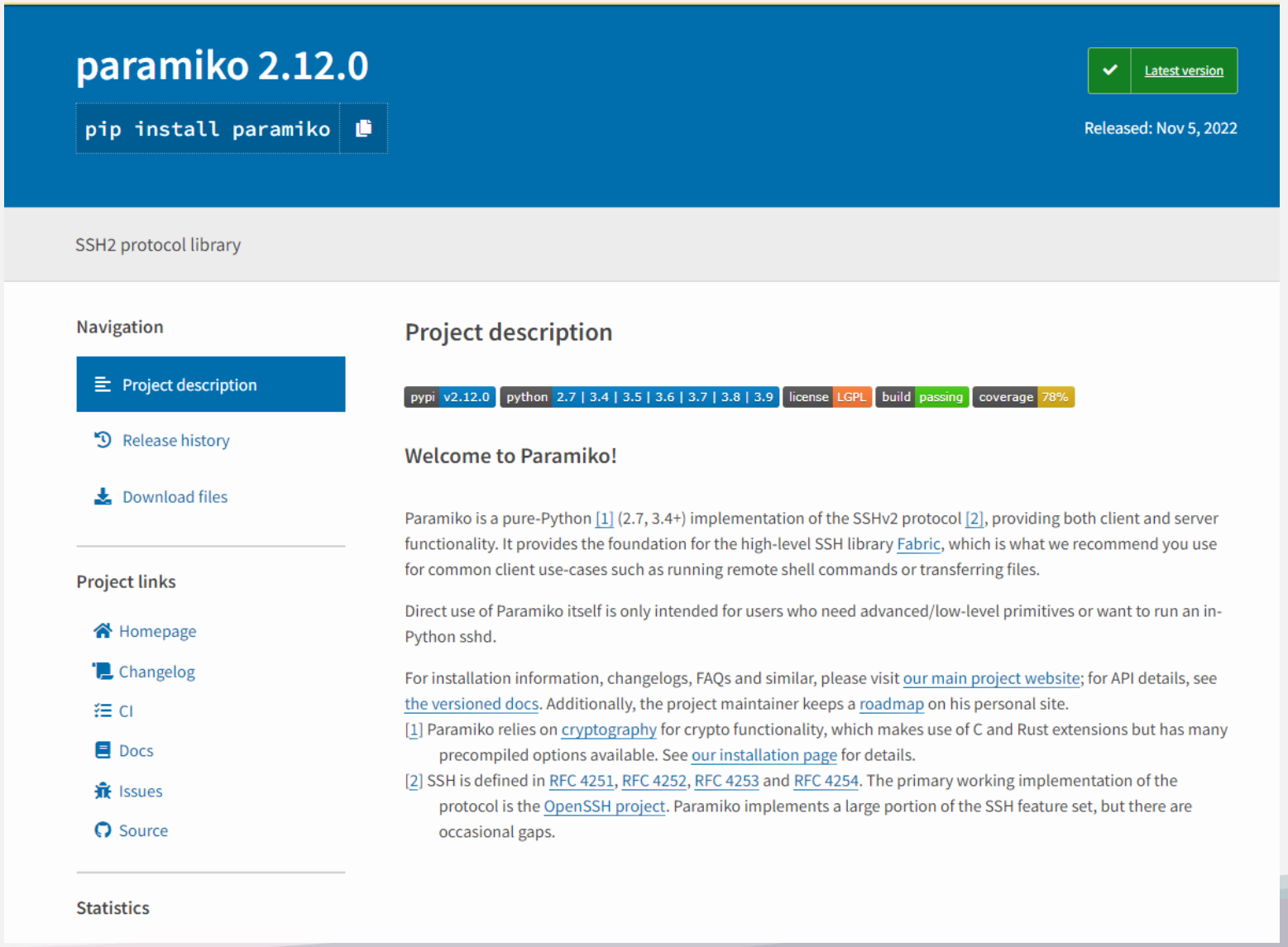

Home - Replit
https://replit.com/~
@bitnara
Search & run commands
Ctrl
Create
Power Up
Home
Templates
My Repls
My Cycles 0
Community
Bounties
Learn
Teams
Curriculum
Use Replit App
Blog
About
Careers
Pricing
Discord
Terms
Help
@bitnara, your AI pair programmer is waiting for you.
Start your free 14 day trial
Learn more
Get started 0/3
See what you can accomplish on Replit
Learn
Explore tutorials
Share
See what people are building
Code
Create your first Repl
My Repls
Create
See all Repls
Explore Tutorials
Trending

replit 실행


Home - Replit
https://replit.com/~
@bitnara
Search & run commands
Ctrl
Create
Power Up
Home
Templates
My Repls
My Cycles
Community
Bounties
Learn
Teams
Curriculum
Use Replit App
Blog
About
Careers
Pricing
Discord
Terms
Help
@bitnara, your AI pair programmer is waiting for you.
Create a Repl
Import from GitHub
Template
Search Templates
Favorites
Python
replit
Node.js
replit
C
replit
Templates
HTML, CSS, JS
replit
Python (with Turtle)
Title
Name your Repl
Public
Anyone can view and fork this Repl.
Power Up to make private
Create Repl
See all Repls
Explore Tutorials
Trending

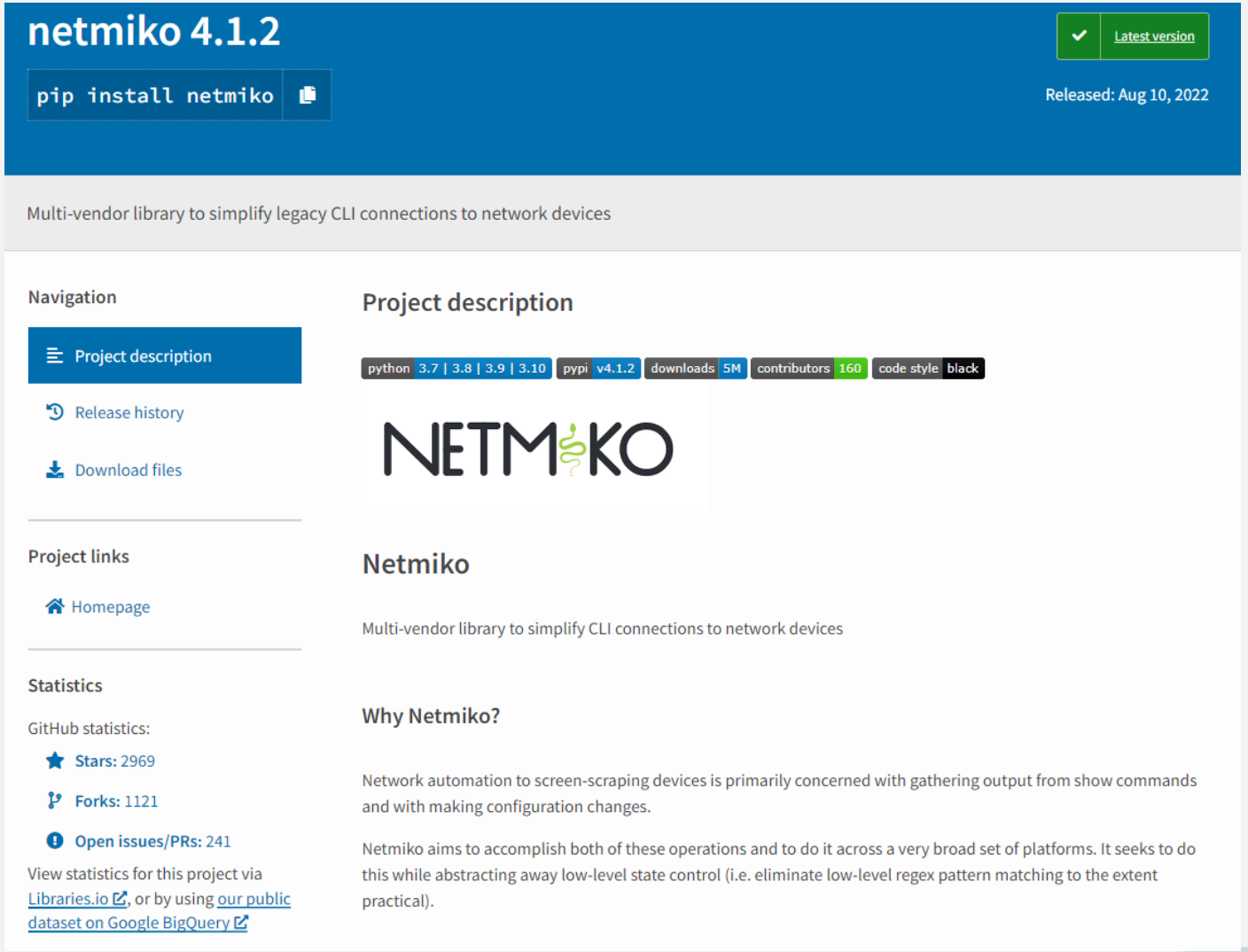
네트워크 장비를 위한 라이브러리

Paramiko



네트워크 장비를 위한 라이브러리

Netmiko



netmiko 4.1.2

pip install netmiko

Latest version

Released: Aug 10, 2022

Multi-vendor library to simplify legacy CLI connections to network devices

Navigation

- Project description
- Release history
- Download files

Project links

- Homepage

Statistics

GitHub statistics:

- Stars: 2969
- Forks: 1121
- Open issues/PRs: 241

View statistics for this project via Libraries.io, or by using our public dataset on Google BigQuery

Project description

python 3.7 | 3.8 | 3.9 | 3.10 pypi v4.1.2 downloads 5M contributors 160 code style black

NETMIKO

Netmiko

Multi-vendor library to simplify CLI connections to network devices

Why Netmiko?

Network automation to screen-scraping devices is primarily concerned with gathering output from show commands and with making configuration changes.

Netmiko aims to accomplish both of these operations and to do it across a very broad set of platforms. It seeks to do this while abstracting away low-level state control (i.e. eliminate low-level regex pattern matching to the extent practical).

네트워크 장비를 위한 라이브러리

scrapli

scrapli 2022.7.30.post1

`pip install scrapli`

Latest version

Released: Sep 4, 2022

Fast, flexible, sync/async, Python 3.7+ screen scraping client specifically for network devices

Navigation

- Project description
- Release history
- Download files

Project links

- Homepage
- Changelog
- Docs

Statistics

GitHub statistics:

- Stars: 462
- Forks: 45
- Open issues/PRs: 1

Project description

python 3.7 | 3.8 | 3.9 | 3.10 pypi package 2022.7.30.post1 Weekly Build passing codecov 91% code style black License MIT

scrapli

Documentation: https://carlmontanari.github.io/scrapli

Source Code: https://github.com/carlmontanari/scrapli

Examples: https://github.com/carlmontanari/scrapli/tree/master/examples

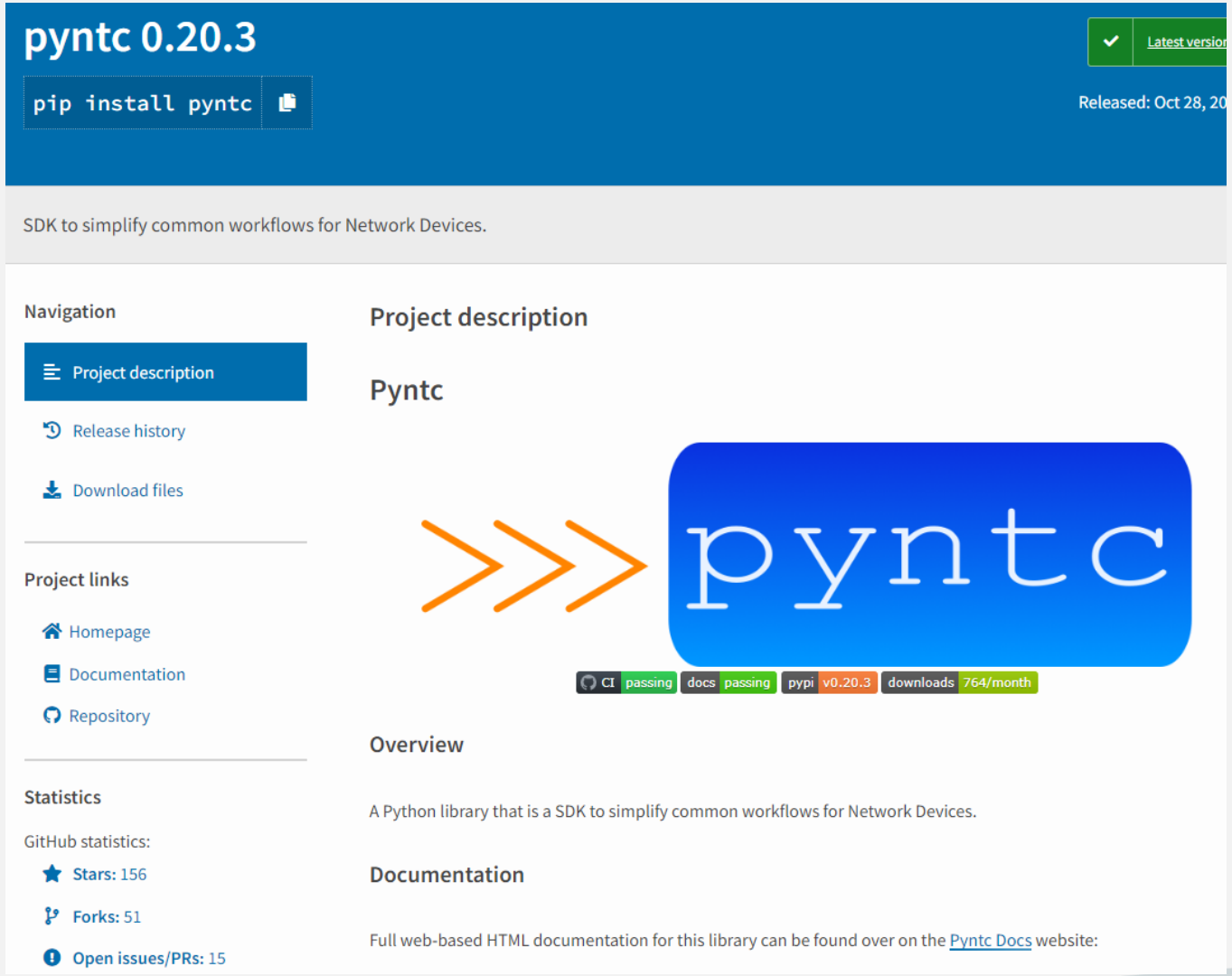
scrapli -- scrap(e c)li -- is a python 3.7+ library focused on connecting to devices, specifically network devices (routers/switches/firewalls/etc.) via Telnet or SSH.

Key Features:

- **Easy**: It's easy to get going with scrapli -- check out the documentation and example links above, and you'll be connecting to devices in no time.
- **Fast**: Do you like to go fast? Of course you do! All of scrapli is built with speed in mind, but if you really feel the need for speed, check out the `ssh2` transport plugin to take it to the next level!

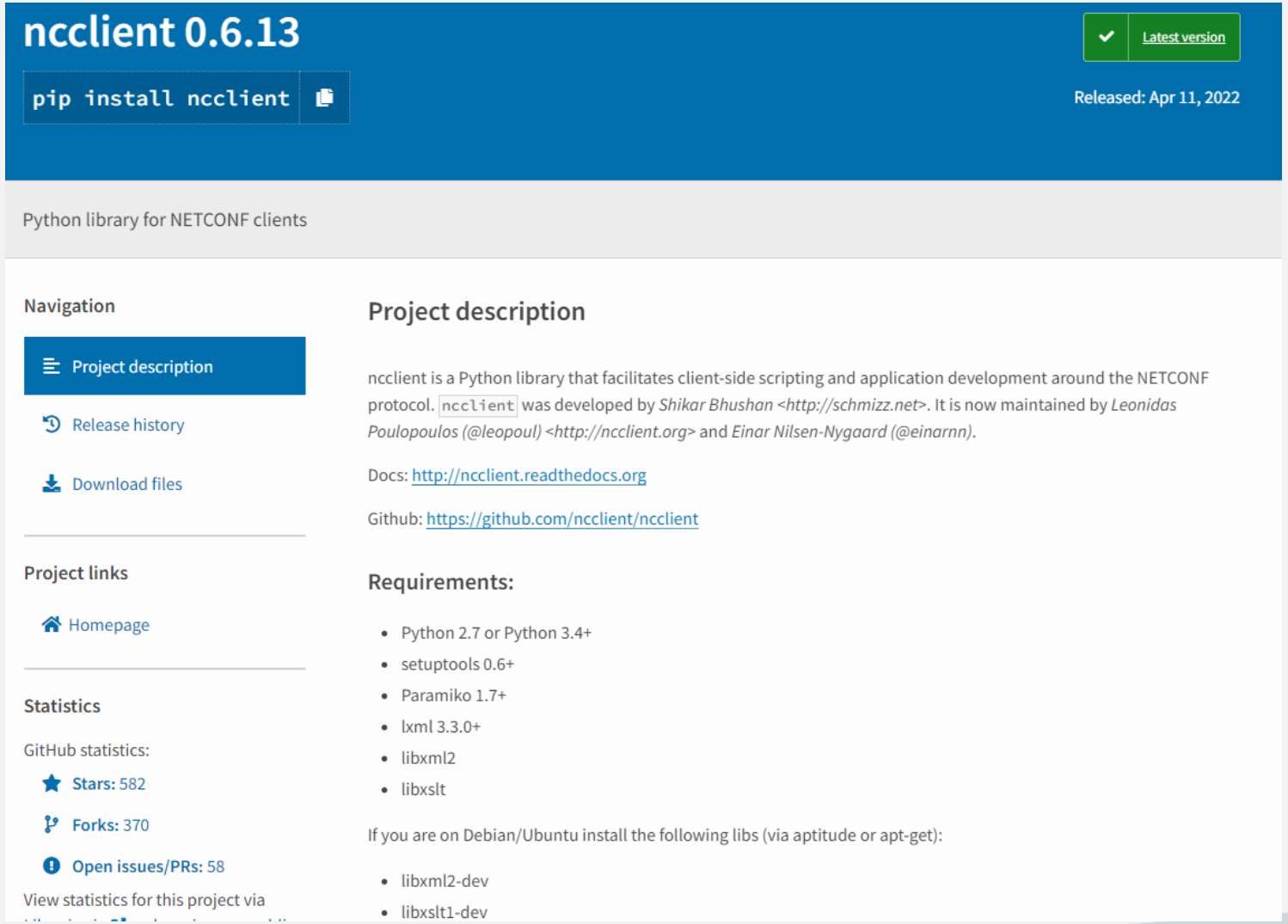
네트워크 장비를 위한 라이브러리

Pyntc



네트워크 장비를 위한 라이브러리

ncclient



ncclient 0.6.13

pip install ncclient

Latest version

Released: Apr 11, 2022

Python library for NETCONF clients

Navigation

- Project description
- Release history
- Download files

Project links

- Homepage

Statistics

GitHub statistics:

- Stars: 582
- Forks: 370
- Open issues/PRs: 58

View statistics for this project via

Project description

ncclient is a Python library that facilitates client-side scripting and application development around the NETCONF protocol. `ncclient` was developed by *Shikar Bhushan <http://schmizz.net>*. It is now maintained by *Leonidas Poulopoulos (@leopoul) <http://ncclient.org>* and *Einar Nilsen-Nygaard (@einarnn)*.

Docs: http://ncclient.readthedocs.org

Github: https://github.com/ncclient/ncclient

Requirements:

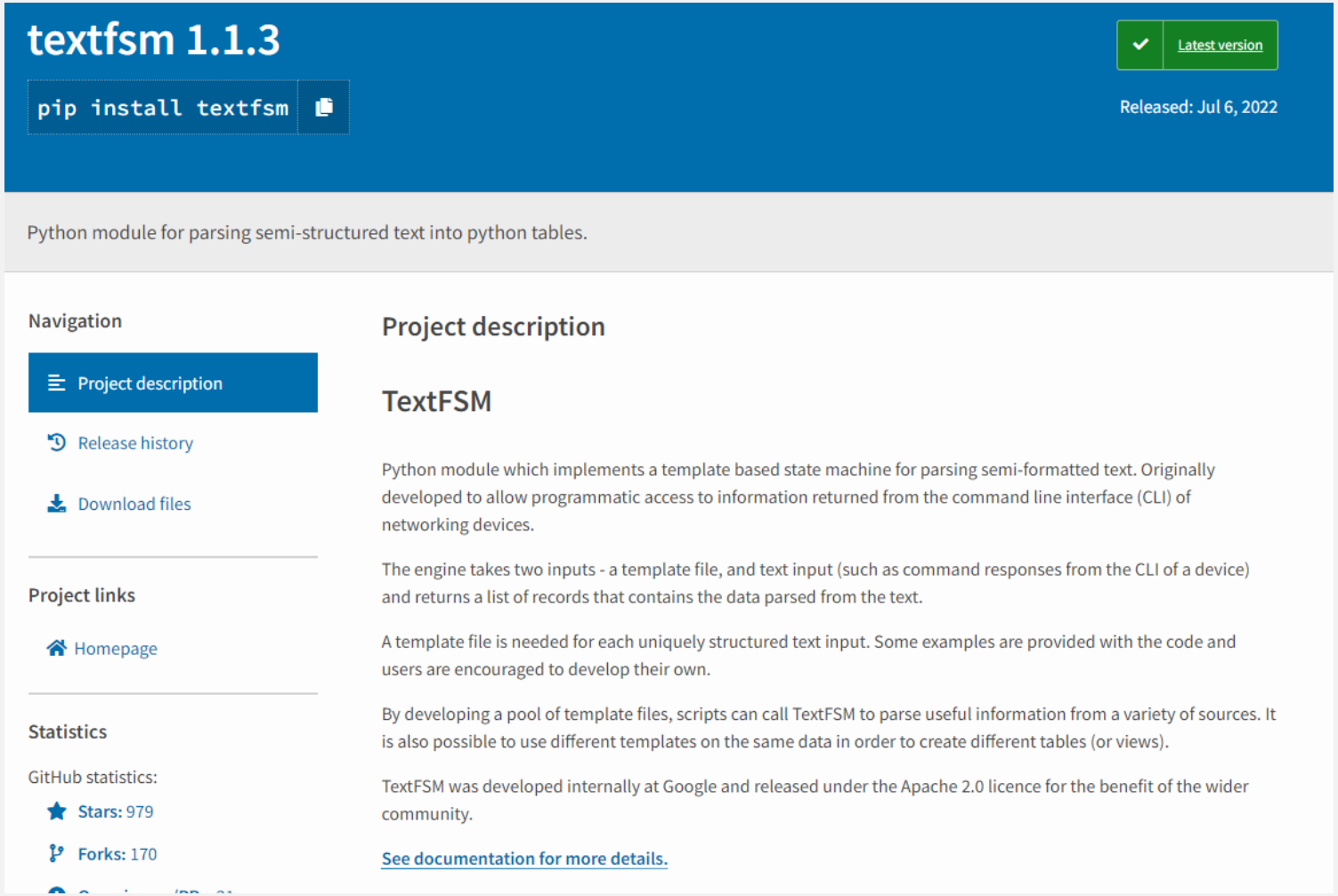
- Python 2.7 or Python 3.4+
- setuptools 0.6+
- Paramiko 1.7+
- lxml 3.3.0+
- libxml2
- libxslt

If you are on Debian/Ubuntu install the following libs (via aptitude or apt-get):

- libxml2-dev
- libxslt1-dev

네트워크 장비를 위한 라이브러리

textfsm

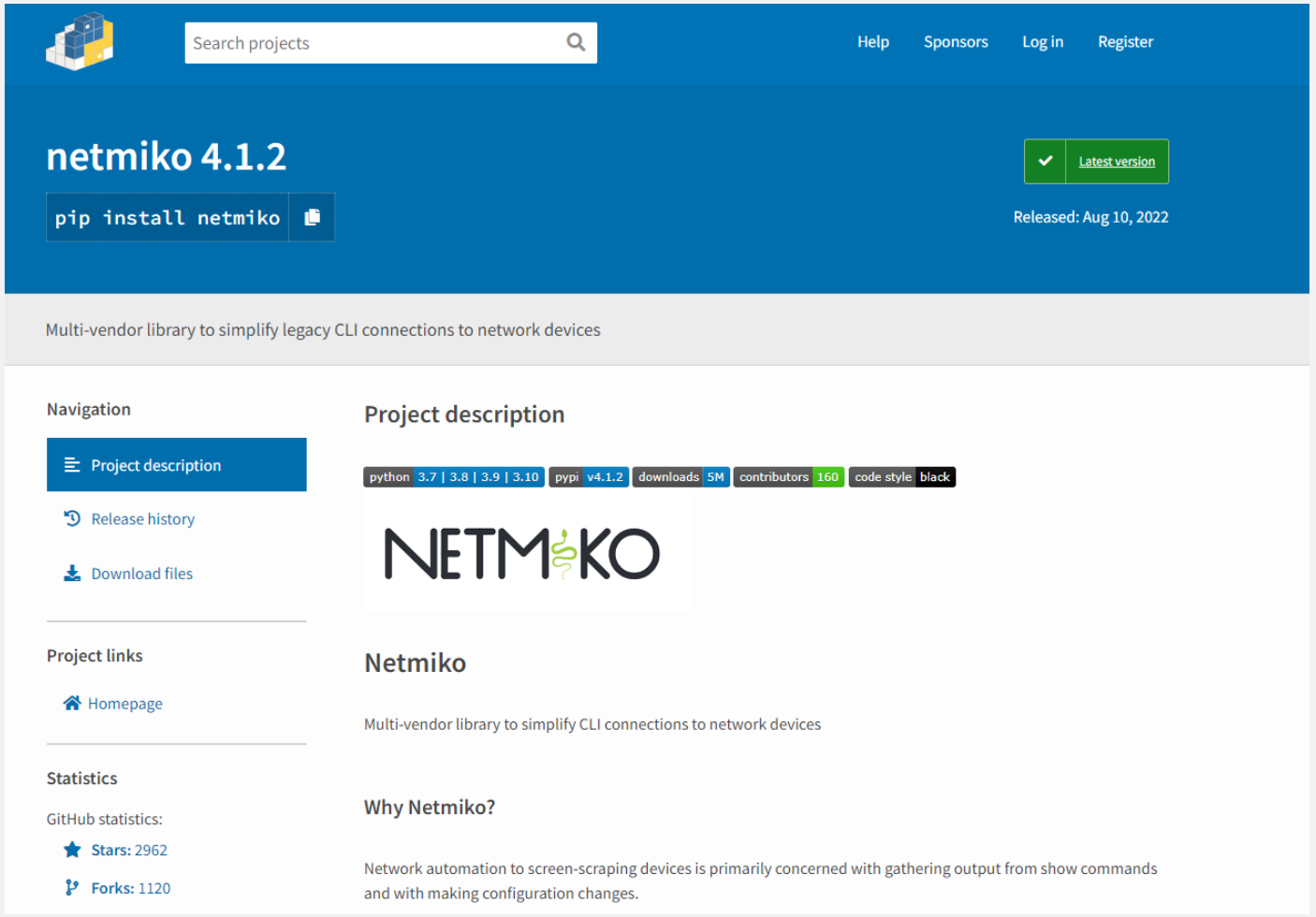


02
Chapter

Create functions

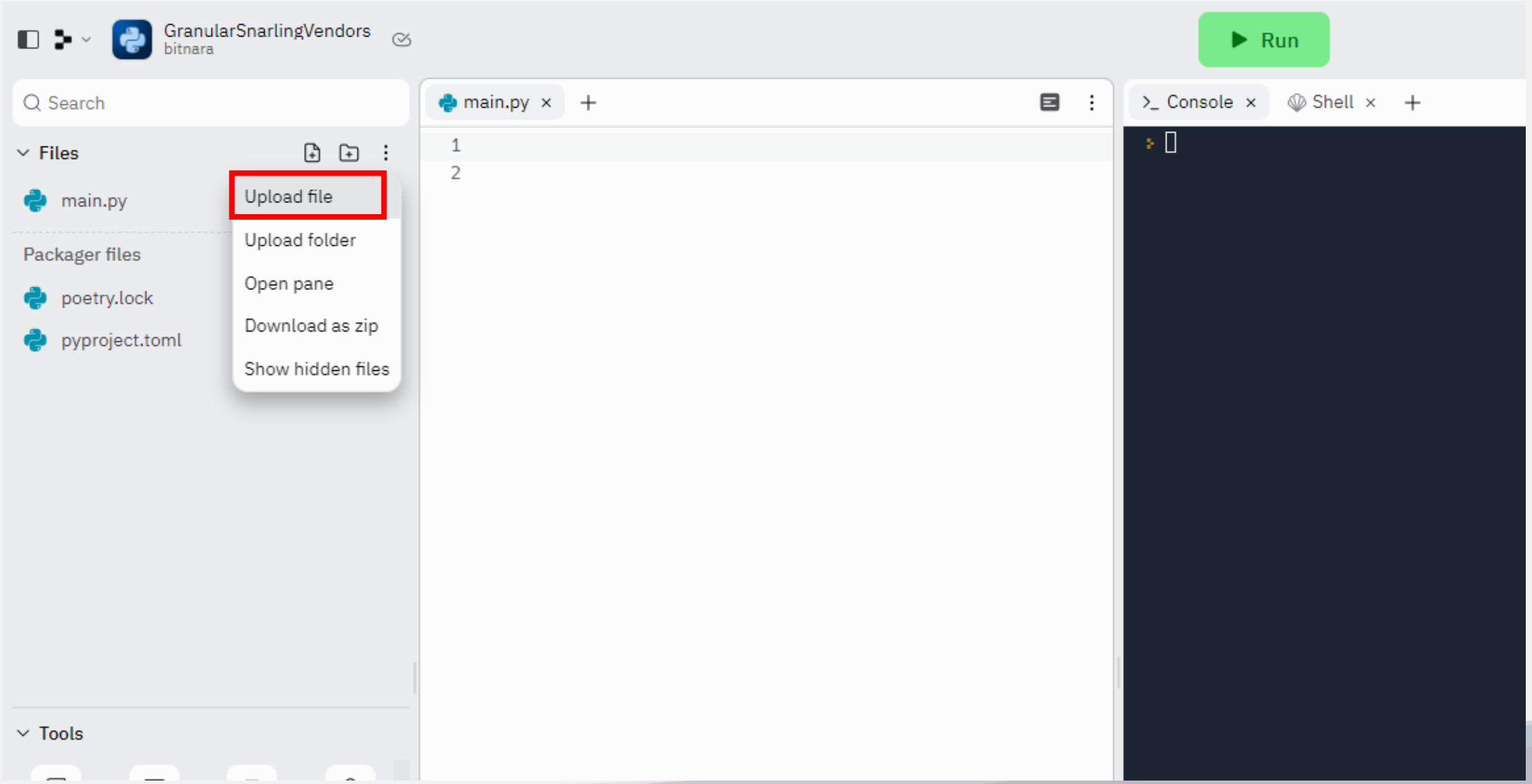
코드 작성

Netmiko

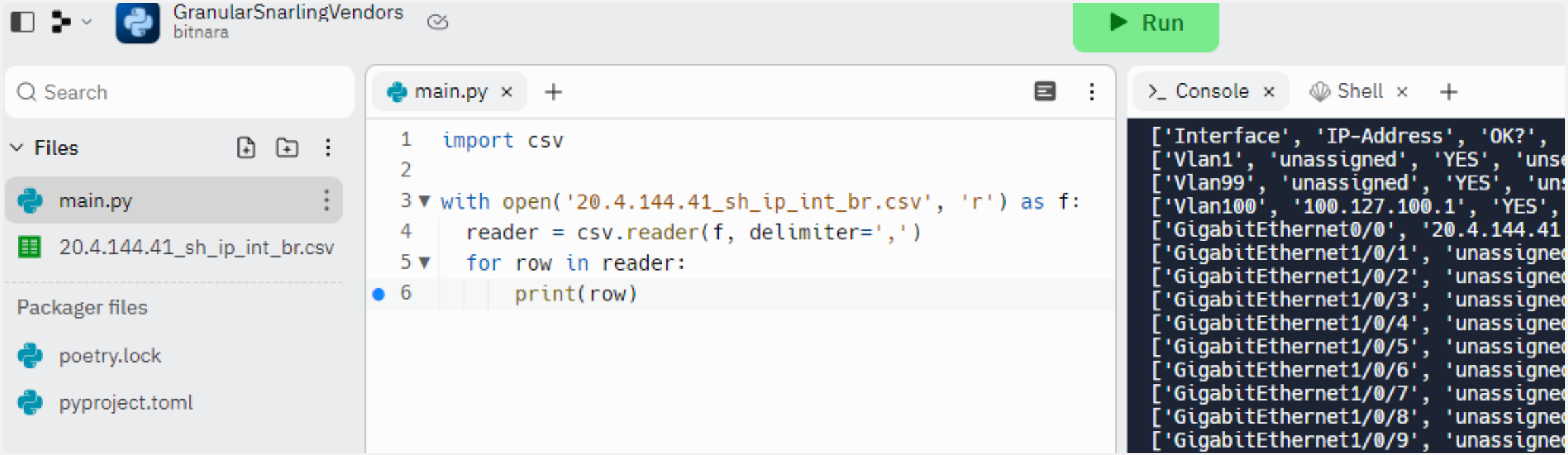


https://pypi.org/project/netmiko/

replit에 csv 파일 올리기



csv 파일 읽기




```
import csv
with open('20.4.144.41_sh_ip_int_br.csv', 'r') as f:
    reader = csv.reader(f, delimiter=',')
    for row in reader:
        print(row)
```

csv 파일 읽기

main.py

```
import csv
from pprint import pprint

data = []
with open('20.4.144.41_sh_ip_int_br.csv', 'r') as f:
    reader = csv.DictReader(f, delimiter=',')
    for row in reader:
        data.append(row)
pprint(data)
```

Console / Shell

```
[{'IP-Address': 'unassigned',
  'Interface': 'Vlan1',
  'Method': 'unset',
  'OK?': 'YES',
  'Protocol': 'down',
  'Status': 'administratively down'},
 {'IP-Address': 'unassigned',
  'Interface': 'Vlan99',
  'Method': 'unset',
  'OK?': 'YES',
  'Protocol': 'up',
  'Status': 'up'},
 {'IP-Address': '100.127.100.1',
  'Interface': 'Vlan100',
  'Method': 'manual',
  'OK?': 'YES',
  'Protocol': 'up',
  'Status': 'up'},
```

```
import csv
data = []
with open('20.4.144.41_sh_ip_int_br.csv', 'r') as f:
    reader = csv.DictReader(f, delimiter=',')
    for row in reader:
        data.append(row)
```

문제

1. '20.4.144.41_sh_ip_int_br.csv' 파일을 읽고, status와 protocol이 모두 up인 interface만 출력하여 txt 파일로 저장하세요.

```
import csv

field_name = ['Interface', 'IP-Address', 'OK?', 'Method', 'Status', 'Protocol']
result = [
{'IP-Address': 'unassigned', 'Interface': 'Port-channel1', 'Method': 'unset', 'OK?': 'YES', 'Protocol': 'up', 'Status': 'up'},
{'IP-Address': 'unassigned', 'Interface': 'Port-channel10', 'Method': 'unset', 'OK?': 'YES', 'Protocol': 'up', 'Status': 'up'},
…]

with open('20.4.144.41_sh_ip_int_br.txt', 'w') as f:
    writer = csv.DictWriter(f, fieldnames=field_name)
    writer.writeheader()
    for row in result:
        writer.writerow(row)
```

문제

2. ipaddress 모듈을 이용해 사용자가 입력한 ip중에 정상적인 ip를 출력하는 함수를 작성하세요.

main.py

```
44  import ipaddress
45
46  def check_ip(ip):
47    try:
48      ipaddress.ip_address(ip)
49      return True
50    except ValueError as err:
51      return False
52
53  print('10.10.10.10: ', check_ip('10.10.10.10'))
54  print('1.1.1: ', check_ip('1.1.1'))
55
56  from check_ip_func import return_correct_ip
57
58  ip_list = input('Cheking list of IP addresses: ')
59  correct = return_correct_ip(ip_list)
60  print(correct)
```

Console / Shell

```
10.10.10.10:  True
1.1.1:  False
Cheking list of IP addresses: 10.10.10.10, 1.1.1
['10.10.10.10']
```

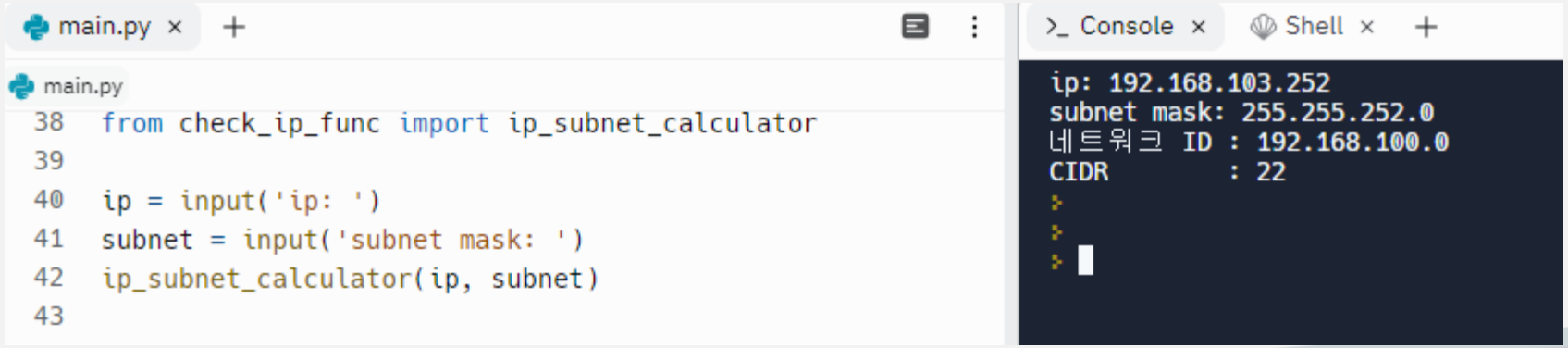
문제

3. 사용자에게 IP주소와 서브넷마스크를 입력 받아 네트워크 ID와 CIDR을 구하세요.

※Hint
- 10진수를 2진수로 변환: format(255, 'b')
- 2진수를 10진수로 변환: int('11111111', 2)

192.168.103.252 => 11000000 10101000 01100111 11111100
255.255.255.0 => 11111111 11111111 11111111 00000000

11000000 10101000 01100111 00000000
=> 192 168 103 0



참고

https://developer.cisco.com/

https://pyneng.readthedocs.io/_/downloads/en/latest/pdf/

opas net
(주)오파스넷

수고하셨습니다.