

Overview of Tools and Experimental Environment

Hui Chen ^a

^aCUNY Brooklyn College

August 26, 2020

Outline

- 1 Introduction to Network Programming in Python
- 2 Experimental Environment

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Programming

We primarily use Python. Example packages and APIs are,

- ▶ Flask
- ▶ ScaPY
- ▶ Socket

Setting up Python Programming Environment

The instructor uses Anaconda

- ▶ <https://www.anaconda.com/products/individual>

A Flask “Hello, World” Program

► <https://github.com/pallets/flask>

```
1 from flask import Flask
2
3 app = Flask(__name__)
4
5 @app.route("/")
6 def hello():
7     return "Hello , World!"
```

Listing 1: hello.py

Running Flask “Hello, World” Program

```
1 #!/bin/bash
2
3 env FLASK_APP=hello.py flask run
```

Listing 2: runhello.sh

```
1 @echo off
2 set FLASK_APP=hello.py
3 flask run
```

Listing 3: runhello.cmd

What just happened?

A Web Client Program

```
1 from http import client as httpclient
2
3 def main():
4     conn = httpclient.HTTPConnection('127.0.0.1:5000')
5
6     conn.request('GET', '/')
7     response = conn.getresponse()
8     print(response.status, response.reason)
9     received = response.read()
10    print(received)
11
12    conn.close()
13
14 if __name__ == "__main__":
15     # execute only if run as a script
16     main()
```

Listing 4: helloclient.py

Running the Web Client Program

```
1 @echo off
2 python hellclient.py
```

Listing 5: runclient.cmd

```
1 #!/bin/bash
2
3 python helloclient.py
```

Listing 6: runclient.sh

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Virtual Machine

Use the instructor's Oracle VM VirtualBox virtual machines image

- ▶ Debian Linux 10
- ▶ Small footprint