

Flask U2F Tutorial - Deployment Guide:

Environment Overview:

Test Machine: Windows 10

Browser: Google Chrome

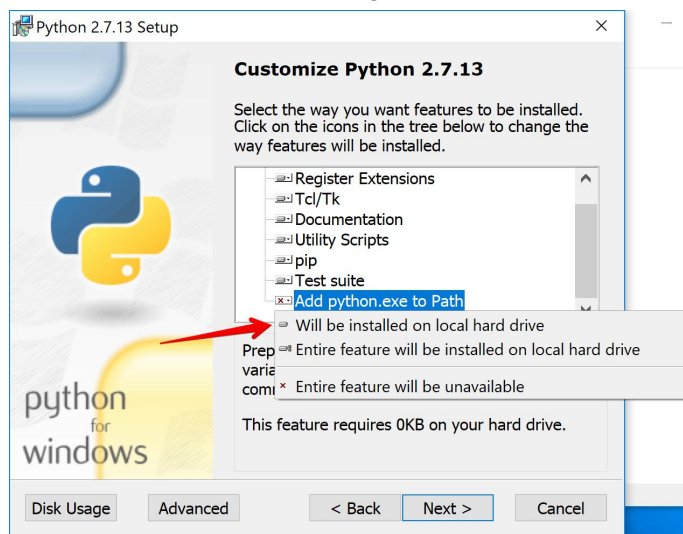
Software needed:

- Flask-U2F-Tutorial -- <https://github.com/dainnilsson/flask-u2f-tutorial/archive/master.zip>
- Google Chrome -- <https://www.google.com/chrome/browser/desktop/index.html#>
- Python 2.7.13 -- <https://www.python.org/ftp/python/2.7.13/python-2.7.13.msi>

Preparation Steps:

On the Windows 10 machine:

- Download the software above
- Install Google Chrome
- Install Python 2.7.13 (do not use v3.x!)
 - *Note: when installing, be sure to check “Add python.exe to Path”

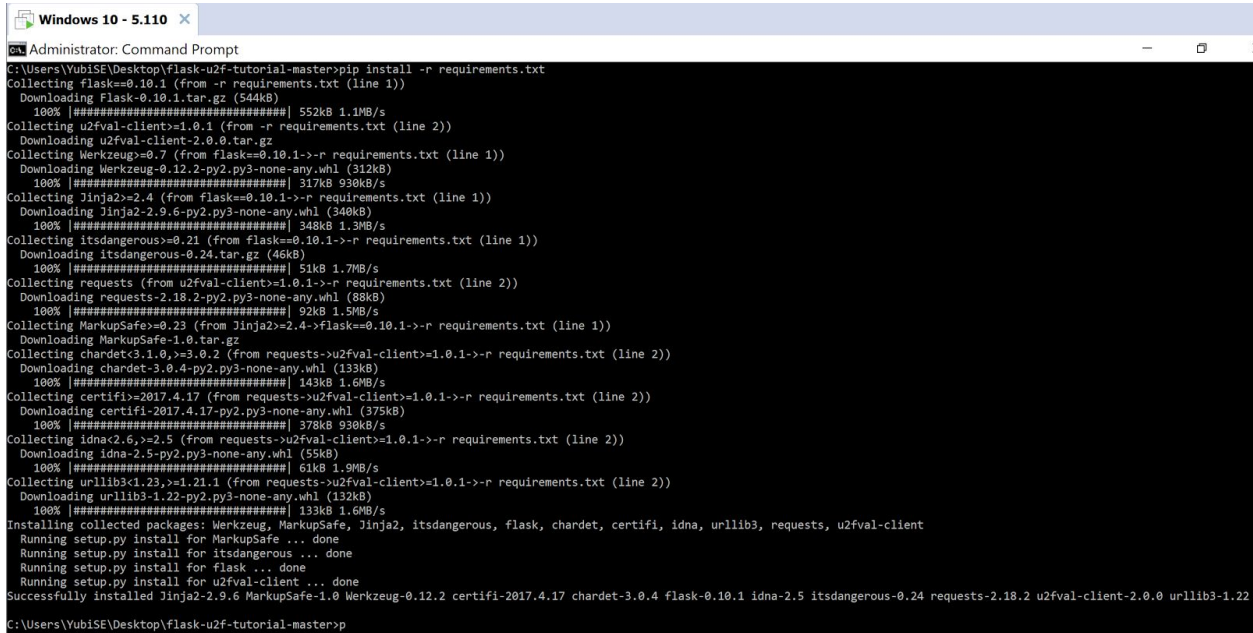


- Copy / unzip Flask-U2F-Tutorial to desktop (or location of choice)
- Modify *requirements.txt* file in the “flask-u2f-tutorial-master” folder:
 - Current values:
 - flask==0.10.1u2fval-client>=1.0.1
 - New values:
 - flask==0.10.1u2fval-client==1.0.1
 - *Note: you are changing **ONLY** the u2fval-client operator from >= to ==

Project Deployment:

To run the project, first install the required dependencies:

- Open **Administrator** CLI (start > cmd > “right-click” > run as administrator)
 - CD to Flask-U2F-Tutorial file location.
 - Example: “C:\Windows\system32>cd
\\Users\YubiSE\Desktop\flask-u2f-tutorial-master”
 - Issue command: pip install -r requirements.txt
 - Output should be as follows



```
Windows 10 - 5.110
Administrator: Command Prompt
C:\Users\YubiSE\Desktop\flask-u2f-tutorial-master>pip install -r requirements.txt
Collecting flask==0.10.1 (from -r requirements.txt (line 1))
  Downloading Flask-0.10.1.tar.gz (544kB)
    100% |#####| 552kB 1.1MB/s
Collecting u2fval-client==1.0.1 (from -r requirements.txt (line 2))
  Downloading u2fval-client-2.0.0.tar.gz
Collecting Werkzeug==0.7 (from flask==0.10.1->-r requirements.txt (line 1))
  Downloading Werkzeug-0.12.2-py2.py3-none-any.whl (312kB)
    100% |#####| 317kB 930kB/s
Collecting Jinja2==2.4 (from flask==0.10.1->-r requirements.txt (line 1))
  Downloading Jinja2-2.9.6-py2.py3-none-any.whl (340kB)
    100% |#####| 348kB 1.3MB/s
Collecting itsdangerous==0.21 (from flask==0.10.1->-r requirements.txt (line 1))
  Downloading itsdangerous-0.24.tar.gz (46kB)
    100% |#####| 51kB 1.7MB/s
Collecting requests (from u2fval-client==1.0.1->-r requirements.txt (line 2))
  Downloading requests-2.18.2-py2.py3-none-any.whl (88kB)
    100% |#####| 92kB 1.5MB/s
Collecting MarkupSafe==0.23 (from Jinja2==2.4->flask==0.10.1->-r requirements.txt (line 1))
  Downloading MarkupSafe-1.0.tar.gz
Collecting chardet<3.1.0,>=3.0.2 (from requests->u2fval-client==1.0.1->-r requirements.txt (line 2))
  Downloading chardet-3.0.4-py2.py3-none-any.whl (133kB)
    100% |#####| 143kB 1.6MB/s
Collecting certifi==2017.4.17 (from requests->u2fval-client==1.0.1->-r requirements.txt (line 2))
  Downloading certifi-2017.4.17-py2.py3-none-any.whl (375kB)
    100% |#####| 378kB 930kB/s
Collecting idna<2.6,>=2.5 (from requests->u2fval-client==1.0.1->-r requirements.txt (line 2))
  Downloading idna-2.5-py2.py3-none-any.whl (55kB)
    100% |#####| 61kB 1.9MB/s
Collecting urllib3<1.23,>=1.21.1 (from requests->u2fval-client==1.0.1->-r requirements.txt (line 2))
  Downloading urllib3-1.22-py2.py3-none-any.whl (132kB)
    100% |#####| 133kB 1.6MB/s
Installing collected packages: Werkzeug, MarkupSafe, Jinja2, itsdangerous, flask, chardet, certifi, idna, urllib3, requests, u2fval-client
Running setup.py install for MarkupSafe ... done
Running setup.py install for itsdangerous ... done
Running setup.py install for flask ... done
Running setup.py install for u2fval-client ... done
Successfully installed Jinja2-2.9.6 MarkupSafe-1.0 Werkzeug-0.12.2 certifi-2017.4.17 chardet-3.0.4 flask-0.10.1 idna-2.5 itsdangerous-0.24 requests-2.18.2 u2fval-client-2.0.0 urllib3-1.22
C:\Users\YubiSE\Desktop\flask-u2f-tutorial-master>p
```

Next, you will need to request and create and API Token:

- Request API Key here: <https://u2fval.appspot.com/>
 - Click “Create New Application”
 - Complete form as follows:
 - Name: U2F Demo
 - AppID: https://localhost:5000
 - Click: “Create Application”
 - On the next page, click: “Generate New API Token”
 - Configure as follows:
 - API Token description: U2F Demo
 - Click “Generate API Token”
 - Copy API Token to clipboard, then minimize browser, **DO NOT** click “Return to Application” yet!
 - Create a new text file in the flask-u2f-tutorial-master folder:
 - Filename: u2fval_api_token (*note: all lowercase)
 - Copy and paste the new API Token into this text file and save

- Rename text file to remove .txt extension by doing the following:
 - Click “view > options > view”
 - Click “Show hidden files, folders, and drives”
 - Uncheck: “Hide extensions for known file types”
 - Click “Apply” then “OK”
 - Rename “u2fval_api_token.txt” to “u2fval_api_token”
 - Click “Yes”
 - Filetype should change to “File”
 - Now you can return to the browser and click “Return to Application”
- Successful completion of Application registration and API Token generation should look like this:

Yubico U2FVAL Service

Application: U2F Demo

Name
U2F Demo

AppID
https://localhost:5000

Number of users
0

Number of registered U2F devices
0

↻ Refresh user stats
✎ Rename
✕ Delete

API access

API endpoint: <https://u2fval.appspot.com/api>

[API connector libraries](#)

[REST API specification](#)

API Tokens in use

Description	Creation date	Delete
U2F Demo	2017-07-26T18:17:06.796Z	✕

+ Generate new API Token

Now, we need to prepare and initialize the Database (DB):

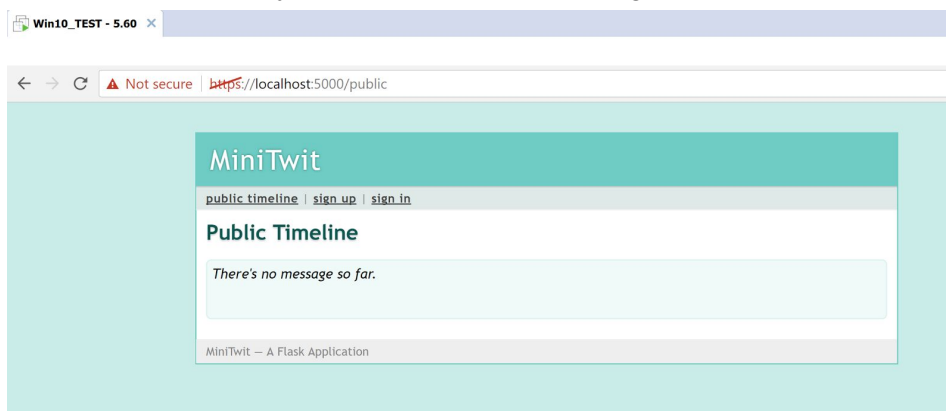
- First, create the directory to place the DB file:
 - Browse to your current user's AppData\Local\Temp directory
 - Example: C:\Users\<useraccount>\AppData\Local\Temp\
 - Right-click > New > Folder
 - Folder name: “U2F_Demo_DB”
- Browse to the minitwit.py file within the flask-u2f-tutorial-master directory, right click, and select “Edit with IDLE”
- Scroll down to the DB configuration section and modify the following line:
 - DATABASE = '/tmp/minitwit.db'

- New value: DATABASE =
'C:\Users\<useraccount>\AppData\Local\Temp\U2F_Demo_DB\minitwit.db'
 - Example:

```
# configuration
DATABASE = 'C:\Users\YubiSE\AppData\Local\Temp\U2F_Demo_DB\minitwit.db'
PER_PAGE = 30
DEBUG = True
```
- You are now ready to initialize the DB. You can do so by issuing the following command from the Admin CLI:
 - python minitwit.py --init-db
 - Example output:

```
C:\Users\YubiSE\Desktop\flask-u2f-tutorial-master>python minitwit.py --init-db
Database initialized!
C:\Users\YubiSE\Desktop\flask-u2f-tutorial-master>_
```
- Now, run the server with the following command:
 - python minitwit.py
 - Example output:

```
C:\Users\YubiSE\Desktop\flask-u2f-tutorial-master>python minitwit.py
* Restarting with stat
* Debugger is active!
* Debugger PIN: 184-461-946
* Running on https://127.0.0.1:5000/ (Press CTRL+C to quit)
```
- To validate that the server is running and reachable, open your browser (Chrome) and go to: <https://localhost:5000>
 - Accept the certificate error
 - Click “Advanced” in the bottom left of your browser
 - Click “Proceed to localhost (unsafe)”
 - If successful, you should see the following web portal:



Now it's time to create a user account and register a YubiKey as the second factor using the U2F protocol!

- Click “sign up”

- Create user:
 - Enter username, email, password x2

- Click “Sign Up”

- Sign in with newly created Username and Password
 - Notice you will see that you were not logged in with U2F!
 - Click “security”

- Insert YubiKey, and connect to VM (if you haven't already done so)
 - In the “Register a new U2F device” field, enter a description for your YubiKey.
 - Example: “Nick’s YubiKey 4 Nano”

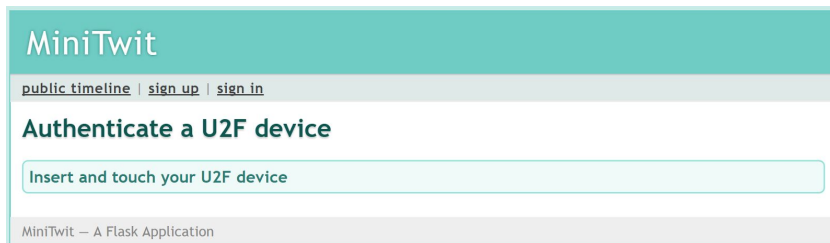
- Click “Add”

- You should receive a prompt to “Insert and Touch YubiKey”
 - Please touch YubiKey now!
- Successfully registered YubiKey will be displayed:



Setup is now complete! Let's test it out:

- Click “sign out”
- Click “sign in”
 - Enter Username and Password, click “Sign In”
 - You will now be prompted to touch your YubiKey:



- Touch YubiKey

CONGRATULATIONS! You have successfully authenticated using username and password as the first factor, and the YubiKey with U2F as the second factor!

