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Flask U2F Tutorial - Deployment Guide:

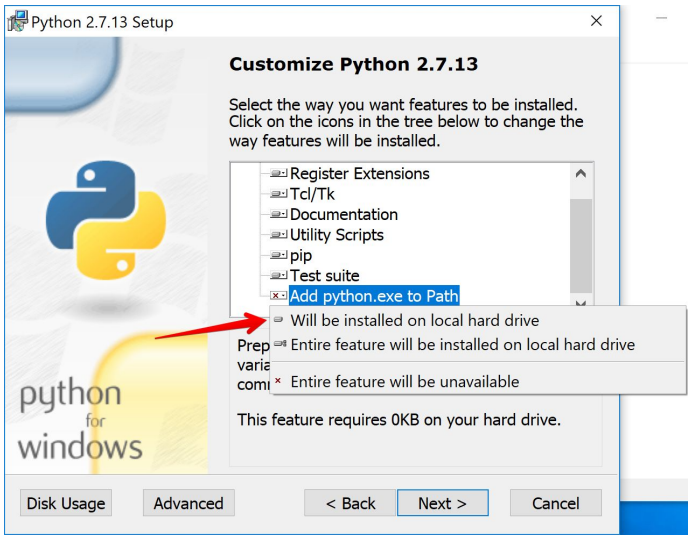
Environment Overview:
Test Machine: Windows 10
Browser: Google Chrome

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”

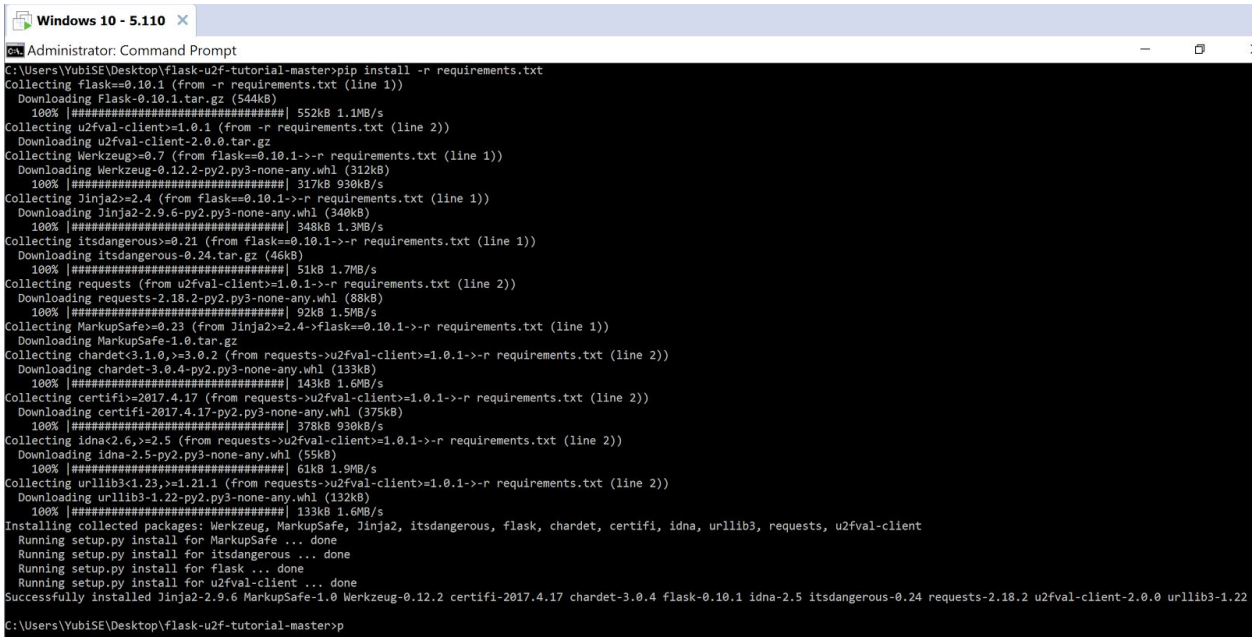


- Copy / unzip Flask-U2F-Tutorial to desktop (or location of choice)
- Modify *requirements.txt* file in the “flask-u2f-tutorial-master” folder:
    - Current values:
        - flask==0.10.1u2fval-client>=1.0.1
    - New values:
        - flask==0.10.1u2fval-client==1.0.1
    - *Note: you are changing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

Project Deployment:

To run the project, first install the required dependencies:

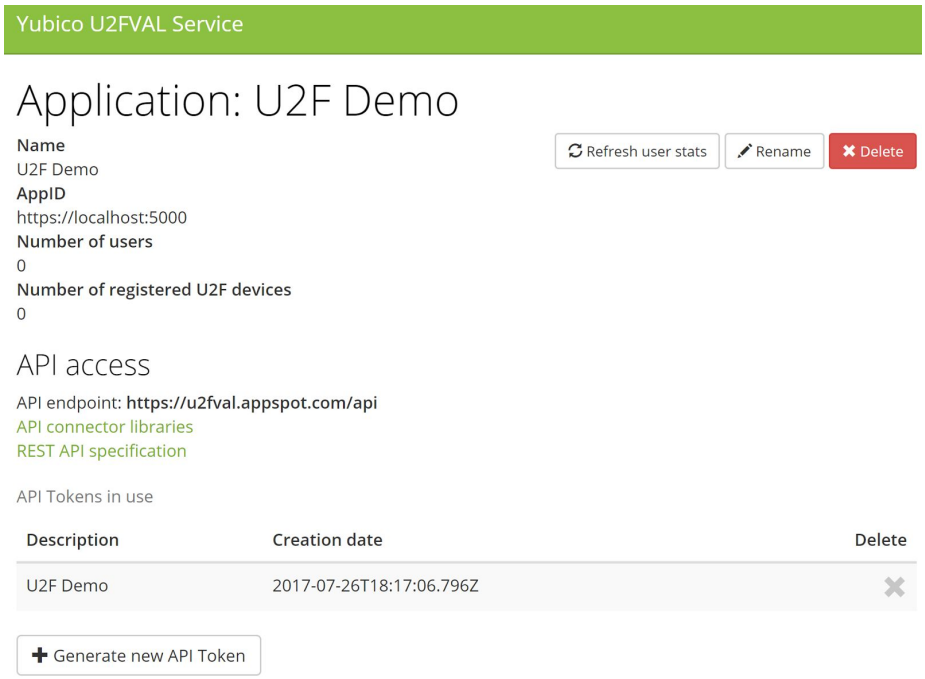
- Open **Administrator** CLI (start > cmd > “right-click” > run as administrator)
    - CD to Flask-U2F-Tutorial file location.
        - Example: “C:\Windows\system32>cd \Users\YubiSE\Desktop\flask-u2f-tutorial-master”
    - Issue command: pip install -r requirements.txt
    - Output should be as follows



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:



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:

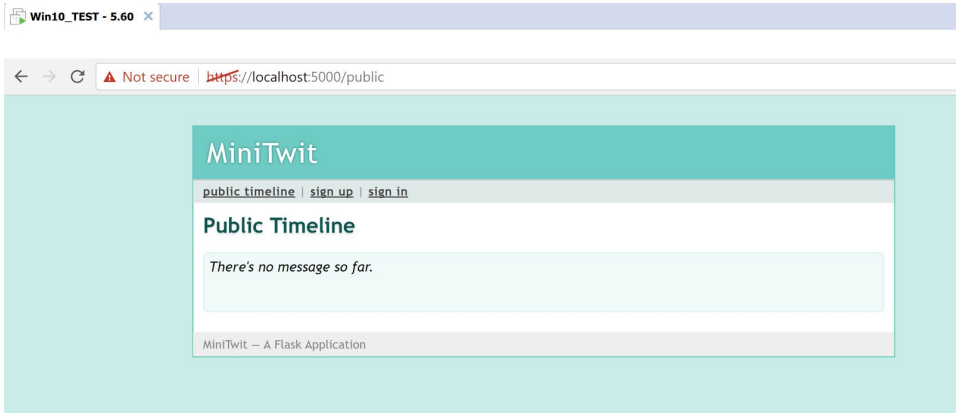
```
C:\Users\YubiSE\Desktop\flask-u2f-tutorial-master>python minitwit.py --init-db
Database initialized!

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)
```

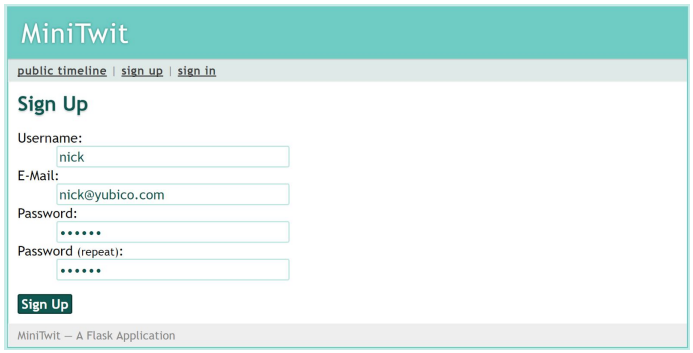
- To validate that the server is running and reachable, open your browser (Chrome) and go to: https://localhost:5000
  - Accept the certificate error
    - Click “Advanced” in the bottom left of your browser
    - Click “Proceed to localhost (unsafe)”
  - If successful, you should see the following web portal:



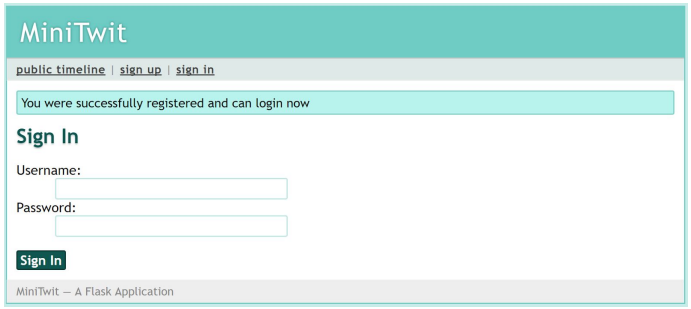
Now it’s time to create a user account and register a YubiKey as the second factor using the U2F protocol!

- Click “sign up”

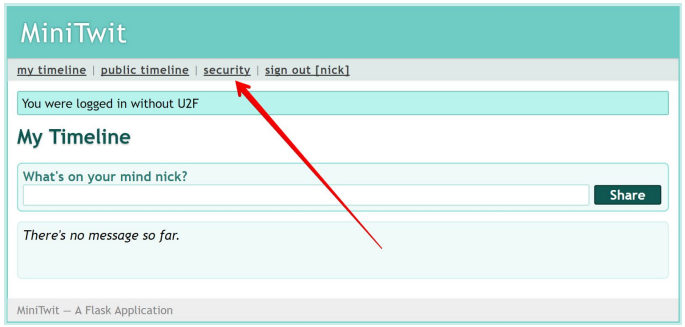
- Create user:
    - Enter username, email, password x2



    - Click “Sign Up”



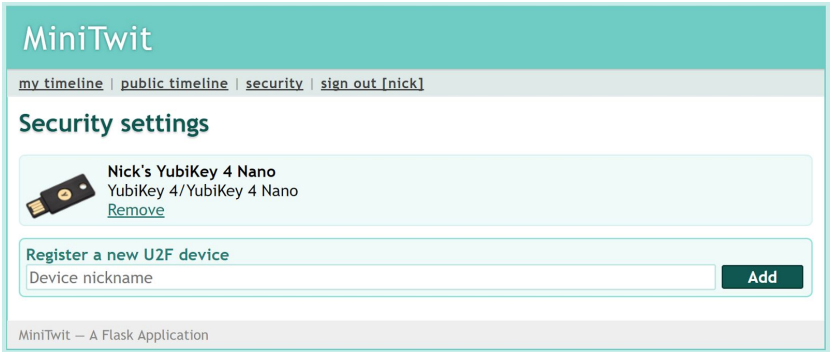
    - Sign in with newly created Username and Password
        - Notice you will see that you were not logged in with U2F!
        - Click “security”



    - 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”

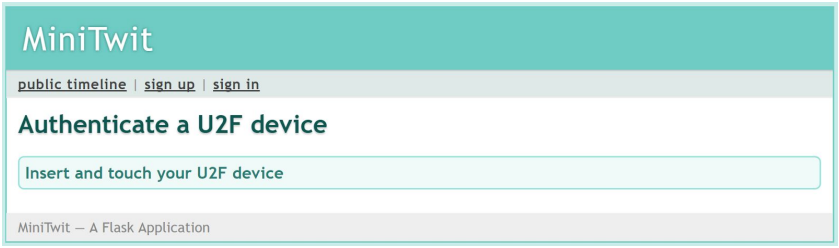
    - Click “Add”

- 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!