

# Syncer

**A Tool for Local File BackUp Leveraging Multiple Cloud Storages**

**Group Member: Wenbin Huang**

**NetID: vx3255**

**Course: Cloud Computing**

**Github Link for Project: <https://github.com/wenbinhuang9/syncer>**

# What is the problem

- **Document Loss:** document may loss if we don't backup
- **High Cost:** It takes money to buy and maintain hardware drives for backup, and hardware drive is unstable with time going.
- **Learning Curve** is high if we want to use multiple cloud storage such as Google Drive, AWS S3, Azure Blog Storage etc.

## How to Address the Problem

- **Backup:** Leveraging multiple cloud storage for backup
- **Clouds are Cheap:** Clouds provide limited free storage and are cheap if we need more
- **Simple and Unified API to Reduce Learning Curve:** The API for backup is simple and compatible with **Unix File Operation Command Line**

# My Contribution

## Searching:

- search the storage service provided by Google Drive, Azure and AWS
- How to use cloud IAM to implement authentication
- How to use API to access cloud storage

## Coding

- Develop proxy, authentication, API and configuration module

## Testing

- Code full unittests

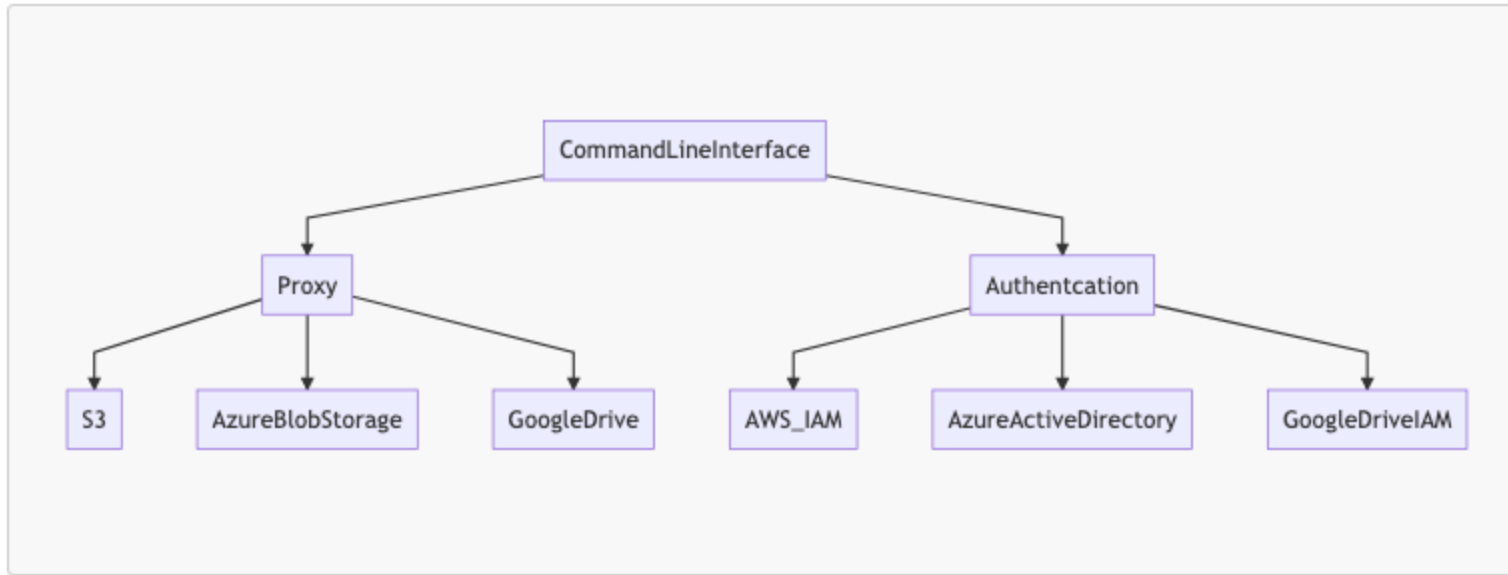
# Cloud Services Used

- AWS S3 and IAM
- Azure Blob Storage and IAM
- Google Drive and IAM

# Languages and Libraries Used

- Python 3.0 and Python Unittest Framework
- **AWS CLI API** to access S3
- **Azure azcopy API** to access Azure Blob Storage
- **PyDrive API** to access Google Drive

# Architecture



# Development Method: Test Driven Development

Python unittest to provide full unit test .

Unit Test Code Demo

Run Unit Test Command: python3 test\_azure\_copy\_proxy.py

```
import os
import unittest
import syncer
class TestSyncer(unittest.TestCase):

    def test_parse_cloud_dir(self):
        cloudDir = "s3"
        cloud, dir = syncer.parseCloudDirectory(cloudDir)

        self.assertTrue(cloud == "s3")
        self.assertTrue(dir == "./")

if __name__ == '__main__':
    unittest.main()
```



# Google Drive BackUp Demo Show

Authntication

```
syncer login gdrive
```

List file list under Google Drive Root Directory

```
syncer ls gdrive
```

Backup a directory

```
syncer cp ./testfile gdrive
```

Delete a directory

```
syncer cp ./testfile gdrive  
syncer rm gdrive/{fileid}
```

# AWS S3 BackUp Demo Show

Authntication

```
syncer login s3
```

List file list under S3 Root Directory

```
syncer ls s3
```

Backup a directory

```
syncer cp ./testfile s3
```

Copy from cloud to local

```
syncer cp s3/folder ./
```

# Azure Blob Storage Demo Show

## Authntication

```
azcopy login --tenant-id=19a46ac2-a14b-4dfa-bce3-93965c21f4cf  
syncer login az
```

## List file list under S3 Root Directory

```
syncer ls az
```

## Backup a directory

```
syncer cp ./testfile az
```

## Copy from cloud to local

```
syncer cp s3/testfile ./
```

# Future Improvements

- **Confidentiality:** Using encrypted algorithms like AES .
- **Cross Platform:** Make Tool supported under Windows
- **More Cloud Storage:** Support More Cloud Storage such as dropbox, Baidu Drive

**Thank you for your time and patience**