Syncer

A Tool for Local File BackUp Leveraging Multiple
Cloud Storages

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Course: Cloud Computing

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

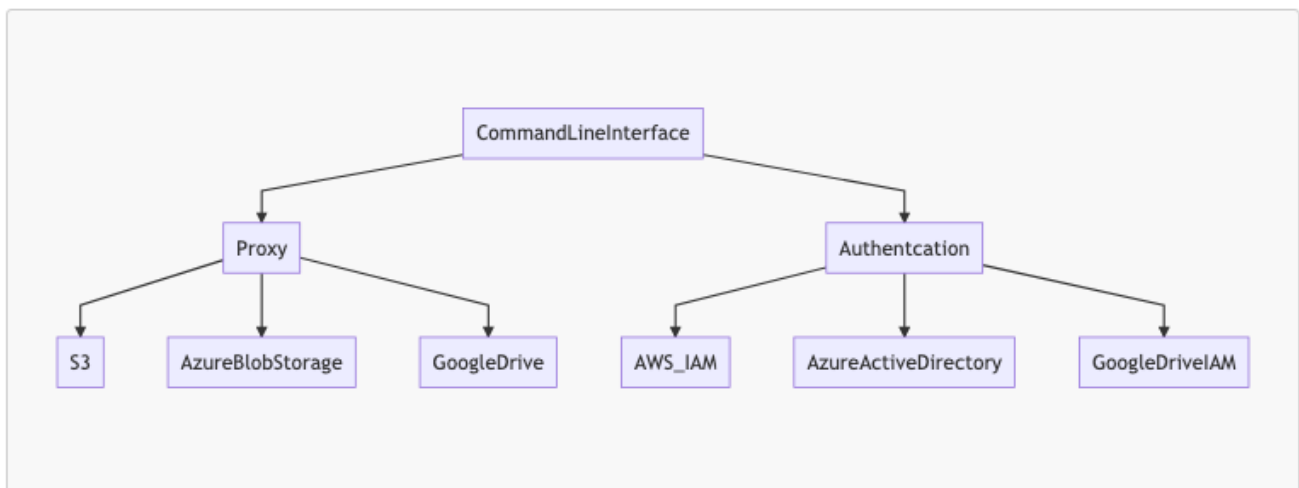- Code full unittests

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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

```python
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

Authtication

```
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

Authtication

```
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

Authtication

```
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

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Thank you for your time and patience