

Program 3 : Backup / Restore

Program Description

- This is an application allowing the users to backup their data to AWS s3 and restore the data to their local as well.
 - It is assumed that the users have their own AWS credentials so that they can access to AWS s3 with command line
 - This program is written by “Python 3” and imports “boto3”
 - There is only one python file and the file name is BackUp.py
-

Program Execution

- Command syntax for back up:

```
python3 BackUp.py backup directory-name bucket-name::directory-name  
directory-name: User's local directory of data that the user want to back up  
bucket-name: User's aws s3 bucket name to back up  
directory-name: The directory inside the bucket where the user want to back up the data
```

Example:

```
python3 BackUp.py backup /Users/connie/Desktop/testing conniebucket::my_cloud
```

=> the user want to backup data from */Users/connie/Desktop/testing* to aws bucket *conniebucket* > *my_cloud*

- Command syntax for restore:

```
python3 BackUp.py restore bucket-name::directory-name directory-name  
bucket-name: User's aws s3 bucket name to restore  
directory-name: The directory inside the bucket which has the data user want to restore  
directory-name: User's local directory where the user want to restore the data
```

Example:

```
python3 BackUp.py restore conniebucket::my_cloud /Users/connie/Desktop
```

=> the user want to restore data from aws bucket *conniebucket* > *my_cloud* to */Users/connie/Desktop*

1. Create a bucket [conniebucket] and make a directory [my_cloud]

The screenshot shows a terminal window on the left and a browser-based AWS S3 console window on the right.

Terminal Output:

```
Last login: Sun Nov 14 17:42:28 on ttys001
connie@iseung-won-ui-MacBookPro ~ % cd Desktop/css436/Prog.3
connie@iseung-won-ui-MacBookPro Prog.3 % ls
Backup.py
connie@iseung-won-ui-MacBookPro Prog.3 %
```

AWS S3 Console:

- The browser title bar shows "s3.console.aws.amazon.com" and "conniebucket - S3 bucket".
- The main page header says "Successfully created folder "my_cloud"" and "Operation successfully completed."
- The "Objects" tab is selected, showing one item: "my_cloud/" which is a Folder.
- Below the table, a message states: "No objects You don't have any objects in this folder."
- At the bottom of the page, there are links for "Feedback", "English (US)", and "Cookie preferences".

2. [my_cloud] is where I want to back up my data

The screenshot shows a terminal window on the left and a browser-based AWS S3 console window on the right.

Terminal Output:

```
Last login: Sun Nov 14 17:42:28 on ttys001
connie@iseung-won-ui-MacBookPro ~ % cd Desktop/css436/Prog.3
connie@iseung-won-ui-MacBookPro Prog.3 % ls
Backup.py
connie@iseung-won-ui-MacBookPro Prog.3 % python3 BackupUp.py backup /Users/connie/Desktop/testing conniebucket::my_cloud

```

AWS S3 Console:

- The browser title bar shows "s3.console.aws.amazon.com" and "conniebucket - S3 bucket".
- The main page header says "Amazon S3 > conniebucket > my_cloud/".
- The "Objects" tab is selected, showing zero items: "No objects You don't have any objects in this folder."
- Below the table, a message states: "No objects You don't have any objects in this folder."
- At the bottom of the page, there are links for "Feedback", "English (US)", and "Cookie preferences".

3. Execute the program to back up

```
Last login: Sun Nov 14 17:42:20 on ttys001
connie@isung-won-01-MacBookPro ~ % cd Desktop/css436/Prog.3
connie@isung-won-01-MacBookPro Prog.3 % ls
BackUp.py
connie@isung-won-01-MacBookPro Prog.3 % python3 BackUp.py backup /Users/connie/Desktop/testing conniebucket::my_cloud
Backing Up to Bucket [ conniebucket ], Directory in the Bucket: my_cloud
-----
Path: /Users/connie/Desktop/testing
Directory: ['1', '2', '3']
Files: [''.DS_Store', '5.rtf', '4.rtf', '6.rtf']
current path: my_cloud/testing
Uploaded: my_cloud/testing/5.rtf
Uploaded: my_cloud/testing/4.rtf
Uploaded: my_cloud/testing/6.rtf
-----
Path: /Users/connie/Desktop/testing/1
Directory: []
Files: [''.DS_Store', '12.rtf', '11.rtf']
current path: my_cloud/testing/1
Uploaded: my_cloud/testing/1/.DS_Store
Uploaded: my_cloud/testing/1/12.rtf
Uploaded: my_cloud/testing/1/11.rtf
-----
Path: /Users/connie/Desktop/testing/1/13
Directory: []
Files: [''.DS_Store', '12.rtf']
current path: my_cloud/testing/1/13
Uploaded: my_cloud/testing/1/13/130.rtf
-----
Path: /Users/connie/Desktop/testing/3
Directory: []
Files: [''.DS_Store', '31.rtf']
current path: my_cloud/testing/3
Uploaded: my_cloud/testing/3/.DS_Store
Uploaded: my_cloud/testing/3/31.rtf
-----
Path: /Users/connie/Desktop/testing/3/32
Directory: []
Files: [''.DS_Store', '3210.rtf']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/321/.DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf
-----
Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
-----
BACK UP COMPLETED
connie@isung-won-01-MacBookPro Prog.3 %
```

4. Data is backed up to the directory [my_cloud] in the bucket [conniebucket]

The image shows two side-by-side screenshots. On the left, a terminal window titled 'Prog.3 -- zsh - 81x21' displays the command-line output of the 'BackUp.py' script performing a backup. It lists the files being uploaded from the local 'testing' directory to the 'my_cloud' directory in the 'conniebucket' S3 bucket. On the right, a screenshot of the AWS S3 console for the 'conniebucket' shows the 'my_cloud' directory listing. The 'Objects' tab is selected, showing one object named 'testing/'. Below the table, there is a note about objects in Amazon S3 and a set of actions for managing the object.

Name	Type	Last modified	Size	Storage class
testing/	Folder	-	-	-

Prog.3 -- zsh -- 81x21

```

Directory: ['321']
Files: ['..DS_Store']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/..DS_Store

Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['..DS_Store', '3210.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/..DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf

Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['..DS_Store', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %

```

testing/

Objects (7)

Name	Type	Last modified	Size	Storage class
..DS_Store	DS_Store	November 14, 2021, 19:46:48 (UTC-08:00)	8.0 KB	Standard
1/	Folder	-	-	-
2/	Folder	-	-	-
3/	Folder	-	-	-
4.rtf	rtf	November 14, 2021, 19:46:48 (UTC-08:00)	373.0 B	Standard
5.rtf	rtf	November 14, 2021, 19:46:48 (UTC-08:00)	371.0 B	Standard
6.rtf	rtf	November 14, 2021, 19:46:49 (UTC-08:00)	371.0 B	Standard

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

Prog.3 -- zsh -- 81x21

```

Directory: ['321']
Files: ['..DS_Store']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/..DS_Store

Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['..DS_Store', '3210.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/..DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf

Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['..DS_Store', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %

```

testing/

Objects (4)

Name	Type	Last modified	Size	Storage class
..DS_Store	DS_Store	November 14, 2021, 19:46:49 (UTC-08:00)	6.0 KB	Standard
11.rtf	rtf	November 14, 2021, 19:46:50 (UTC-08:00)	374.0 B	Standard
12.rtf	rtf	November 14, 2021, 19:46:49 (UTC-08:00)	372.0 B	Standard
13/	Folder	-	-	-

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

Prog.3 -- zsh -- 81x21

```

Directory: ['321']
Files: ['..DS_Store']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/..DS_Store

Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['..DS_Store', '3210.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/..DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf

Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['..DS_Store', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %

```

testing/

Objects (1)

Name	Type	Last modified	Size	Storage class
130.rtf	rtf	November 14, 2021, 19:46:50 (UTC-08:00)	373.0 B	Standard

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

Prog.3 -- zsh - 81x21

```
Directory: ['321']
Files: ['_.DS_Store']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/.DS_Store
Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/.DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf
[REDACTED]
Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %
```

s3.console.aws.amazon.com

Amazon S3 > conniebucket > my_cloud/ > testing/ > 2/

Objects Properties

Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Name	Type	Last modified	Size	Storage class
21.rtf	rtf	November 14, 2021, 19:46:52 (UTC-08:00)	372.0 B	Standard
22.rtf	rtf	November 14, 2021, 19:46:52 (UTC-08:00)	372.0 B	Standard

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

Prog.3 -- zsh - 81x21

```
Directory: ['321']
Files: ['_.DS_Store']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/.DS_Store
Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/.DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf
[REDACTED]
Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %
```

s3.console.aws.amazon.com

Amazon S3 > conniebucket > my_cloud/ > testing/ > 3/

Objects Properties

Objects (3)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Name	Type	Last modified	Size	Storage class
_.DS_Store	DS_Store	November 14, 2021, 19:46:50 (UTC-08:00)	6.0 KB	Standard
31.rtf	rtf	November 14, 2021, 19:46:51 (UTC-08:00)	372.0 B	Standard
32/	Folder	-	-	-

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

Prog.3 -- zsh - 81x21

```
Directory: ['321']
Files: ['_.DS_Store']
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/.DS_Store
Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/.DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf
[REDACTED]
Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %
```

s3.console.aws.amazon.com

Amazon S3 > conniebucket > my_cloud/ > testing/ > 3/ > 32/

Objects Properties

Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Name	Type	Last modified	Size	Storage class
_.DS_Store	DS_Store	November 14, 2021, 19:46:51 (UTC-08:00)	6.0 KB	Standard
32/	Folder	-	-	-

Feedback English (US) © 2008 - 2021, Amazon Web Services, Inc. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

Directory: ['./321']
 Files: ['./.DS_Store', '3210.rtf']
 current path: my_cloud/testing/3/32
 Uploaded: my_cloud/testing/3/32/.DS_Store
 Uploaded: my_cloud/testing/3/32/3210.rtf

Path: /Users/connie/Desktop/testing/3/32/321
 Directory: []
 Files: ['./.DS_Store', '3210.rtf']
 current path: my_cloud/testing/3/32/321
 Uploaded: my_cloud/testing/3/32/321/.DS_Store
 Uploaded: my_cloud/testing/3/32/321/3210.rtf

BACK UP COMPLETED
 connie@iseung-won-ui-MacBookPro Prog.3 %

File Browser:

- 1
 - 11.rtf
 - 12.rtf
 - 13
 - 130.rtf
- 2
 - 21.rtf
 - 22.rtf
- 3
 - 31.rtf
 - 32
 - 321
 - 3210.rtf
 - 4.rtf
 - 5.rtf
 - 6.rtf

5. Delete a file from s3

I have a file “3210.rtf” in my local but I don’t have it in my s3 now.

Directory: ['./321']
 Files: ['./.DS_Store', '3210.rtf']
 current path: my_cloud/testing/3/32
 Uploaded: my_cloud/testing/3/32/.DS_Store
 Uploaded: my_cloud/testing/3/32/3210.rtf

Path: /Users/connie/Desktop/testing/3/32/321
 Directory: []
 Files: ['./.DS_Store', '3210.rtf']
 current path: my_cloud/testing/3/32/321
 Uploaded: my_cloud/testing/3/32/321/.DS_Store
 Uploaded: my_cloud/testing/3/32/321/3210.rtf

BACK UP COMPLETED
 connie@iseung-won-ui-MacBookPro Prog.3 %

File Browser:

- 1
 - 11.rtf
 - 12.rtf
 - 13
 - 130.rtf
- 2
 - 21.rtf
 - 22.rtf
- 3
 - 31.rtf
 - 32
 - 321
 - 3210.rtf
 - 4.rtf
 - 5.rtf
 - 6.rtf

Screen Shot
 2021-11-49.16 PM

6. Execute the program to back up

```
current path: my_cloud/testing/3/32
Uploaded: my_cloud/testing/3/32/.DS_Store
Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['.DS_Store', '3210.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/.DS_Store
Uploaded: my_cloud/testing/3/32/321/3210.rtf
-----
Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/2
Uploaded: my_cloud/testing/2/21.rtf
Uploaded: my_cloud/testing/2/22.rtf
-----
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 % python3 BackUp.py backup /Users/connie/Desktop/testing conniebucket:my_cloud
Backing Up to Bucket [ conniebucket ], Directory in the Bucket: my_cloud
-----
Path: /Users/connie/Desktop/testing
Directory: []
Files: ['.DS_Store', '5.rtf', '6.rtf']
current path: my_cloud/testing
-----
Path: /Users/connie/Desktop/testing/1
Directory: ['13']
Files: ['.DS_Store', '12.rtf', '11.rtf']
current path: my_cloud/testing/1
-----
Path: /Users/connie/Desktop/testing/1/13
Directory: []
Files: ['130.rtf']
current path: my_cloud/testing/1/13
-----
Path: /Users/connie/Desktop/testing/3
Directory: ['32']
Files: ['.DS_Store', '31.rtf']
current path: my_cloud/testing/3
-----
Path: /Users/connie/Desktop/testing/3/32
Directory: ['321']
Files: ['.DS_Store']
current path: my_cloud/testing/3/32
-----
Path: /Users/connie/Desktop/testing/3/32/321
Directory: []
Files: ['.DS_Store', '3210.rtf']
current path: my_cloud/testing/3/32/321
Uploaded: my_cloud/testing/3/32/321/3210.rtf
-----
Path: /Users/connie/Desktop/testing/2
Directory: []
Files: ['21.rtf', '22.rtf']
current path: my_cloud/testing/2
-----
BACK UP COMPLETED
connie@iseung-won-ui-MacBookPro Prog.3 %
```

7. A file is backed up

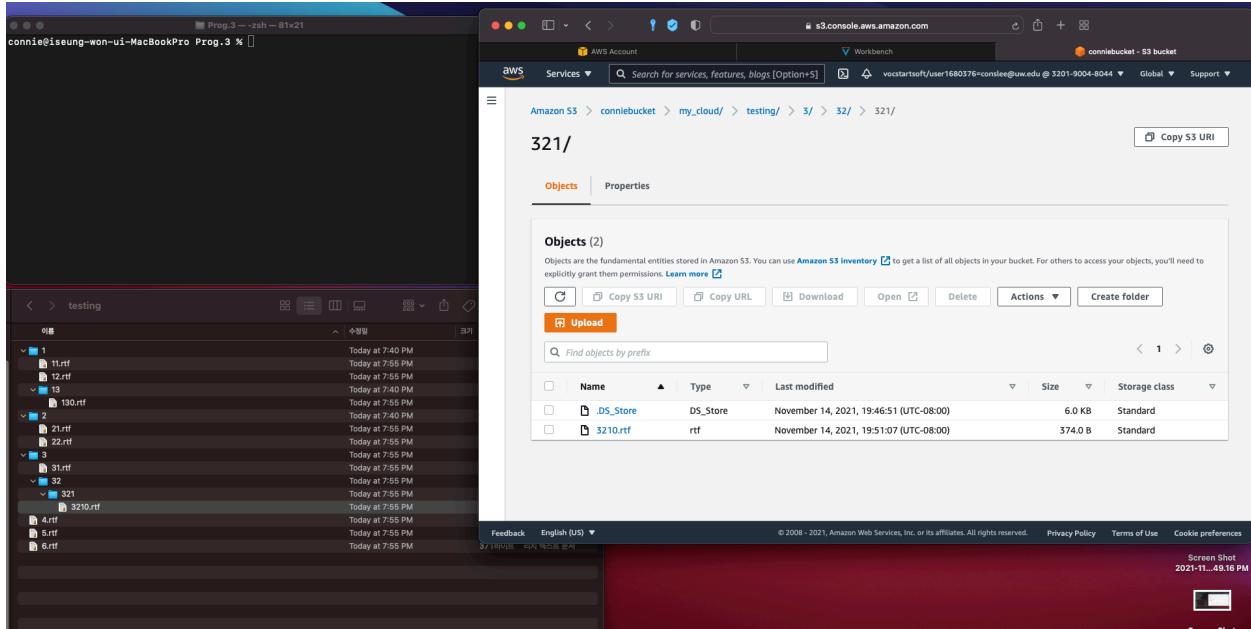
I have a file “3210.rtf” both in my local and my s3 now.

The screenshot shows two windows side-by-side. On the left is a terminal window titled 'Prog.3' with the command 'Prog.3' at the bottom. It displays the output of a Python script named 'BackUp.py' which performs a backup from a local directory to an S3 bucket. The output shows files being uploaded, including '.DS_Store' and '3210.rtf'. On the right is a web browser window for 'aws.amazon.com' showing the 's3.console.aws.amazon.com' interface. It navigates to 'Amazon S3 > conniebucket > my_cloud > testing > 3/ > 32/ > 321/'. The 'Objects' tab is selected, showing a list of objects with details like name, type, last modified, size, and storage class. Two objects are listed: '.DS_Store' (Type: DS_Store, Last modified: November 14, 2021, 19:46:51 (UTC-08:00), Size: 6.0 KB, Storage class: Standard) and '3210.rtf' (Type: rtf, Last modified: November 14, 2021, 19:51:07 (UTC-08:00), Size: 374.0 B, Storage class: Standard). The bottom of the browser window shows standard AWS footer links and a timestamp '2021-11-11 49:16 PM'.

8. Delete a file from my local

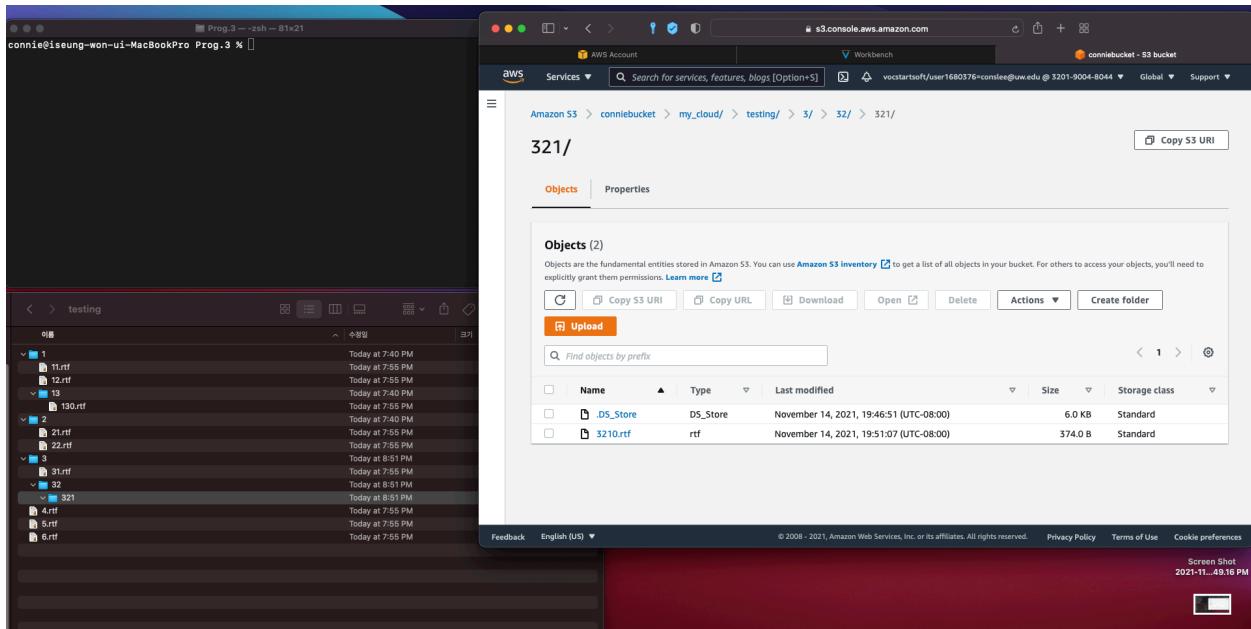
I have a file “3210.rtf” in my s3 but I don’t have it in my local.

BEFORE DELETE



The screenshot shows the AWS S3 console interface. On the left, a file explorer window displays a directory structure under 'testing'. Inside 'testing', there are several sub-folders (1, 2, 3) and files (4.rtf, 5.rtf, 6.rtf). A specific file, '3210.rtf', is highlighted. On the right, the main pane shows the contents of the '321' folder. It lists two objects: '.DS_Store' (Type: DS_Store, Last modified: November 14, 2021, 19:46:51 (UTC-08:00), Size: 6.0 KB, Storage class: Standard) and '3210.rtf' (Type: rtf, Last modified: November 14, 2021, 19:51:07 (UTC-08:00), Size: 374.0 B, Storage class: Standard).

AFTER DELETE



The screenshot shows the AWS S3 console interface after the file '3210.rtf' has been deleted. The main pane now displays the contents of the '321' folder, which only contains the single object '.DS_Store' (Type: DS_Store, Last modified: November 14, 2021, 19:46:51 (UTC-08:00), Size: 6.0 KB, Storage class: Standard). The file '3210.rtf' is no longer listed.

9. Execute the program to restore

I have a file “3210.rtf” both in my s3 and my local.

All files’ time stamp have been changed “Today at 7:55 PM” to “Today at 8:51 PM” since I restore the files from s3 to my local at 8:51 PM

connie@iseung-won-ui-MacBookPro Prog.3 % python3 BackUp.py restore conniebucket::my_cloud
RESTORE COMPLETED

Amazon S3 > conniebucket > my_cloud/ > testing/ > 3/ > 32/ > 321/

Name	Type	Last modified	Size	Storage class
.DS_Store	DS_Store	November 14, 2021, 19:46:51 (UTC-08:00)	6.0 KB	Standard
3210.rtf	rtf	November 14, 2021, 19:51:07 (UTC-08:00)	374.0 B	Standard