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Program 3 Application Description

For this application, I created a system allowing AWS to users to backup or restore, and directory on their local machine, to any bucket in their S3 service. This can be used by any Linux user who wishes to keep their local storage backed up, while not wasting any data on files that have already been uploaded in their current state.

To backup a local directory, the user must input on the command line, the specific directory they would like backed up, the name of the bucket it should be backed up into, and the directory within the bucket it should be backed up into. The same applies for restoring a local directory that is saved in the cloud. To do each of these functions, I created a recursive algorithm, recursing deeper into the directory, making a folder if necessary, or transferring a file if necessary. I found the most challenging component of this program to be comparing the modified times of files when backing up. This was an important component to ensure data was not being wasted, but caused quite a bit of difficulty managing the time formats and time zones.

```
simon@DESKTOP-U5LCGPL:/mnt/c/Users/Simon/Desktop/School/CSS436 Cloud Computing/Program 3 BackupRestore$ python3 backup.p
y /mnt/c/Users/Simon/Desktop/BackUpFiles/ simon-a-data-backup-css436-23::
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/Resume Simon Aronsky.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Cloud/ICA6_Upper-bound_On_Availability.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Cloud/ICA8_Design_the_contract_for_this_Service.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Cloud/MidtermExamStudyGuide.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Security/Cryptography.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Security/Hashing.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Security/IDS.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Security/IDSChapter.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Security/NetworkFirewalls.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/School/Security/SecurityDesignPrinciples.pdf
UPDATING: /mnt/c/Users/Simon/Desktop/BackUpFiles/test.txt
```

Backing Up Files using terminal command

```
simon@DESKTOP-U5LCGPL:/mnt/c/Users/Simon/Desktop/School/CSS436 Cloud Computing/Program 3 BackupRestore$ python3 restore.py simon-a-data-backup-css436-23::"" /mnt/c/Users/Simon/Desktop/BackU
pFilesRestore/
Resume Simon Aronsky.pdf
Restoring: Resume Simon Aronsky.pdf
Making Directory: /mnt/c/Users/Simon/Desktop/BackUpFilesRestore/School
Making Directory: /mnt/c/Users/Simon/Desktop/BackUpFilesRestore/School/Cloud
ICA6_Upper-bound_On_Availability.pdf
Restoring: School/Cloud/ICA6_Upper-bound_On_Availability.pdf
ICA8_Design_the_contract_for_this_Service.pdf
Restoring: School/Cloud/ICA8_Design_the_contract_for_this_Service.pdf
MidtermExamStudyGuide.pdf
Restoring: School/Cloud/MidtermExamStudyGuide.pdf
Making Directory: /mnt/c/Users/Simon/Desktop/BackUpFilesRestore/School/Security
Cryptography.pdf
Restoring: School/Security/Cryptography.pdf
Hashing.pdf
Restoring: School/Security/Hashing.pdf
IDS.pdf
Restoring: School/Security/IDS.pdf
IDSChapter.pdf
Restoring: School/Security/IDSChapter.pdf
NetworkFirewalls.pdf
Restoring: School/Security/NetworkFirewalls.pdf
SecurityDesignPrinciples.pdf
Restoring: School/Security/SecurityDesignPrinciples.pdf
test.txt
Restoring: test.txt
```

Restoring Files using terminal command