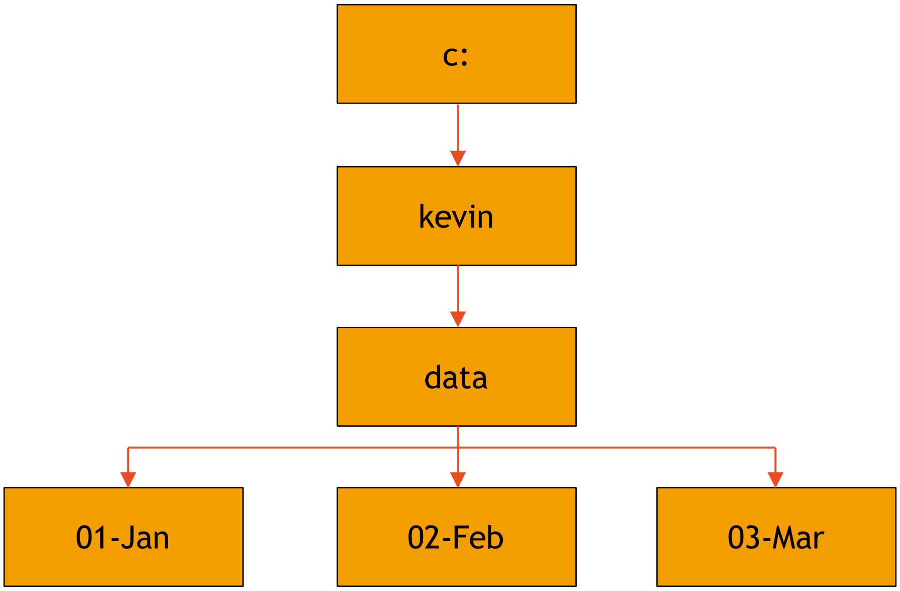
Chapter 5, Miller 3rd ed, Bigger Data, File I/O

The os Module

1. Python needs to know where the file is located
2. Python looks in the "Current Working Directory"
3. Example directory structure – Look at files in directory:



4. Move around in OS shell (command-line/terminal/PowerShell)

```
PowerShell 7.0.3
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PS C:\Users\kmlil> cd /
PS C:\> cd kevin/data
PS C:\kevin\data> ls

    Directory: C:\kevin\data

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----           7/20/2020 11:26 AM                01-Jan
d----           7/20/2020 11:26 AM                02-Feb
d----           7/20/2020 11:26 AM                03-Mar
-a---           7/20/2020 11:23 AM             29 print-cwd.py

PS C:\kevin\data> cd 02-Feb
PS C:\kevin\data\02-Feb> ls


    Directory: C:\kevin\data\02-Feb

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a---           7/20/2020 11:23 AM             29 print-cwd.py

PS C:\kevin\data\02-Feb> cd ..
PS C:\kevin\data> ls

    Directory: C:\kevin\data

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----           7/20/2020 11:26 AM                01-Jan
d----           7/20/2020 11:26 AM                02-Feb
d----           7/20/2020 11:26 AM                03-Mar
-a---           7/20/2020 11:23 AM             29 print-cwd.py

PS C:\kevin\data> cd ..
PS C:\kevin> ls

    Directory: C:\kevin

Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d----           7/20/2020 11:26 AM                data
-a---           7/20/2020 11:23 AM             29 print-cwd.py

PS C:\kevin> cd data/01-Jan
PS C:\kevin\data\01-Jan> cd ../02-Feb
PS C:\kevin\data\02-Feb>
```

5. Default CWD is where the running python program is saved.
   a. Move to different directories
   b. Run 05-01-print-cwd.py from different directories
      `python print-cwd.py`

```
# print-cwd.py
import os
print(f'Current working directory is: {os.getcwd()}')
```

6. "Move around" from within Python – Change CWD
   a. Restart OS shell (PowerShell, cmd, terminal, etc.)
   b. Start Python shell

```
import os

os.getcwd()                    → 'C:\\'
```

- Why the double \\
- Try print('c:\new–directory')
  - Doesn't work, \n is new line
- Need to do: print('c:\\new–directory')
- Recall, \\ is how you get a backslash

```
os.chdir('kevin/data')

os.getcwd()                    → 'C:\\kevin\\data'

os.listdir()
    → ['01–Jan', '02–Feb', '03–Mar', 'print-cwd.py']

os.chdir('02-Feb')

os.getcwd()                    → 'C:\\kevin\\data\\02–Feb'

os.chdir(os.pardir)

os.getcwd()                    → 'C:\\kevin\\data'

os.chdir('01-Jan')

os.getcwd()                    → 'C:\\kevin\\data\\01–Jan'

os.pardir                      → '..'
os.chdir('/kevin/data/01-Jan')      Note leading '/'

os.chdir('/')                       Change to root directory

os.chdir('../../')

os.getcwd()                         → 'C:\\kevin'
```

7. Write files to different directories from Python shell

```
import os

os.getcwd()             → 'C:\\'

os.chdir('kevin')

os.getcwd()             → 'C:\\kevin'

dataFile = open('file-in-kevin.txt', 'w')
print('Data in kevin dir', file=dataFile)
dataFile.close()
    → Go verify the file is in the right spot

os.chdir('data/03-Mar')

dataFile = open('file-in-march.txt', 'w')
print('Data is March directory', file=dataFile)
print('A second line of data', file=datafile)
dataFile.close()
    → Go verify the file is in the right spot
```

Opening a Text File

```
inFile = open(fileName, 'r')    →    'r' for Read

outFile = open(filename, 'w')   →    'w' for Write
```

Closing a Text File

```
inFile.close()
outFile.close
```

What Wing does with the working directory

- When you have a saved file opened for editing
- Wing changes the CWD to the directory in which that file is located

- Demonstrate this