



# Python

## Querying Directory Contents



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# We know how to move around directories

We know how to move around directories  
And how to list what's in directories

We know how to move around directories  
And how to list what's in directories  
How do we

We know how to move around directories  
And how to list what's in directories

How do we

- Check whether a file exists

We know how to move around directories  
And how to list what's in directories

How do we

- Check whether a file exists
- Tell apart a file and a directory

We know how to move around directories

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How do we

- Check whether a file exists
- Tell apart a file and a directory
- See if two variables refer to the same directory

We know how to move around directories

And how to list what's in directories

How do we

- Check whether a file exists
- Tell apart a file and a directory
- See if two variables refer to the same directory
- Check that we are allowed to delete a file



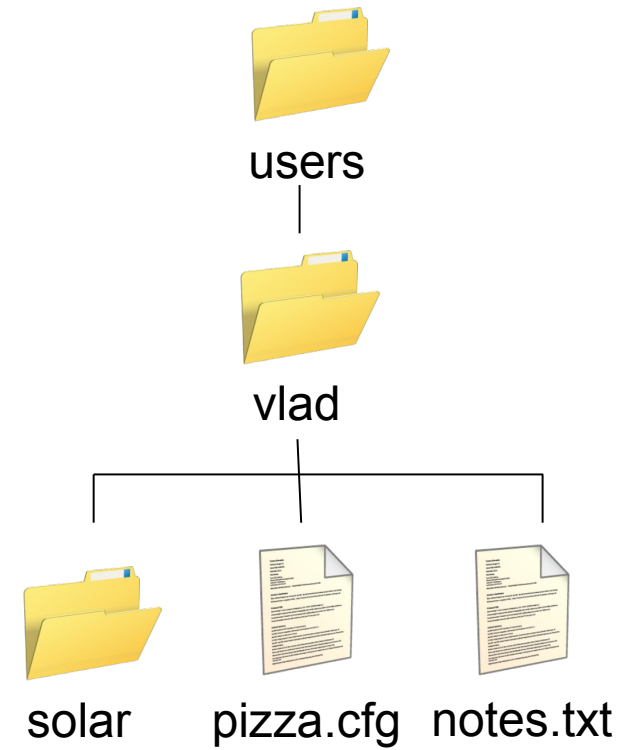
We know how to move around directories

And how to list what's in directories

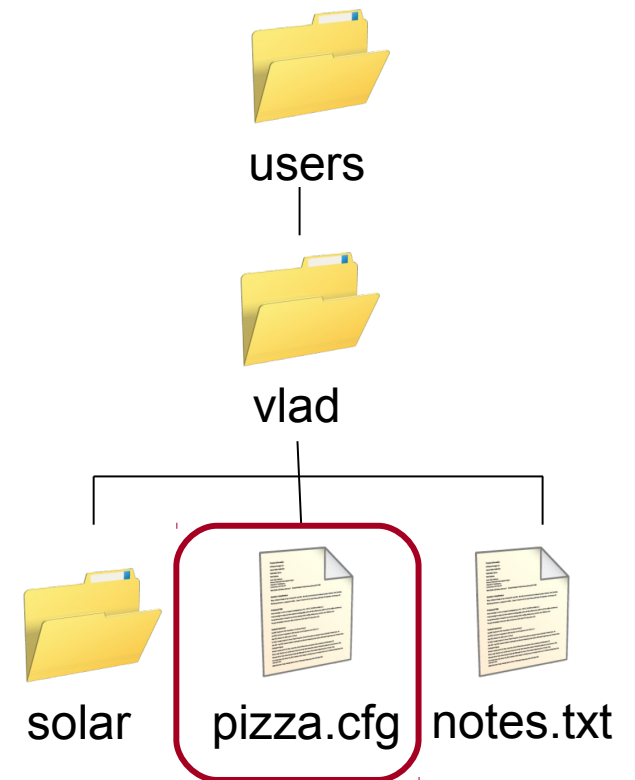
How do we

- Check whether a file exists
- Tell apart a file and a directory
- See if two variables refer to the same directory
- Check that we are allowed to delete a file
- Get the size of a file

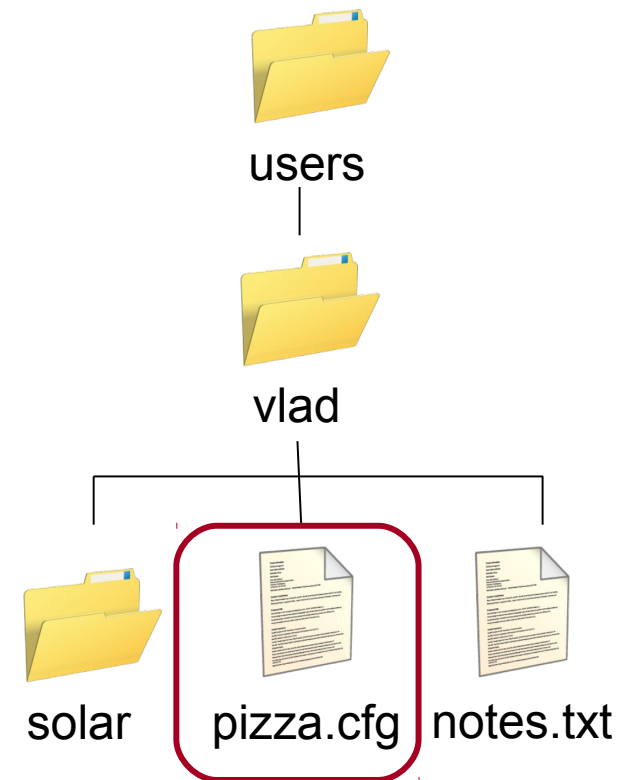
```
>>> from os import exists
```



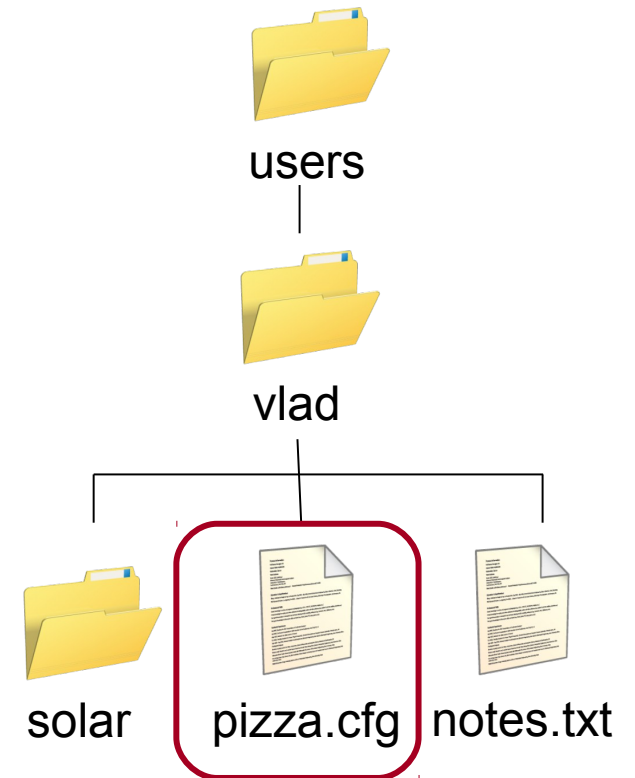
```
>>> from os import exists  
>>> exists('pizza.cfg')
```



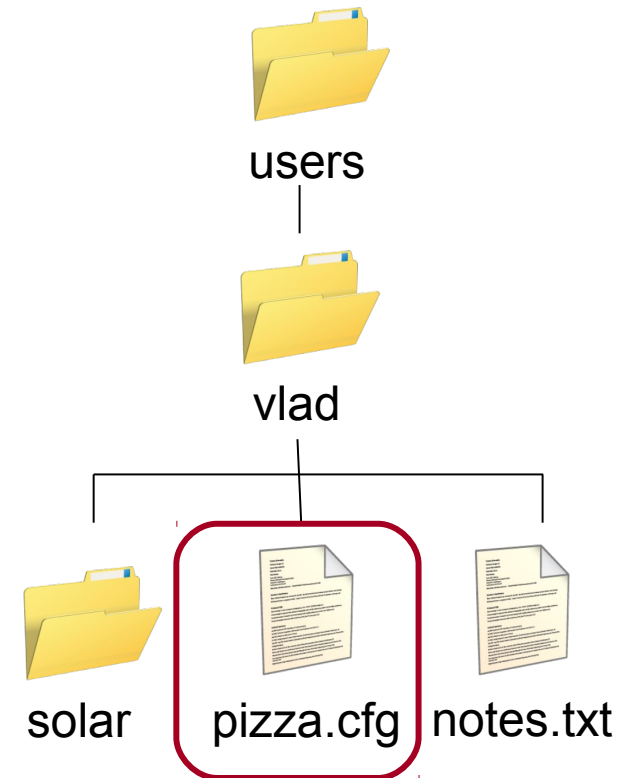
```
>>> from os import exists  
>>> exists('pizza.cfg')  
True
```



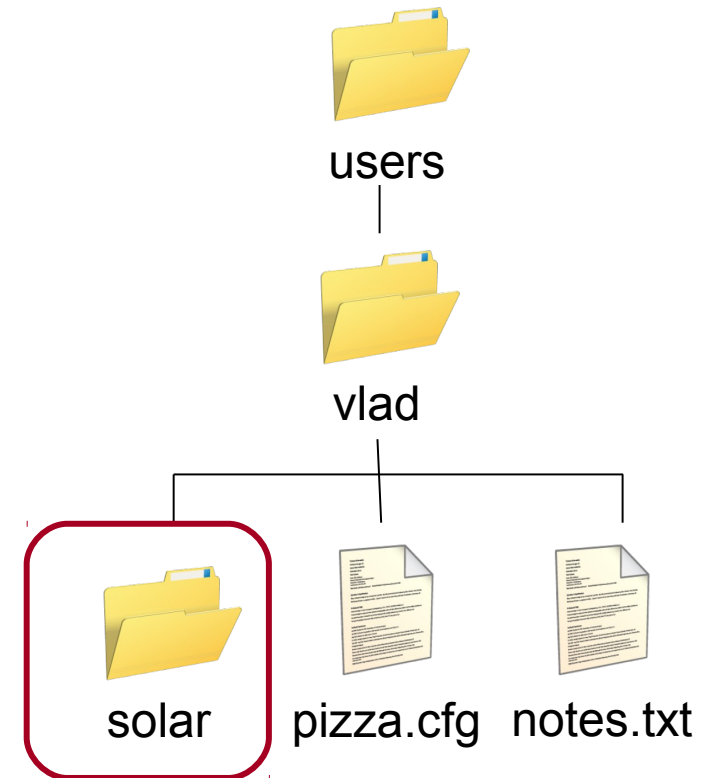
```
>>> from os import exists  
>>> exists('pizza.cfg')  
True  
>>> exists('/users/vlad/pizza.cfg')
```



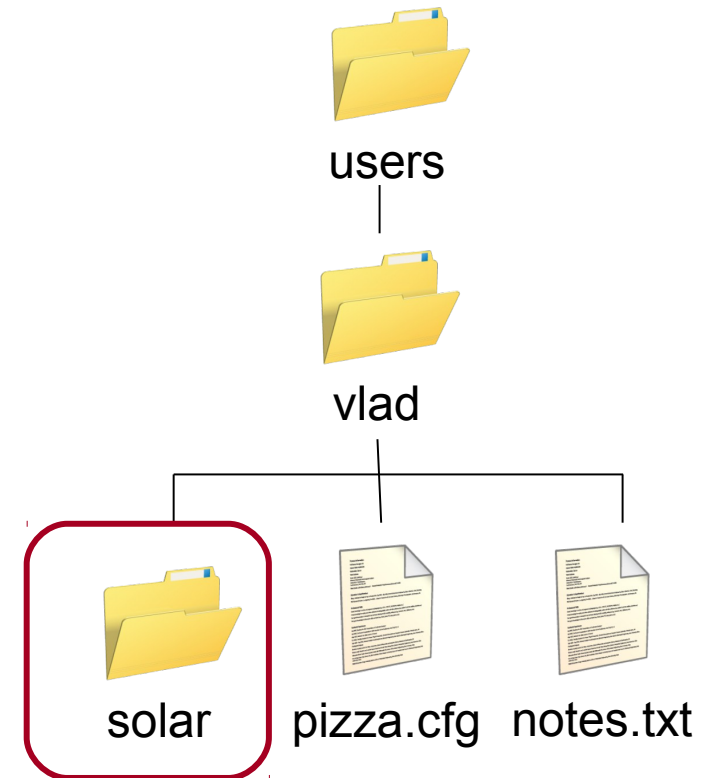
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
```



```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
```

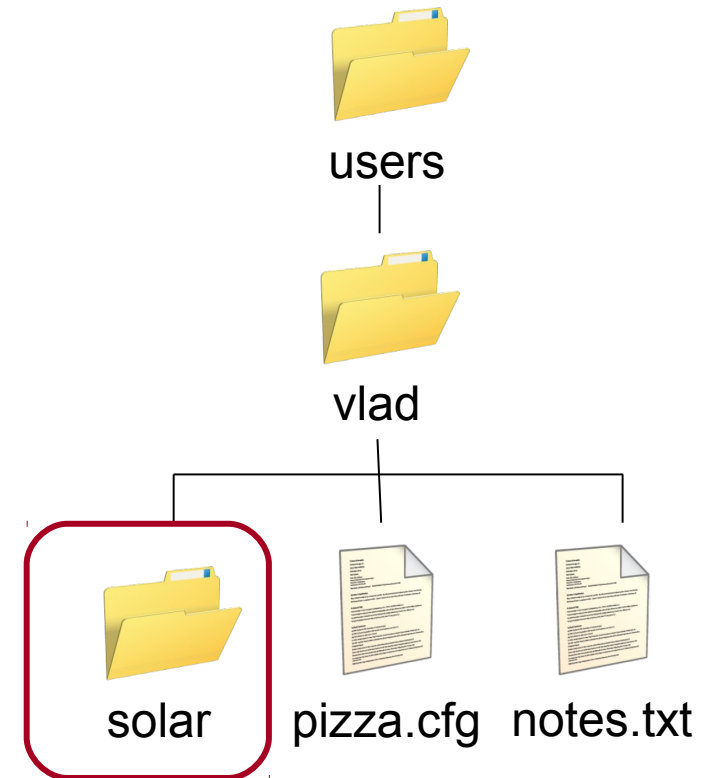


```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
```

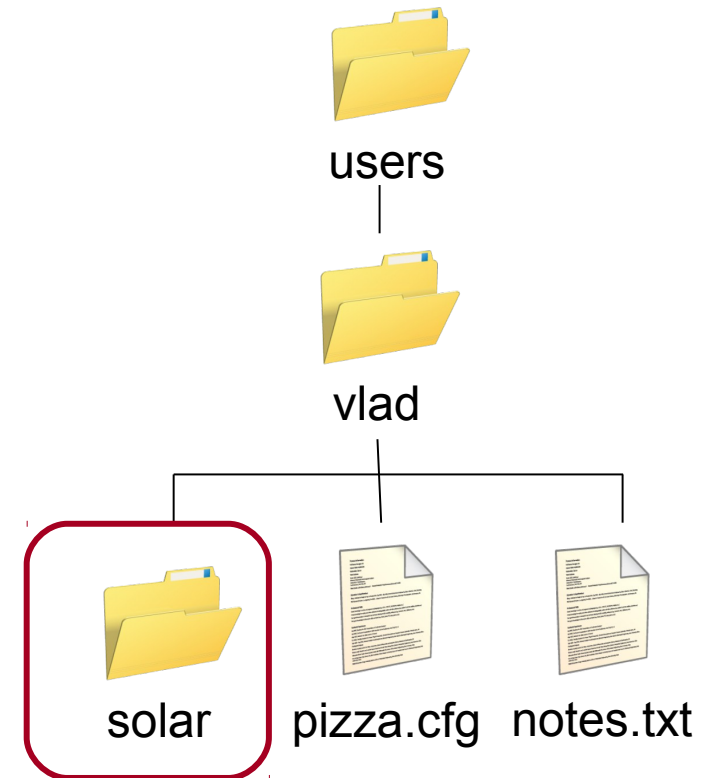




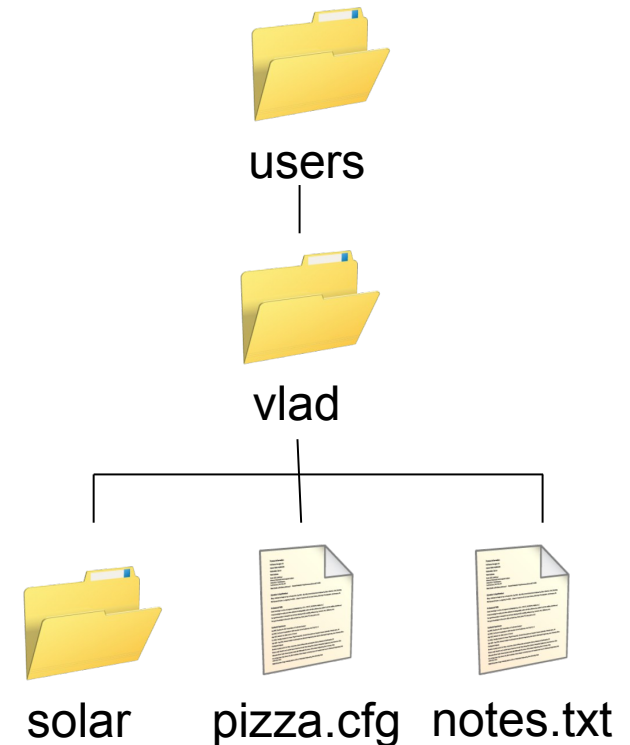
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
>>> exists('/users/vlad/solar')
```



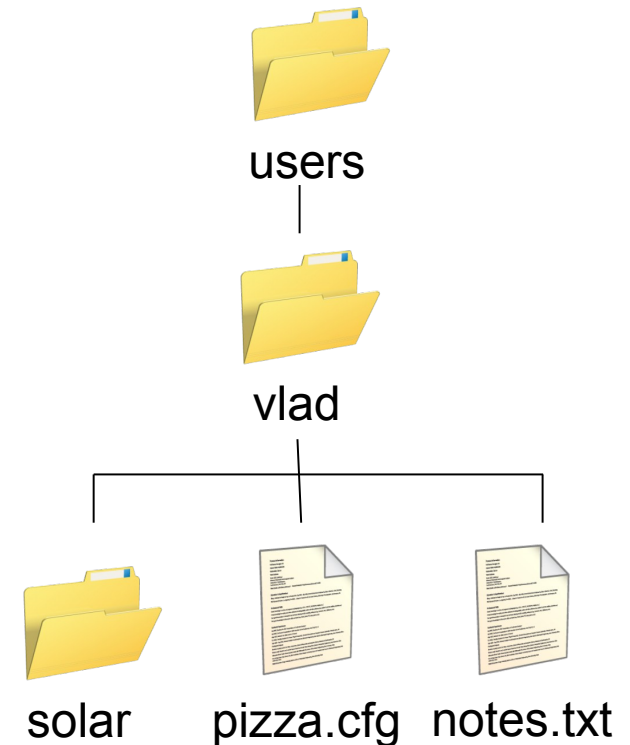
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
>>> exists('/users/vlad/solar')
True
```



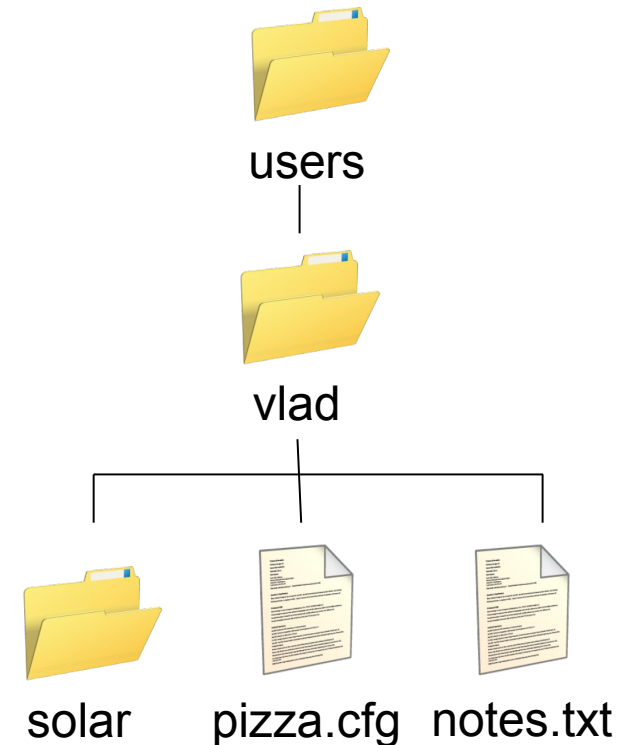
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
>>> exists('/users/vlad/solar')
True
>>> exists('no-such-file')
```



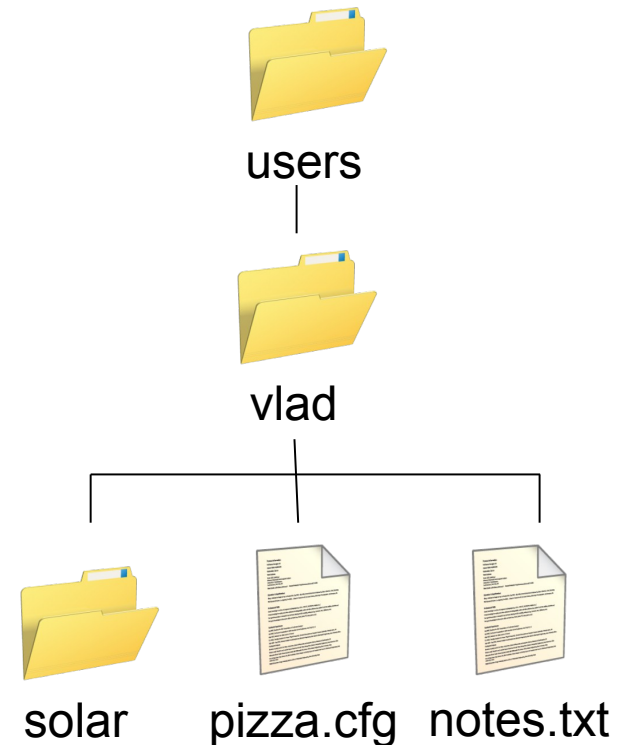
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
>>> exists('/users/vlad/solar')
True
>>> exists('no-such-file')
False
```



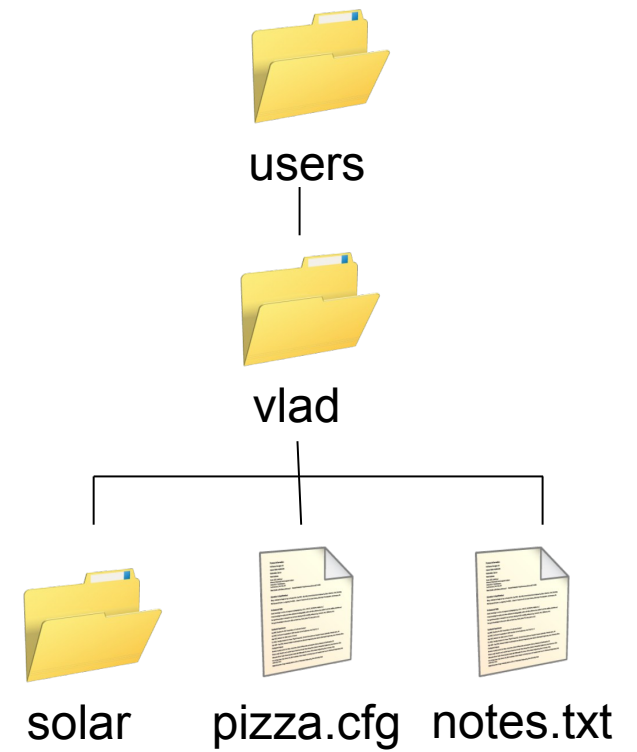
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
>>> exists('/users/vlad/solar')
True
>>> exists('no-such-file')
False
>>> exists('/users/vlad/no-such-thing')
```



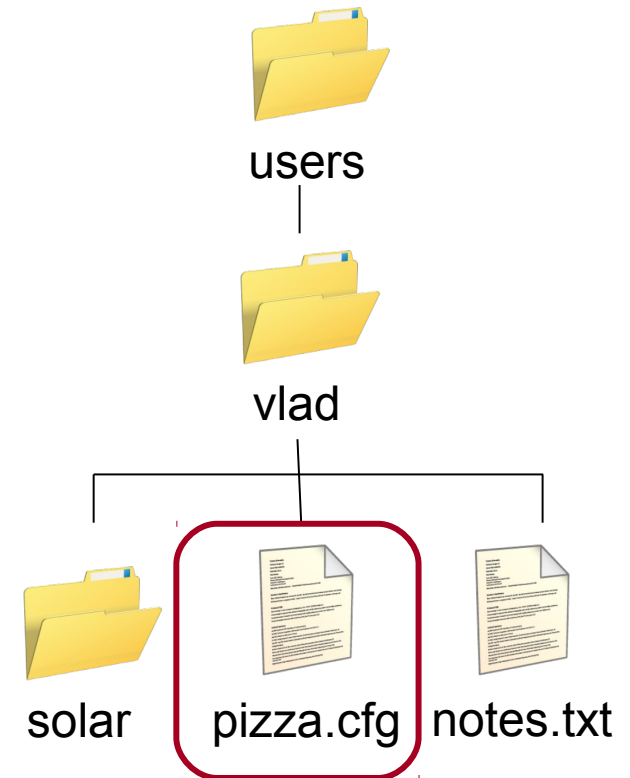
```
>>> from os import exists
>>> exists('pizza.cfg')
True
>>> exists('/users/vlad/pizza.cfg')
True
>>> exists('solar')
True
>>> exists('/users/vlad/solar')
True
>>> exists('no-such-file')
False
>>> exists('/users/vlad/no-such-thing')
False
```



```
>>> from os import isfile, isdir
```

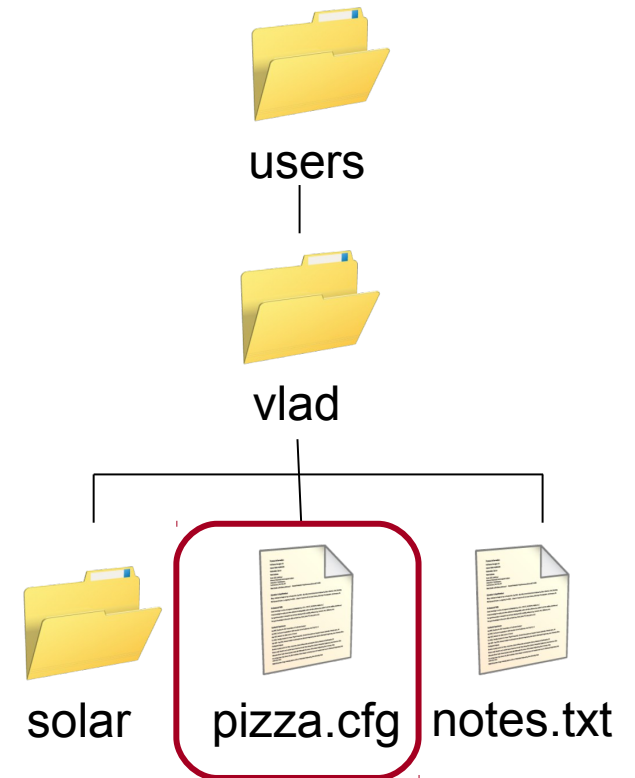


```
>>> from os import isfile, isdir  
>>> isfile('pizza.cfg')
```

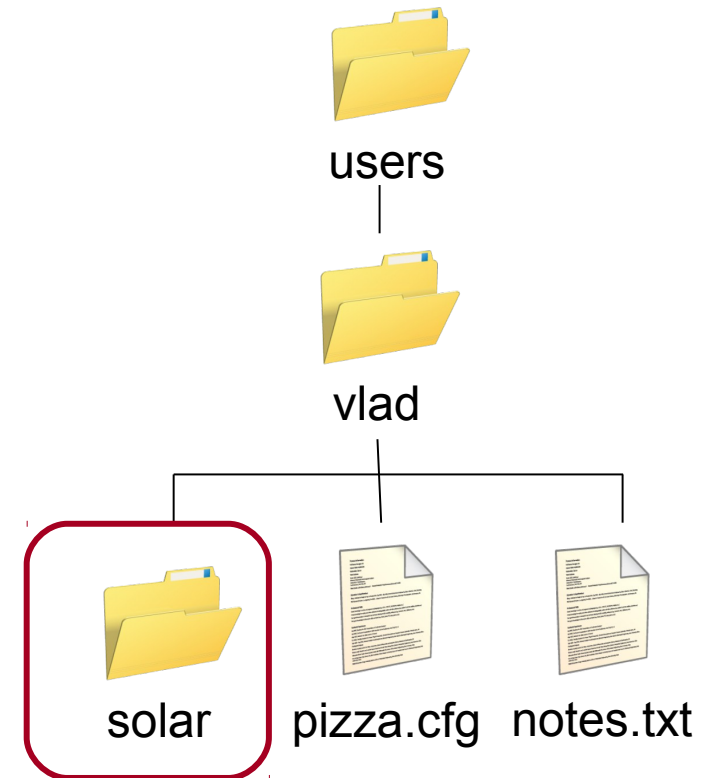




```
>>> from os import isfile, isdir  
>>> isfile('pizza.cfg')  
True
```



```
>>> from os import isfile, isdir  
>>> isfile('pizza.cfg')  
True  
>>> isfile('solar')
```



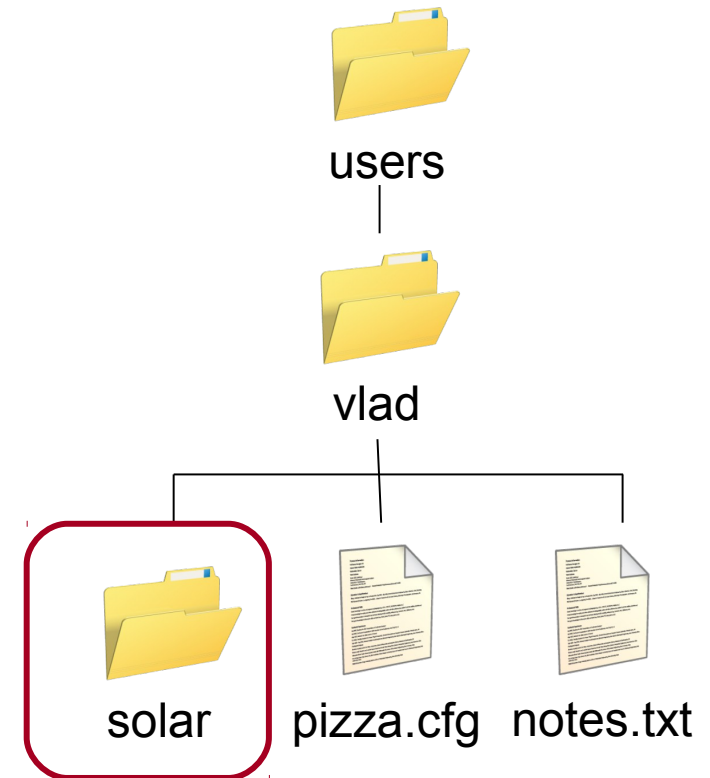
```
>>> from os import isfile, isdir
```

```
>>> isfile('pizza.cfg')
```

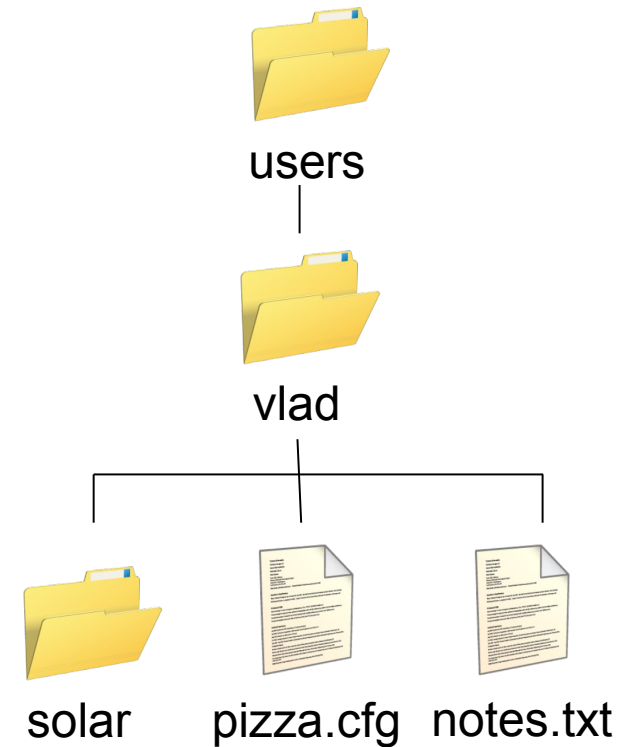
```
True
```

```
>>> isfile('solar')
```

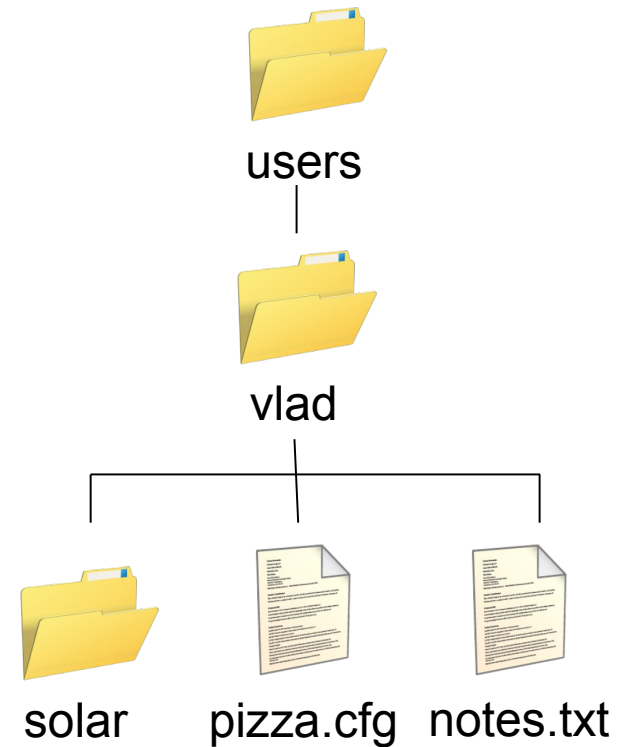
```
False
```



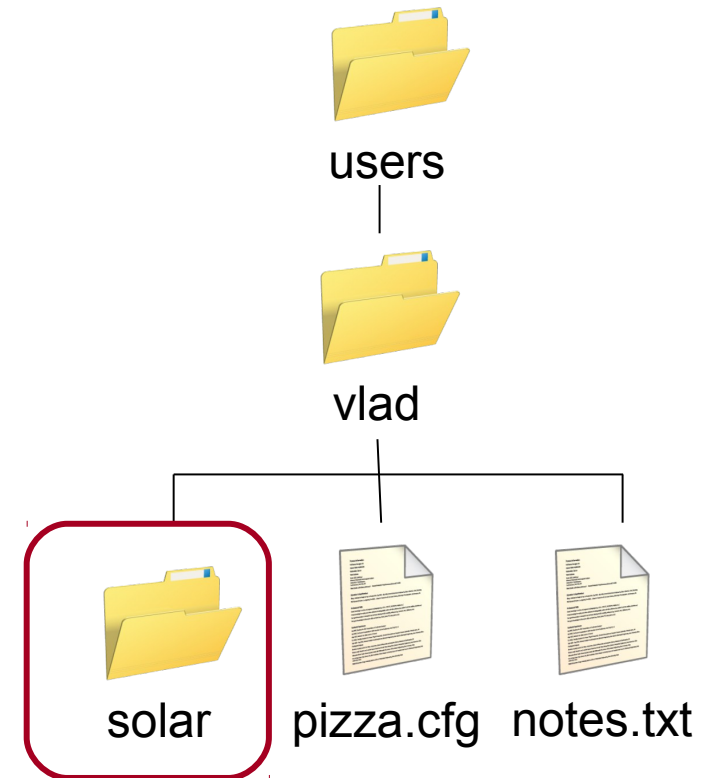
```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
```



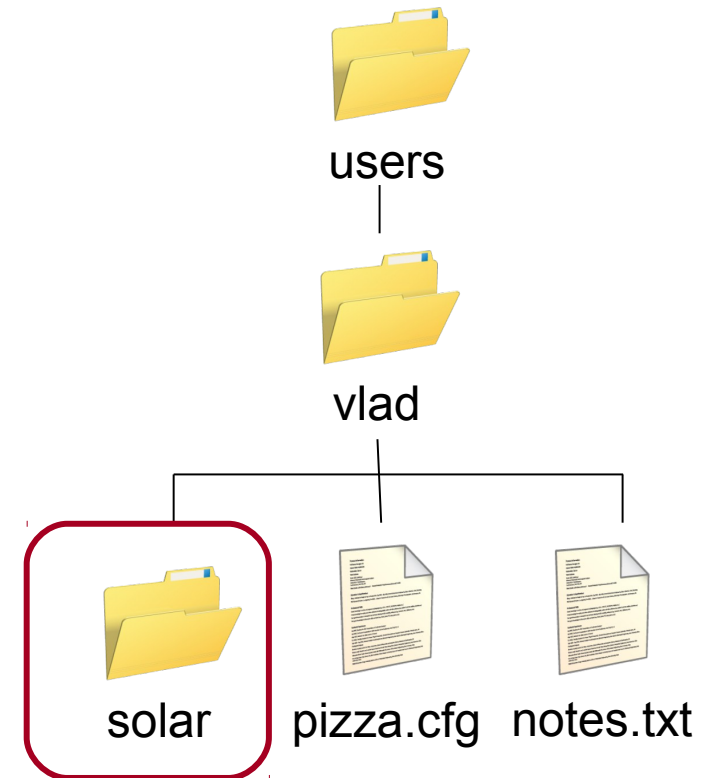
```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
False
```



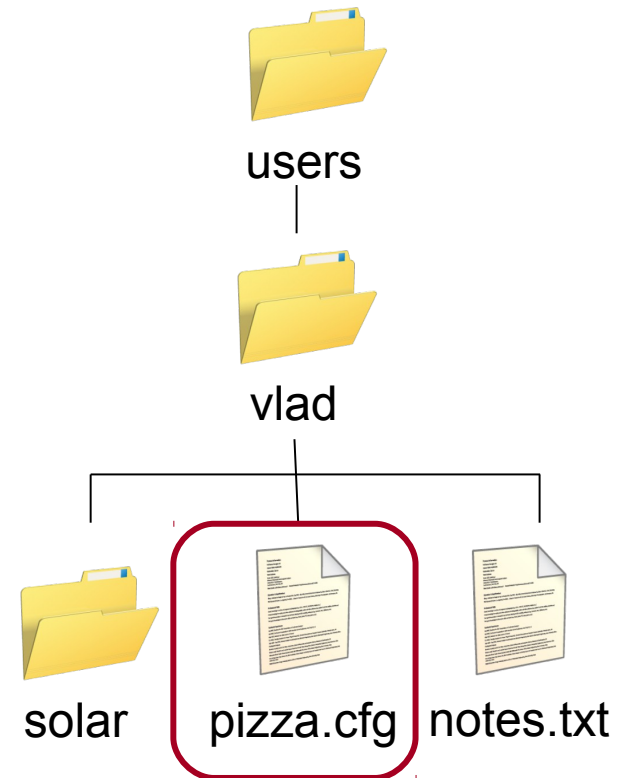
```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
False
>>> isdir('solar')
```



```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
False
>>> isdir('solar')
True
```

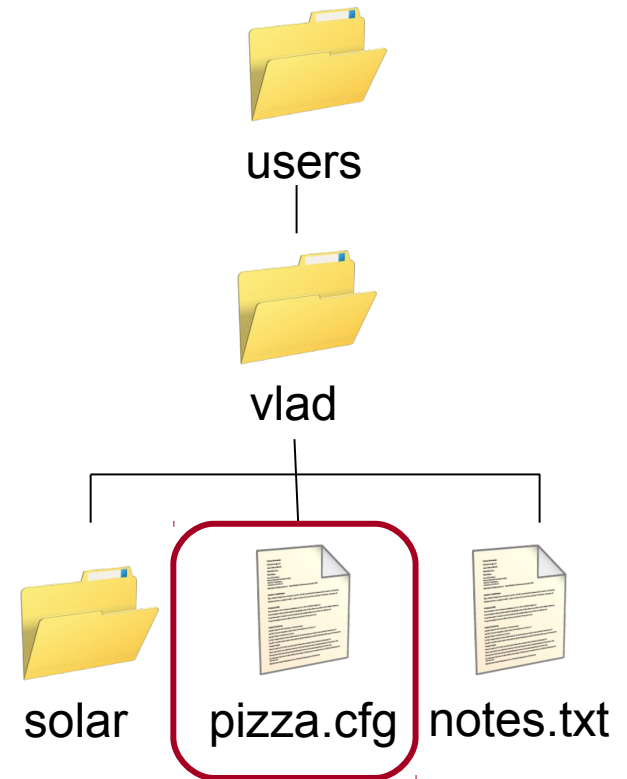


```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
False
>>> isdir('solar')
True
>>> isdir('pizza.cfg')
```

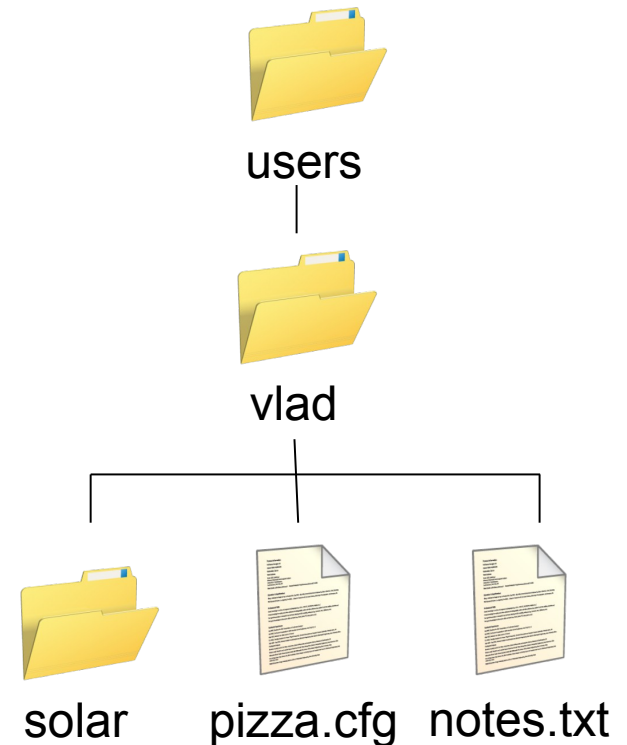




```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
False
>>> isdir('solar')
True
>>> isdir('pizza.cfg')
False
```



```
>>> from os import isfile, isdir
>>> isfile('pizza.cfg')
True
>>> isfile('solar')
False
>>> isfile('no-such-file')
False
>>> isdir('solar')
True
>>> isdir('pizza.cfg')
False
>>> isdir('no-such-dir')
```



```
>>> from os import isfile, isdir
```

```
>>> isfile('pizza.cfg')
```

```
True
```

```
>>> isfile('solar')
```

```
False
```

```
>>> isfile('no-such-file')
```

```
False
```

```
>>> isdir('solar')
```

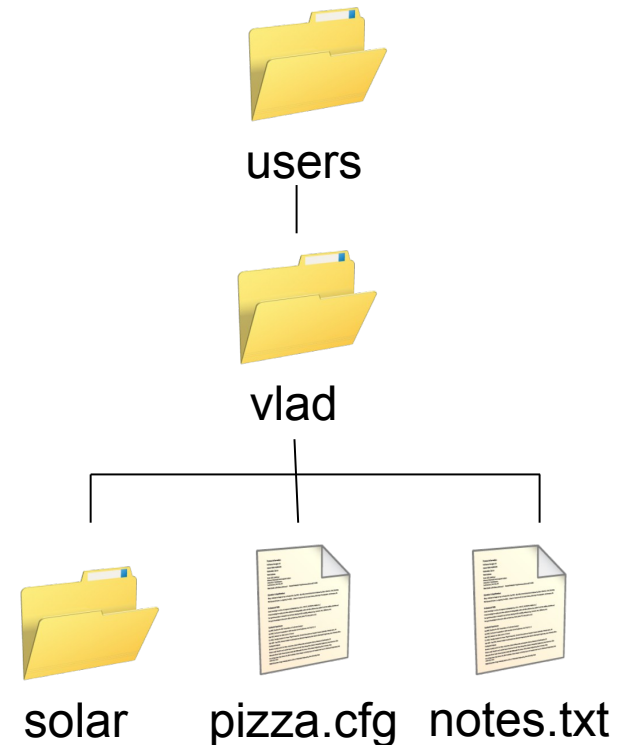
```
True
```

```
>>> isdir('pizza.cfg')
```

```
False
```

```
>>> isdir('no-such-dir')
```

```
False
```



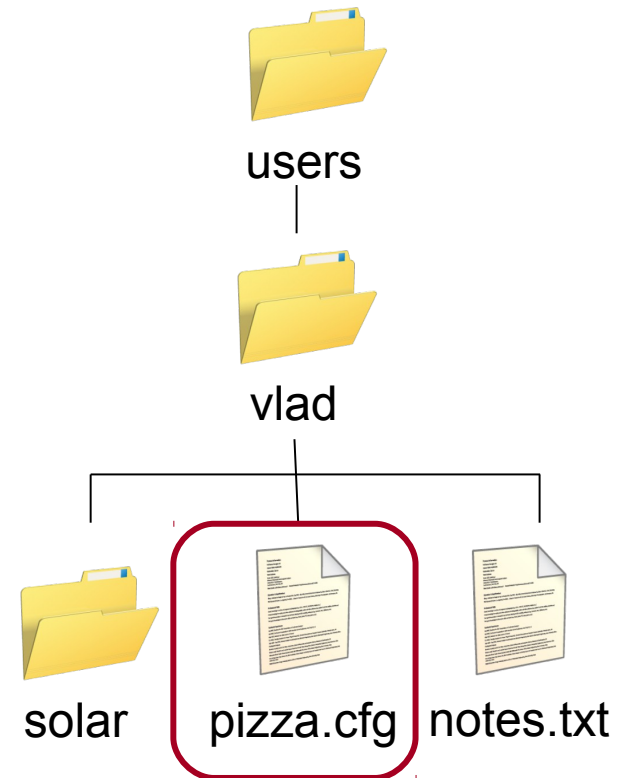
```
>>> def check(path):  
...     if isfile(path):  
...         print "It's a file"  
...     elif isdir(path):  
...         print "It's a directory"  
...     else:  
...         print "It doesn't exist"  
...
```

```
>>> def check(path):  
...     if isfile(path):  
...         print "It's a file"  
...     elif isdir(path):  
...         print "It's a directory"  
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...         print "It doesn't exist"  
...
```

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>>> def check(path):  
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...     elif isdir(path):  
...         print "It's a directory"  
...     else:  
...         print "It doesn't exist"  
... 
```

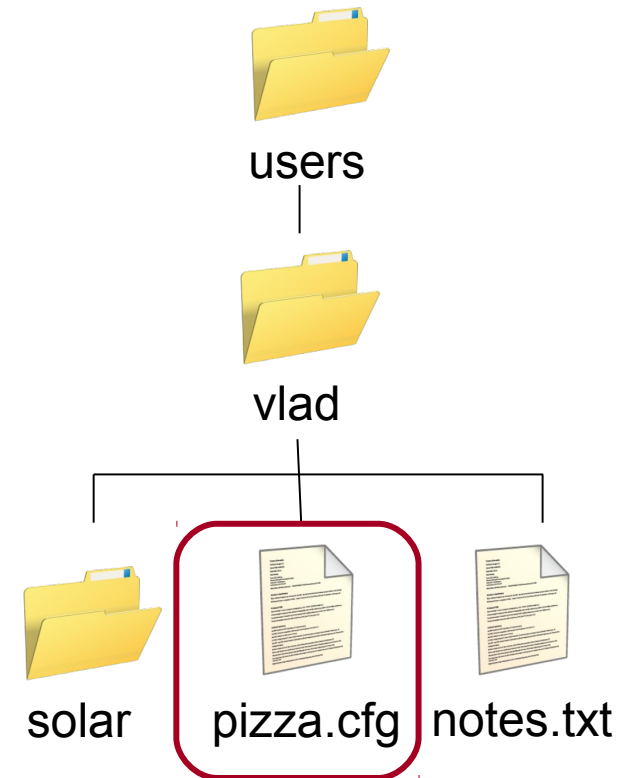
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>>> def check(path):  
...     if isfile(path):  
...         print "It's a file"  
...     elif isdir(path):  
...         print "It's a directory"  
...     else:  
...         print "It doesn't exist"  
...
```

```
>>> def check(path):
...     if isfile(path):
...         print "It's a file"
...     elif isdir(path):
...         print "It's a directory"
...     else:
...         print "It doesn't exist"
...
>>> check('/users/vlad/pizza.cfg')
```

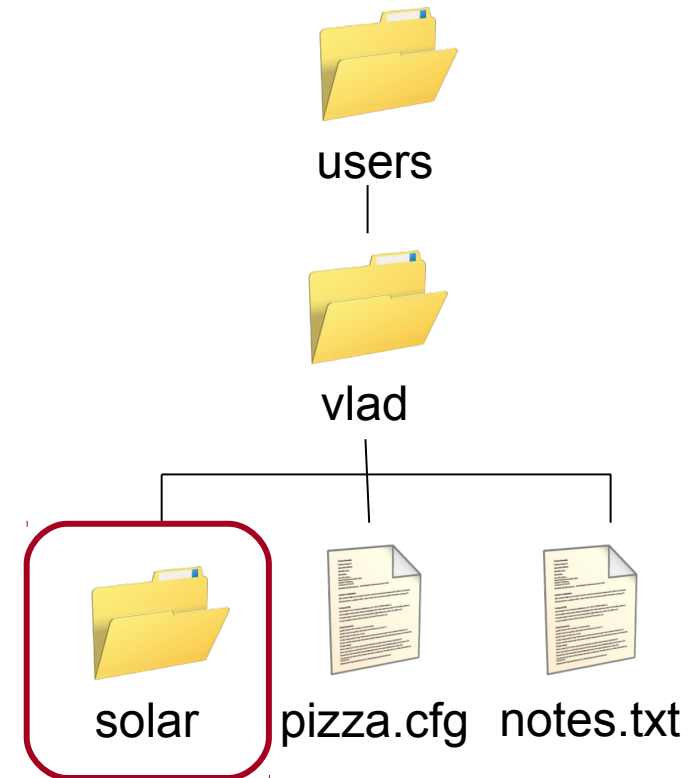




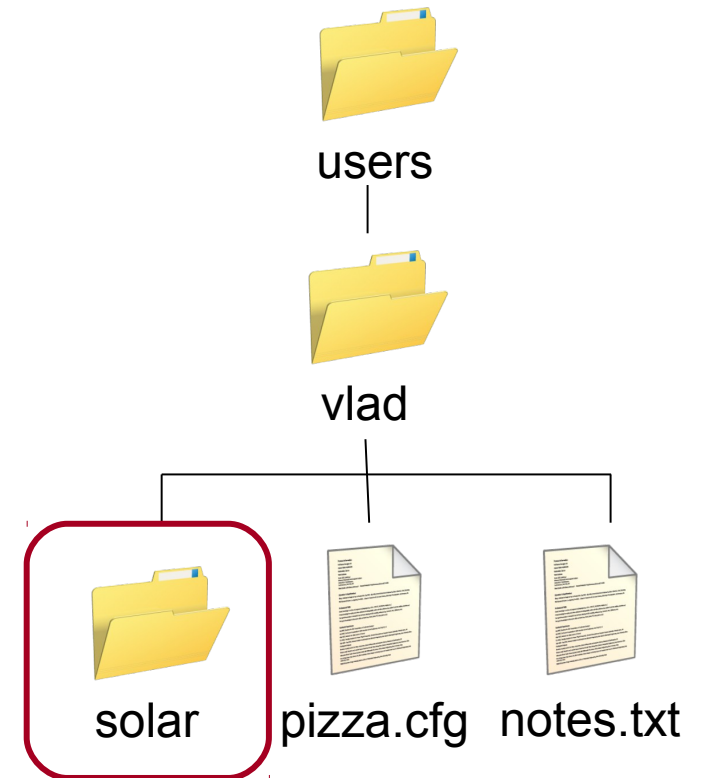
```
>>> def check(path):  
...     if isfile(path):  
...         print "It's a file"  
...     elif isdir(path):  
...         print "It's a directory"  
...     else:  
...         print "It doesn't exist"  
...  
>>> check('/users/vlad/pizza.cfg')  
It's a file
```



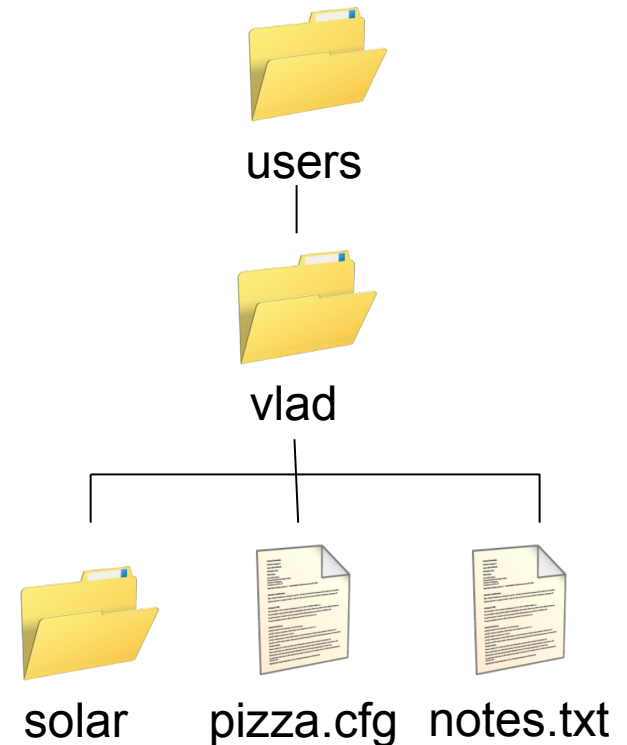
```
>>> def check(path):  
...     if isfile(path):  
...         print "It's a file"  
...     elif isdir(path):  
...         print "It's a directory"  
...     else:  
...         print "It doesn't exist"  
...  
>>> check('/users/vlad/pizza.cfg')  
It's a file  
>>> check('/users/vlad/solar')
```



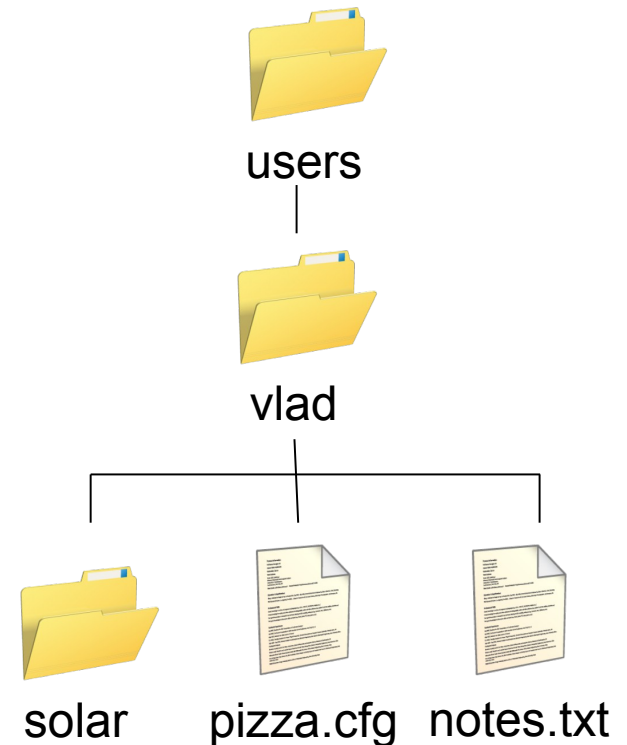
```
>>> def check(path):
...     if isfile(path):
...         print "It's a file"
...     elif isdir(path):
...         print "It's a directory"
...     else:
...         print "It doesn't exist"
...
>>> check('/users/vlad/pizza.cfg')
It's a file
>>> check('/users/vlad/solar')
It's a directory
```



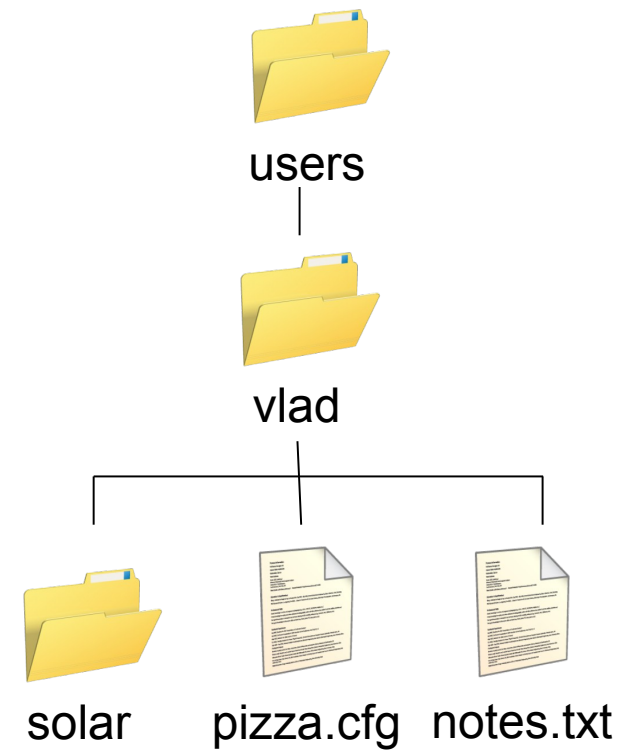
```
>>> def check(path):
...     if isfile(path):
...         print "It's a file"
...     elif isdir(path):
...         print "It's a directory"
...     else:
...         print "It doesn't exist"
...
>>> check('/users/vlad/pizza.cfg')
It's a file
>>> check('/users/vlad/solar')
It's a directory
>>> check('/users/vlad/no-such-file')
```



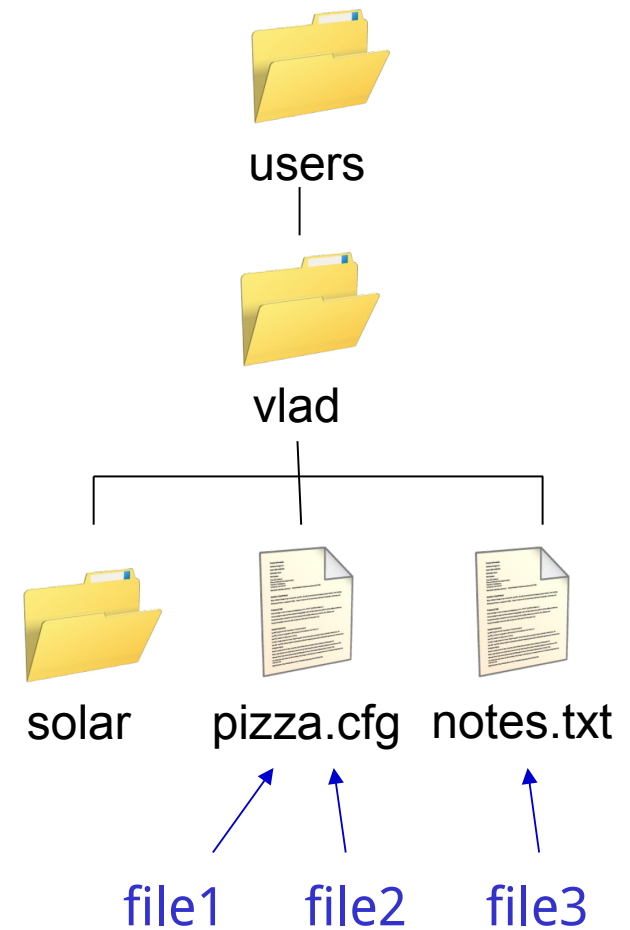
```
>>> def check(path):  
...     if isfile(path):  
...         print "It's a file"  
...     elif isdir(path):  
...         print "It's a directory"  
...     else:  
...         print "It doesn't exist"  
...  
>>> check('/users/vlad/pizza.cfg')  
It's a file  
>>> check('/users/vlad/solar')  
It's a directory  
>>> check('/users/vlad/no-such-file')  
It doesn't exist
```



```
>>> from os.path import samefile
```

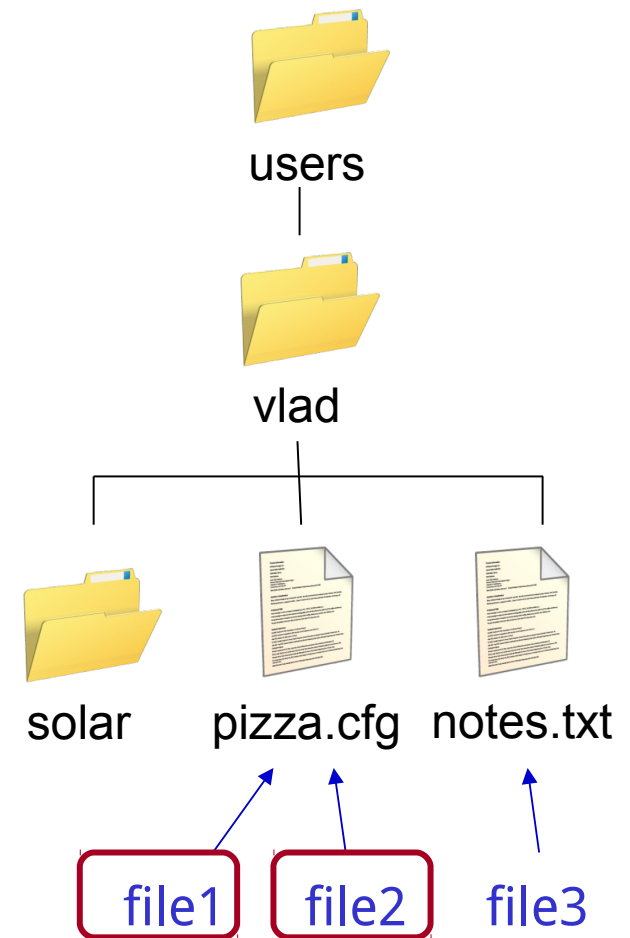


```
>>> from os.path import samefile  
>>> file1 = 'pizza.cfg'  
>>> file2 = '/users/vlad/pizza.cfg'  
>>> file3 = 'notes.txt'
```



```
>>> from os.path import samefile
>>> file1 = 'pizza.cfg'
>>> file2 = '/users/vlad/pizza.cfg'
>>> file3 = 'notes.txt'

>>> samefile(file1, file2)
```

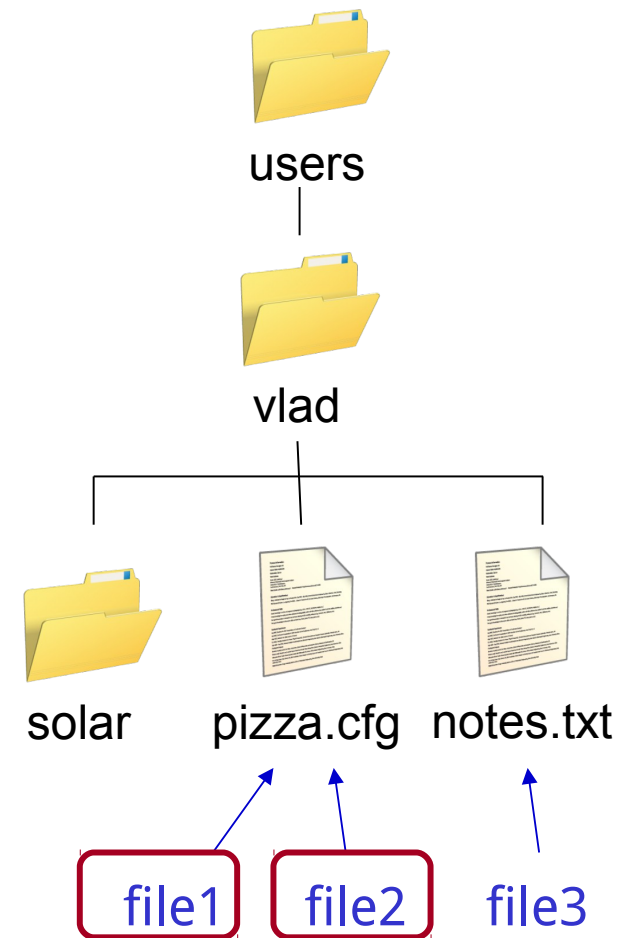




```
>>> from os.path import samefile  
>>> file1 = 'pizza.cfg'  
>>> file2 = '/users/vlad/pizza.cfg'  
>>> file3 = 'notes.txt'
```

```
>>> samefile(file1, file2)
```

True

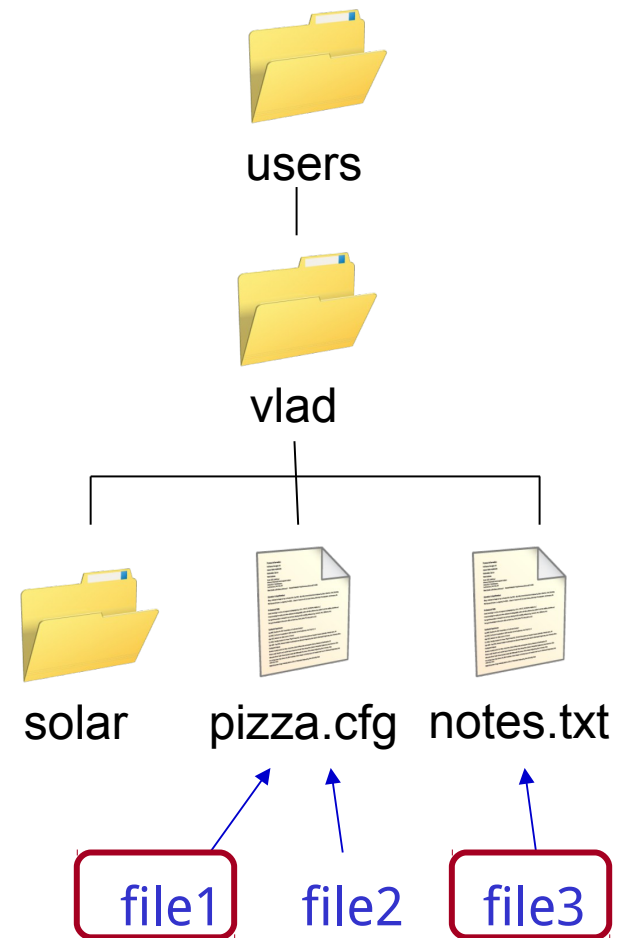


```
>>> from os.path import samefile  
>>> file1 = 'pizza.cfg'  
>>> file2 = '/users/vlad/pizza.cfg'  
>>> file3 = 'notes.txt'
```

```
>>> samefile(file1, file2)
```

```
True
```

```
>>> samefile(file1, file3)
```



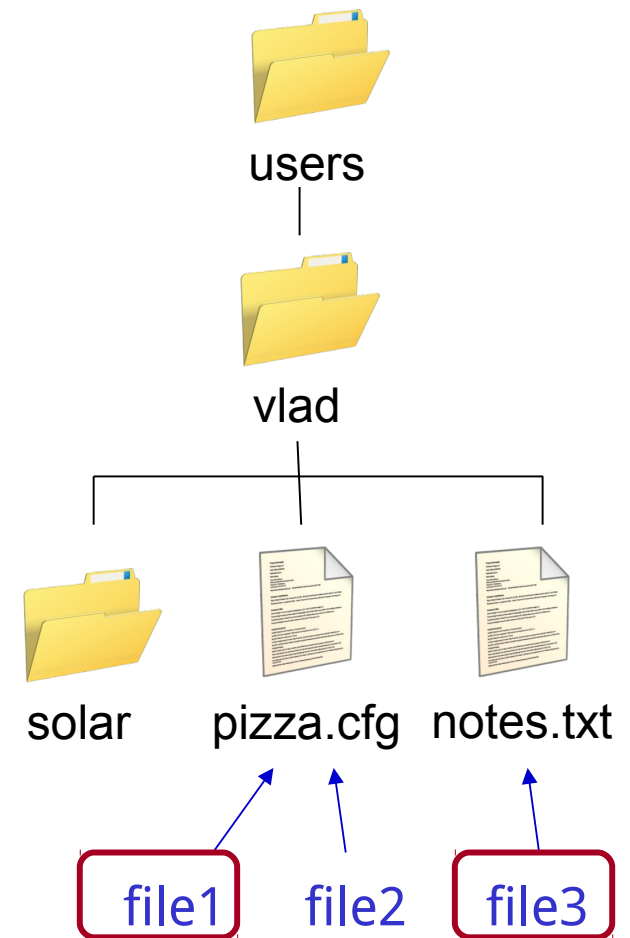
```
>>> from os.path import samefile  
>>> file1 = 'pizza.cfg'  
>>> file2 = '/users/vlad/pizza.cfg'  
>>> file3 = 'notes.txt'
```

```
>>> samefile(file1, file2)
```

True

```
>>> samefile(file1, file3)
```

False



```
>>> from os import access
```

```
>>> from os import access  
>>> from os import F_OK, R_OK, W_OK, X_OK
```

```
>>> from os import access
```

```
>>> from os import F_OK, R_OK, W_OK, X_OK
```

```
>>> access('pizza.cfg', F_OK)
```

← Does the path exist?

```
>>> from os import access
```

```
>>> from os import F_OK, R_OK, W_OK, X_OK
```

```
>>> access('pizza.cfg', F_OK)
```

← Does the path exist?

```
True
```

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
```

← Can it be read?



```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
```

← Can it be read?

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
```

← Can it be written?

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
```

← Can it be written?

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
```

← Can it be executed?

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
```

← Can it be executed?

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
>>> access('pizza.cfg', os.R_OK | os.W_OK)
```

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
>>> access('pizza.cfg', os.R_OK | os.W_OK)
True
```

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
>>> access('pizza.cfg', os.R_OK | os.W_OK)
True
>>> access('pizza.cfg', os.R_OK | os.X_OK)
```



```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
>>> access('pizza.cfg', os.R_OK | os.W_OK)
True
>>> access('pizza.cfg', os.R_OK | os.X_OK)
False
```

```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
>>> access('pizza.cfg', os.R_OK | os.W_OK)
True
>>> access('pizza.cfg', os.R_OK | os.X_OK)
False
>>> access('pizza.cfg', os.F_OK | os.R_OK | os.W_OK)
```


```
>>> from os import access
>>> from os import F_OK, R_OK, W_OK, X_OK
>>> access('pizza.cfg', F_OK)
True
>>> access('pizza.cfg', R_OK)
True
>>> access('pizza.cfg', W_OK)
True
>>> access('pizza.cfg', X_OK)
False
>>> access('pizza.cfg', os.R_OK | os.W_OK)
True
>>> access('pizza.cfg', os.R_OK | os.X_OK)
False
>>> access('pizza.cfg', os.F_OK | os.R_OK | os.W_OK)
True
```

```
>>> from os import stat  
>>> info = stat('pizza.cfg')
```

```
>>> from os import stat
>>> info = stat('pizza.cfg')
>>> print info
```

(33188, 5557L, 73188003L, 1, 3946, 4000, 8172L, 1304999431,  
1304951325, 1304951325)

stat returns a record



```
>>> from os import stat
>>> info = stat('pizza.cfg')
>>> print info
(33188, 5557L, 73188003L, 1, 3946, 4000, 8172L, 1304999431,
1304951325, 1304951325)
>>> print info.st_mode
```

Protection bits

33188

```
>>> from os import stat
>>> info = stat('pizza.cfg')
>>> print info
(33188, 5557L, 73188003L, 1, 3946, 4000, 8172L, 1304999431,
1304951325, 1304951325)
>>> print info.st_mode
33188
>>> print info.st_ino          Inode number
5557
```

```
>>> from os import stat
>>> info = stat('pizza.cfg')
>>> print info
(33188, 5557L, 73188003L, 1, 3946, 4000, 8172L, 1304999431,
1304951325, 1304951325)
>>> print info.st_mode
33188
>>> print info.st_ino
5557
>>> print info.st_dev          Device
73188003
```



```
>>> from os import stat
>>> info = stat('pizza.cfg')
>>> print info
(33188, 5557L, 73188003L, 1, 3946, 4000, 8172L, 1304999431,
1304951325, 1304951325)
>>> print info.st_mode
33188
>>> print info.st_ino
5557
>>> print info.st_dev
73188003
>>> print info.st_nlink          Number of hard links
1
```

```
>>> from os import stat
>>> info = stat('pizza.cfg')
>>> print info
(33188, 5557L, 73188003L, 1, 3946, 4000, 8172L, 1304999431,
1304951325, 1304951325)
>>> print info.st_mode
33188
>>> print info.st_ino
5557
>>> print info.st_dev
73188003
>>> print info.st_nlink
1
>>> print info.st_uid
3946
```

Owner's user ID

```
>>> print info.st_gid  
4000
```

Owner's group ID

```
>>> print info.st_gid
```

```
4000
```

```
>>> print info.st_size
```

```
8172
```

File size in bytes

```
>>> print info.st_gid
```

```
4000
```

```
>>> print info.st_size
```

```
8172
```

```
>>> print info.st_atime
```

```
1304999431
```

Most recent access time

```
>>> print info.st_gid
4000
>>> print info.st_size
8172
>>> print info.st_atime
1304999431
>>> print info.st_mtime
1304951325
```

Most recent modification

```
>>> print info.st_gid
```

```
4000
```

```
>>> print info.st_size
```

```
8172
```

```
>>> print info.st_atime
```

```
1304999431
```

```
>>> print info.st_mtime
```

```
1304951325
```

```
>>> print info.st_ctime
```

Most recent metadata change time for Linux  
or, creation time for Windows

```
1304951325
```

```
>>> print info.st_gid      Owner's group ID
4000
>>> print info.st_size     File size in bytes
8172
>>> print info.st_atime    Most recent access time
1304999431
>>> print info.st_mtime    Most recent modification
1304951325
>>> print info.st_ctime     Most recent metadata change time for Linux
1304951325                     or, creation time for Windows
>>> from os import stat_float_times
>>> stat_float_times()
False
```



A stat record may contain operating system-specific values

A stat record may contain operating system-specific values

```
>>> print info.st_blocks
```

Number of blocks, for Linux

17

A stat record may contain operating system-specific values

```
>>> print info.st_blocks
```

```
17
```

```
>>> print info.st_blksize
```

 File system block size for Linux

```
8192
```

<b>os.path</b>	Common pathname manipulations
<b>exists</b>	Does the given path exist?
<b>isfile</b>	Is the given path a file?
<b>isdir</b>	Is the given path a directory?
<b>samefile</b>	Are the given arguments paths to the same file or directory?
<b>os</b>	Miscellaneous operating system interfaces
<b>access</b>	Can the file/directory be accessed?
<b>stat</b>	Get operating system-specific information



created by

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