

Short bit on growth mindset

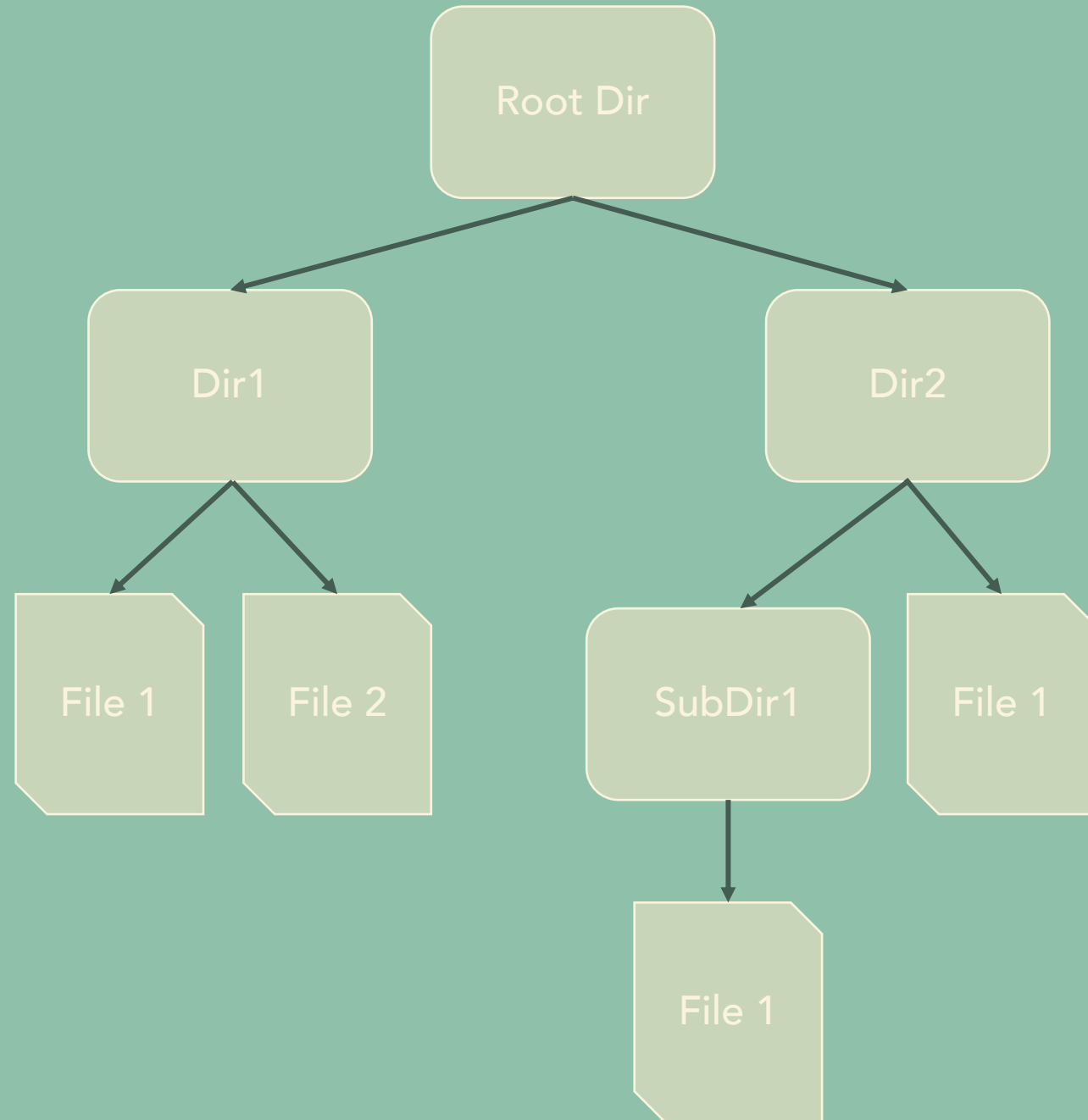
- Believing that your abilities can improve through effort, learning, and persistence
- It's not about where you start
- For today, be willing to ask "dumb" questions to better your understanding

Agreed upon expectations

- My expectations for you:
 - Ask questions if you don't understand
 - Let me know if you are falling behind before it's too late
 - Interact with my questions, activities, etc.
- Your expectations for me:
 - Clearly explain files & folders
 - I will not treat any question as 'dumb'
- Others you would like to add?

Directories

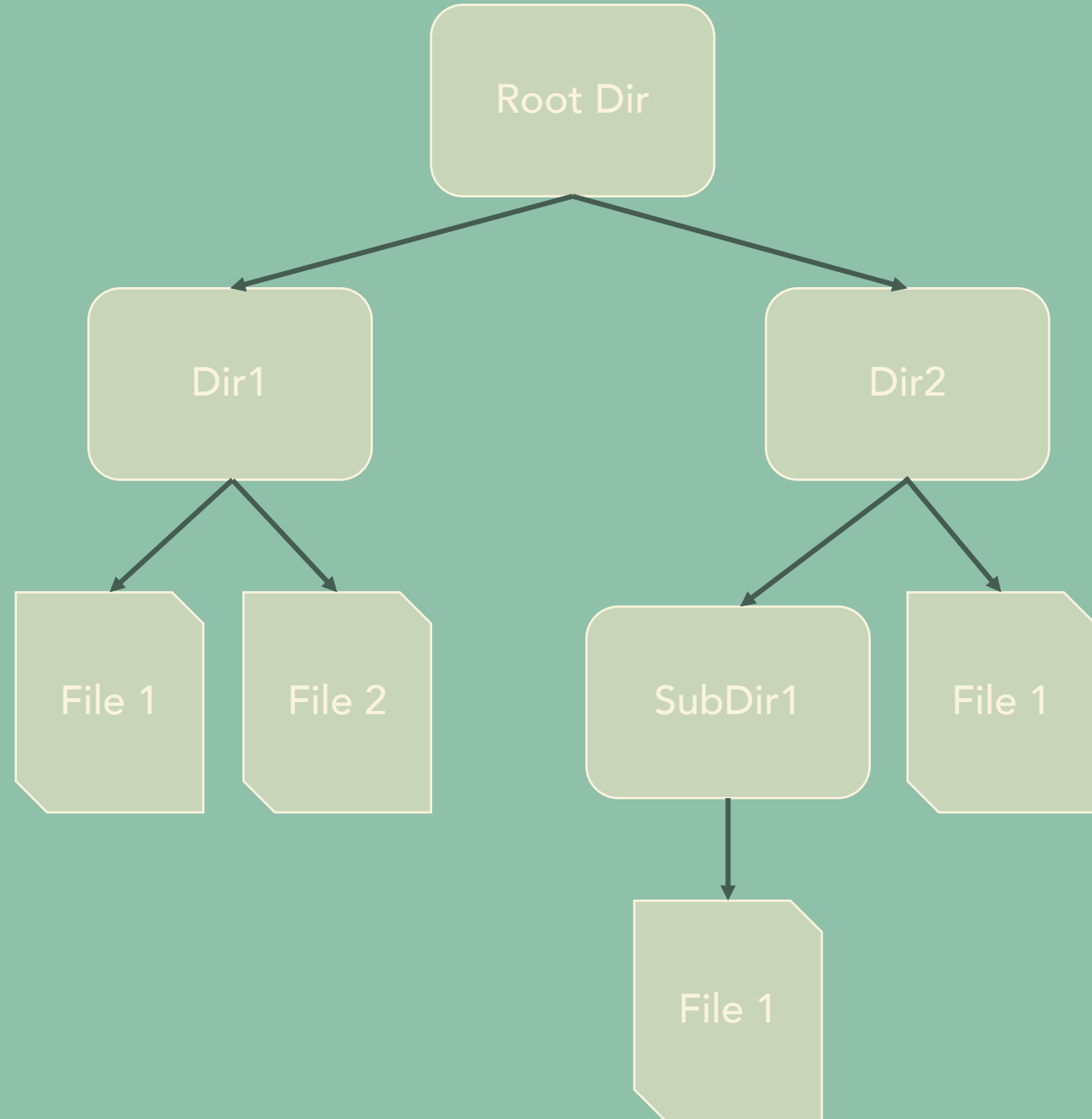
- Another name for folder
- Stores files without taking up additional space
- Some types of directories:
 - Parent directory
 - Child directory
 - Root directory



Directories

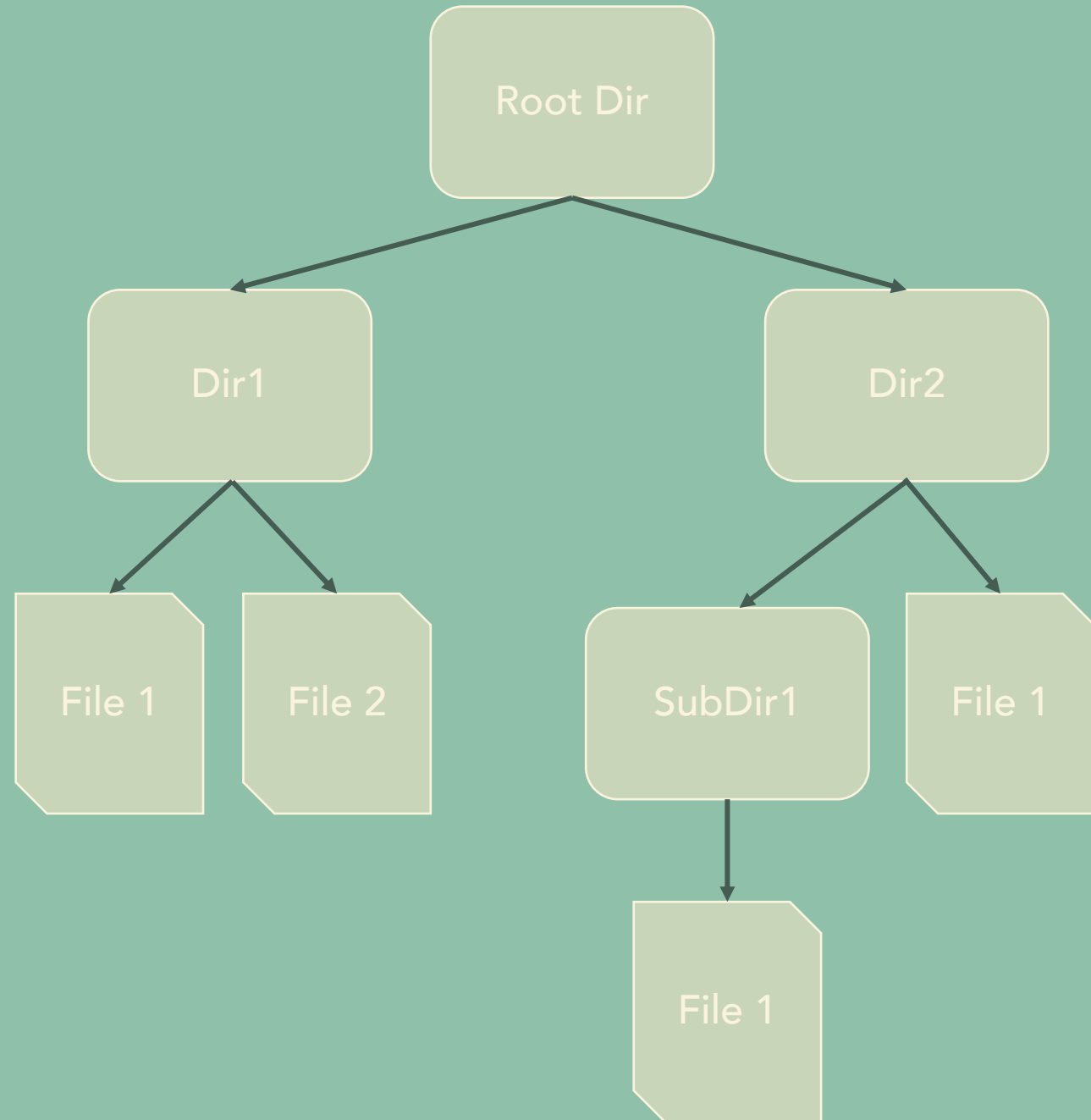
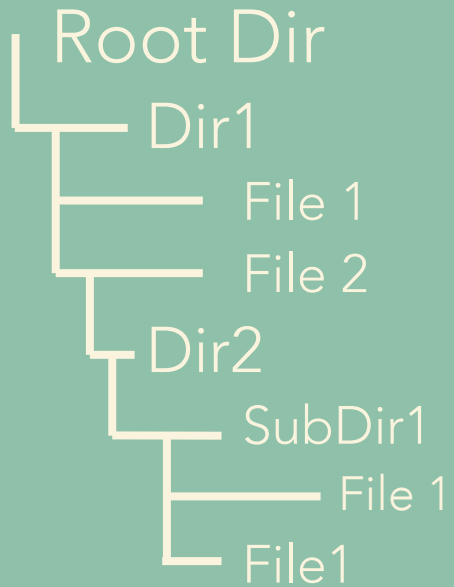
- We could represent this diagram in bullet points:

- Root Dir
 - Dir1
 - File 1
 - File 2
 - Dir2
 - SubDir1
 - File 1
 - File1



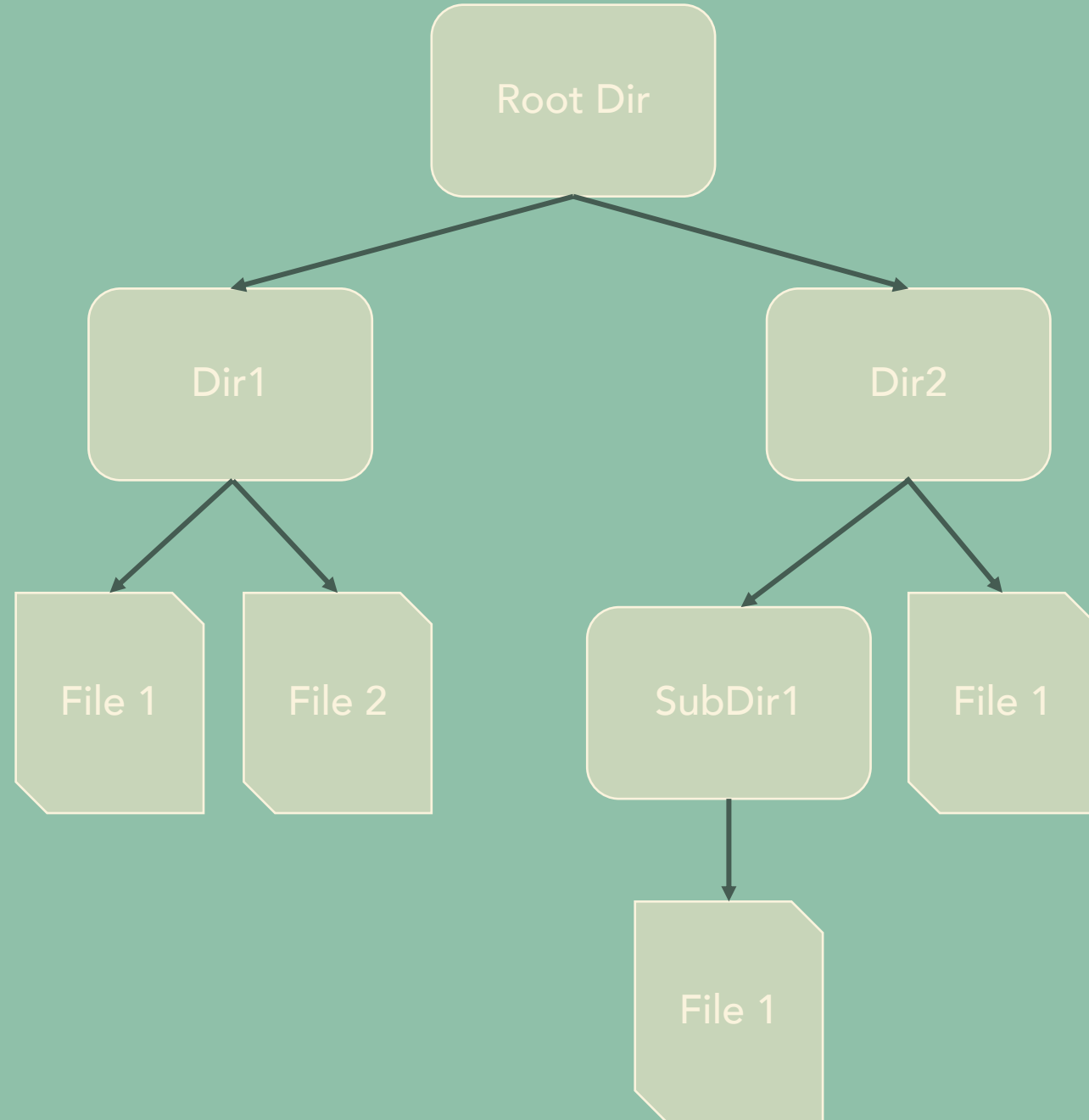
Directories

- Or as a directory "Tree":



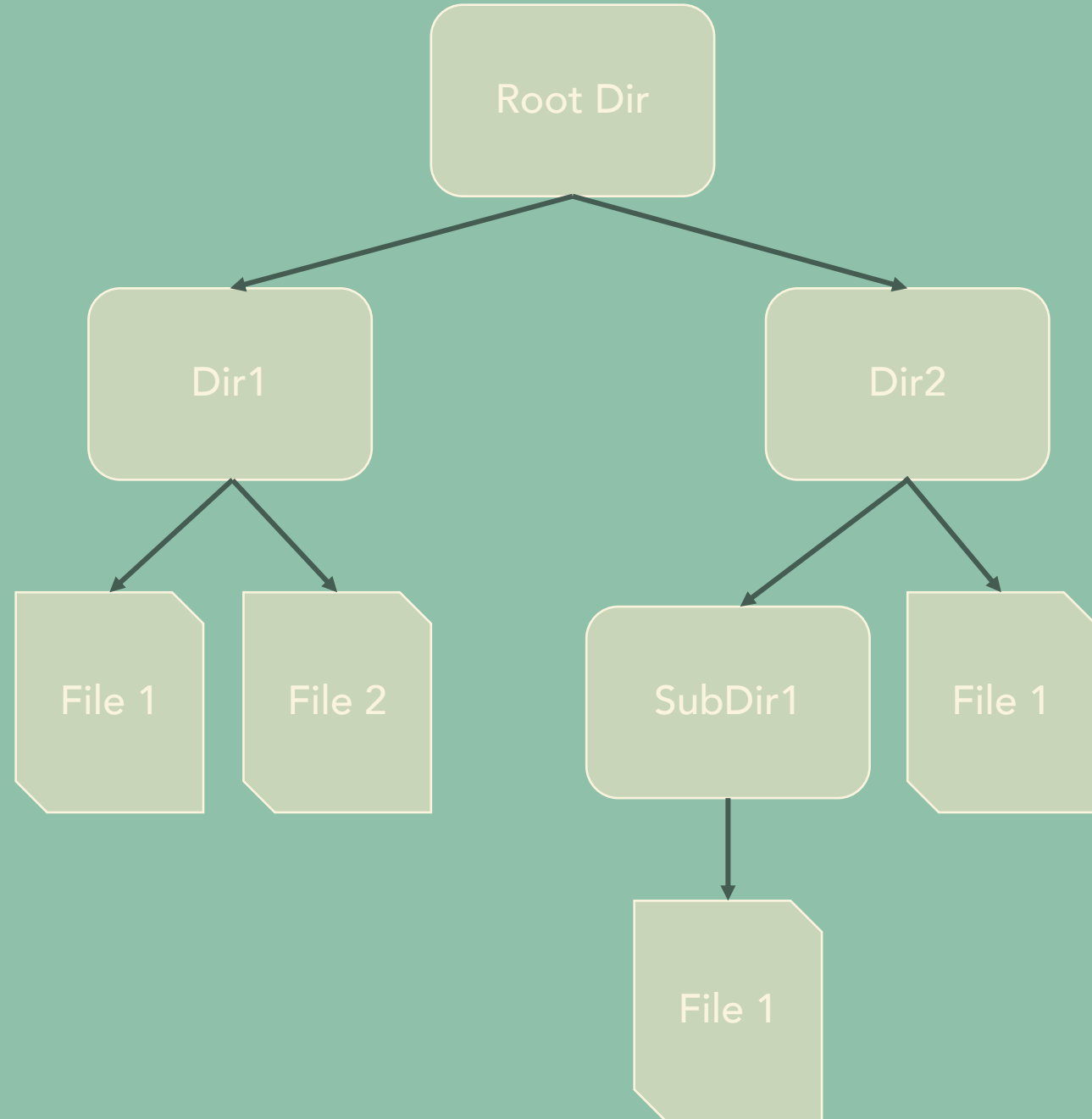
Directories

- If I said, "open File1", which would you open?



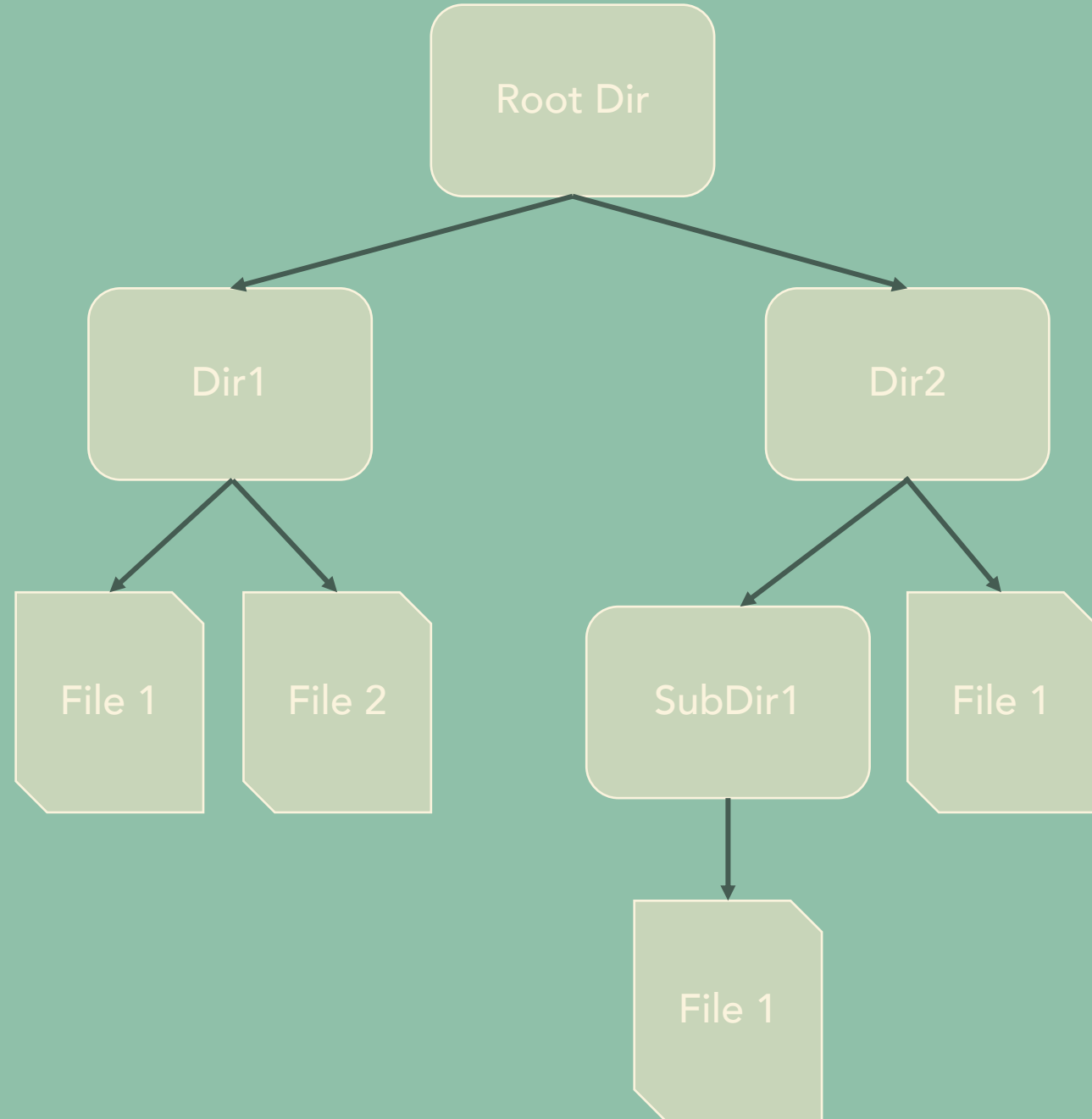
Directories

- If I said, "open File1", which would you open?
- We have to specify which directory File1 is in



Directories

- If I said, “open **File 1**”, which would you open?
- We have to specify which directory **File 1** is in
- So if I said, open **File1** from **Dir2**, which one would you open?

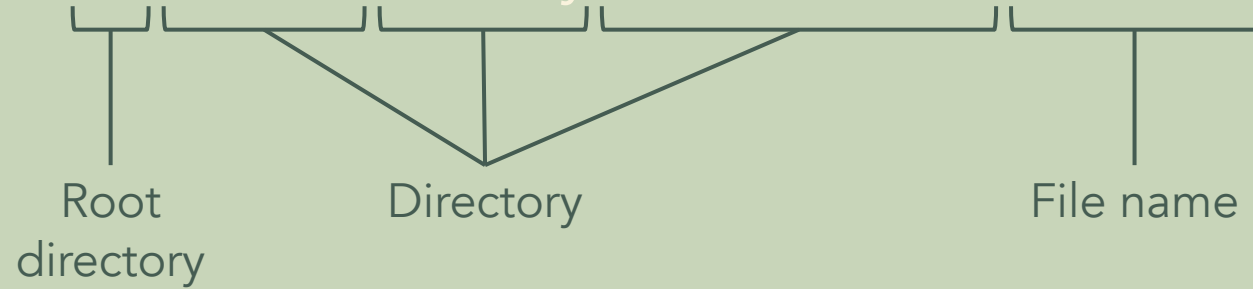


Paths

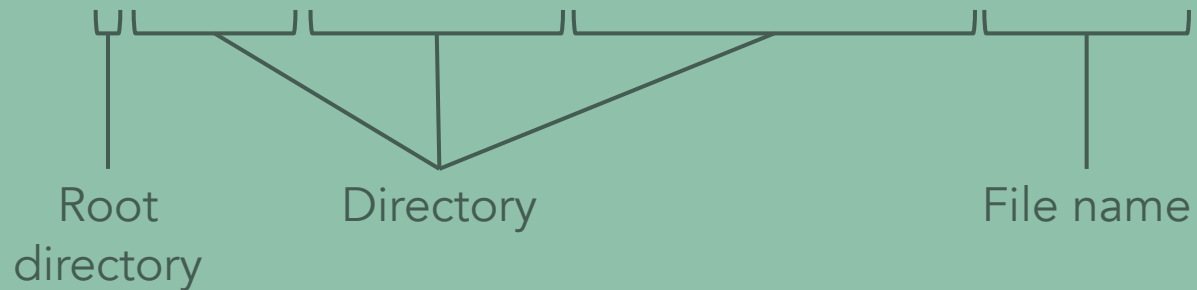
- How we tell our computer which files we are working with
- Your computer stores files as full addresses
- **Fun fact:** when you delete a file, your computer only deletes the address to that file
 - The file is only 'removed' when it is rewritten by storage for another file

Paths

- C:\Users\Shady\Documents\File.txt



- /Users/kusters/Documents/File.txt

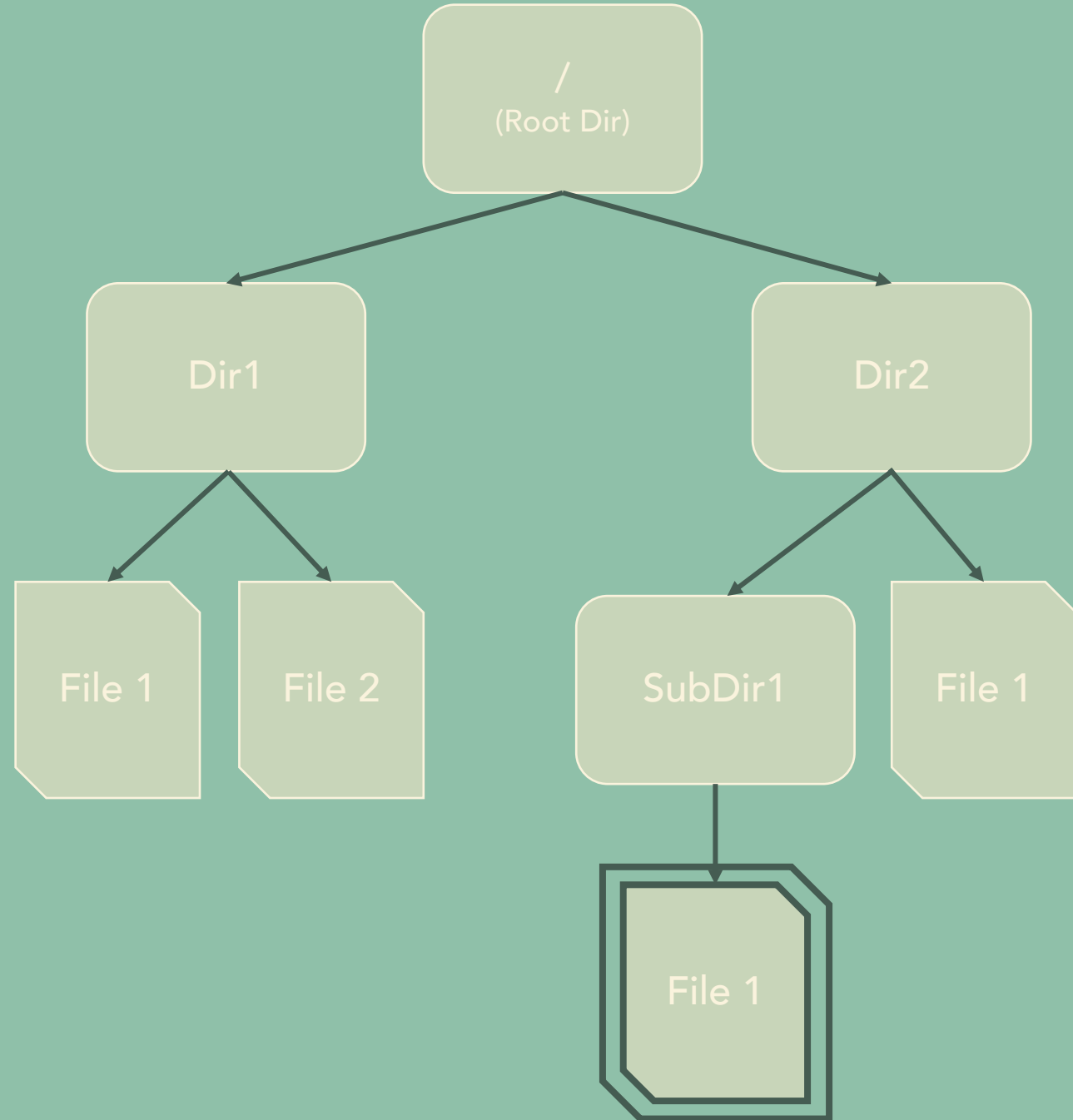


Absolute vs Relative Paths

- Absolute path:
 - Gives the full address/location of a file
 - The paths in the previous slide were an absolute path
- Relative path:
 - Gives the address/location of a file *relative* to where you are currently in the directory system
 - Where you are currently is also referred to as your Current Working Directory (CWD)

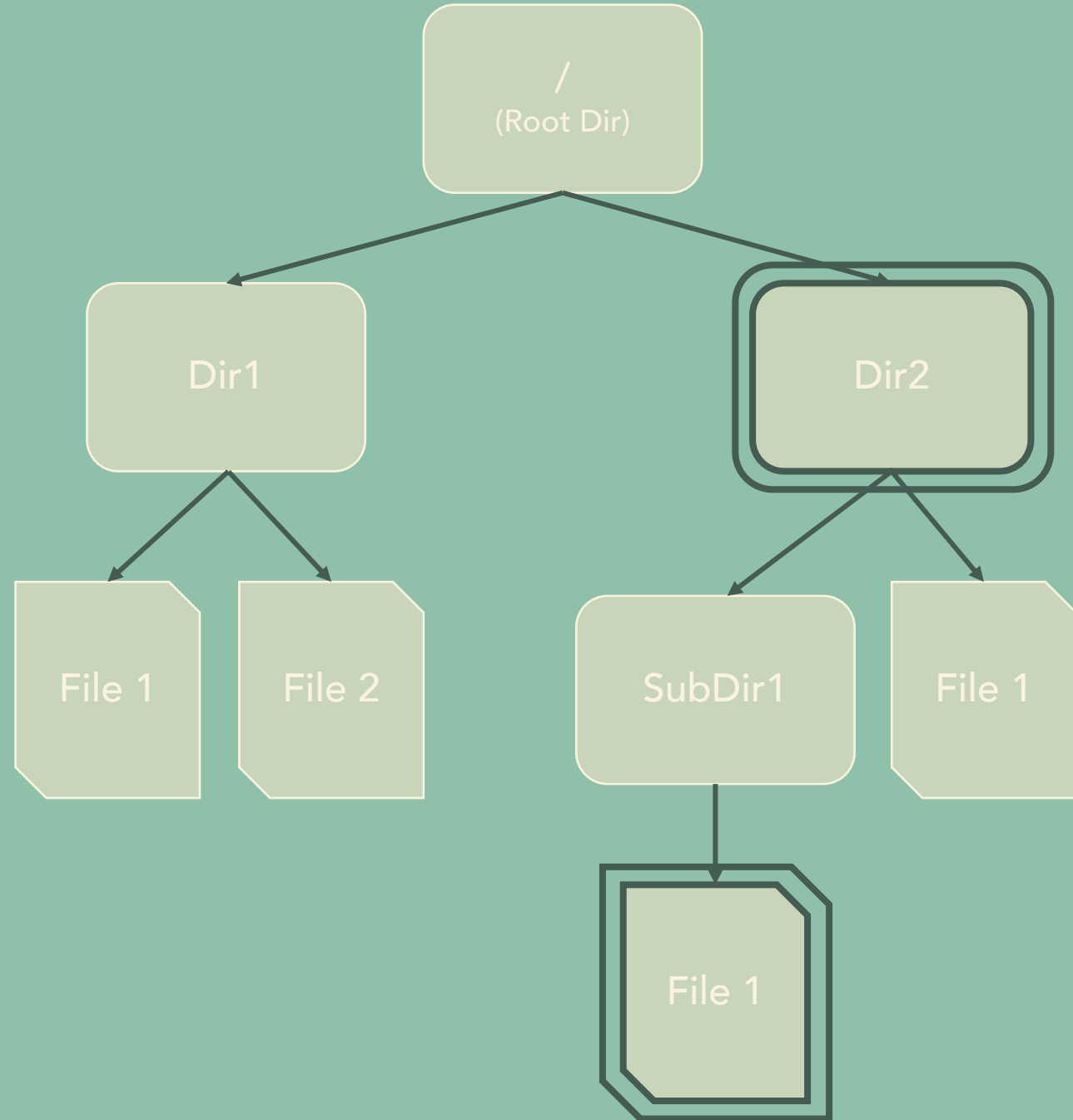
Absolute Path

- What would the absolute path for the circled File 1 be?



Relative Path

- If our CWD is the Dir2 directory, what is the relative path for our previous File 1 (circled) be?



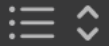
Path Shortcuts

Symbol	Meaning
/	Delimiter between directories or files Root directory
.	Current directory
..	Previous directory
~	A User's home directory (Linux, different from root)

Types of Files

- File extension
 - Lets your computer know what format to expect & what applications can open/read the file
- Data files
 - Ex: .tsv, .csv, .txt, .fasta
- Executable files
 - Ex: .exe, .py, .R

Viewing file information

- Windows
 - In File Explorer, View -> Details (with selection of icon size options)
- Mac
 - In Finder, click  and choose 'list'

Tips & Tricks for working with files

- Avoid spaces in file names, column names, directory names, etc.
- Use `head()` or similar tool to look at your data before use
- If you need to modify the data file during an analysis, make a copy of the original and store it somewhere safely
- Backup often!

Common Troubleshooting Go-Tos

- Your computer/software will only do exactly as you tell it
- Double check object, variable, column, file, and directory names to make sure you didn't mistype, etc.
 - Usually better to copy & paste filenames, etc.
- Be careful with copying code from online!
 - Sometimes, dashes/others are different, so always paste on a new line & retype it if it doesn't work at first

Common Troubleshooting Go-Tos

- Google your error messages
 - This will help you learn about your computer/software
- Good Resources:
 - Stack Overflow
 - Stack Exchange
 - GeeksforGeeks
 - Rdocumentation (R specific)
 - BioStars

Downloading a fasta file, opening & reading

- *Peromyscus maniculatus bairdii* mitochondrial genome (NC_039921.1):
 - https://www.ncbi.nlm.nih.gov/nucleotide/NC_039921.1
- Follow along to associate the new file type with a program to open it
- But first we need to make sure we use a plain text editor!

Thanks for listening!

- Any questions?
- Further questions/need help? shady.kuster@colostate.edu