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CHANGE THE WORLD FROM HERE

Paths and Files

CS 272 Software Development

Professor Sophie Engle
Department of Computer Science

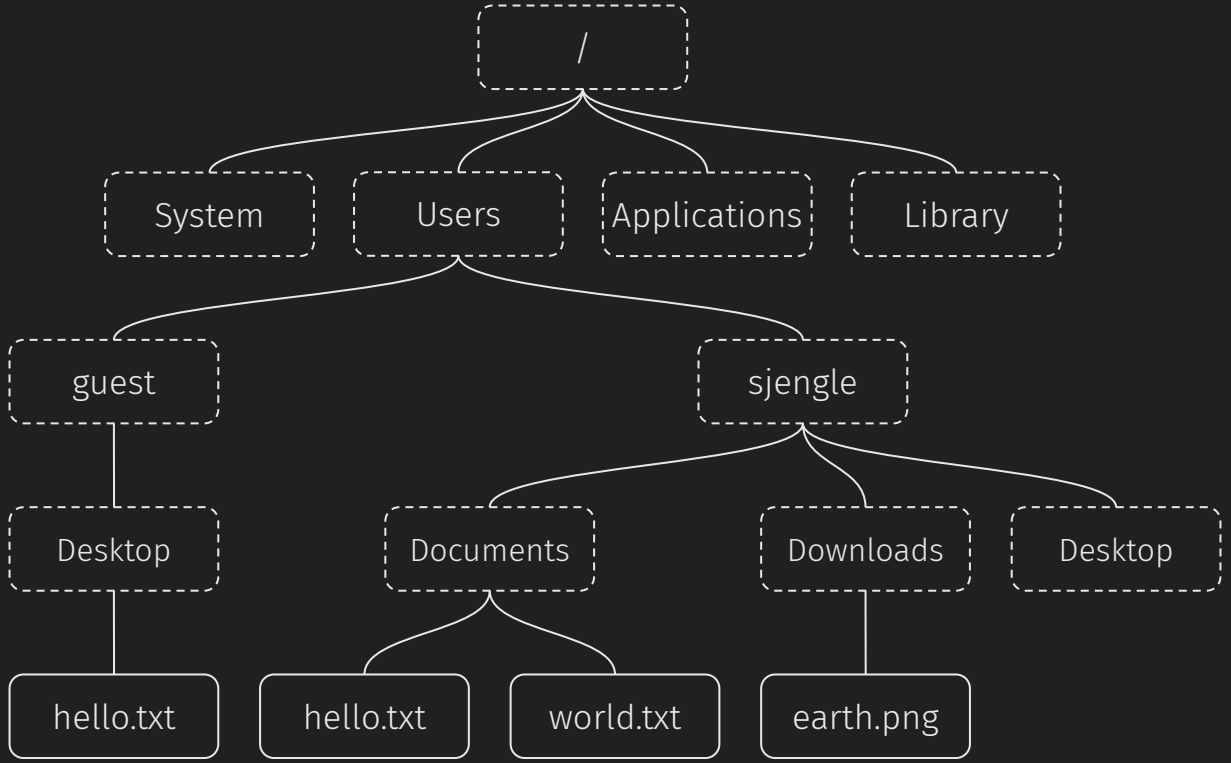
Java IO, NIO, NIO.2

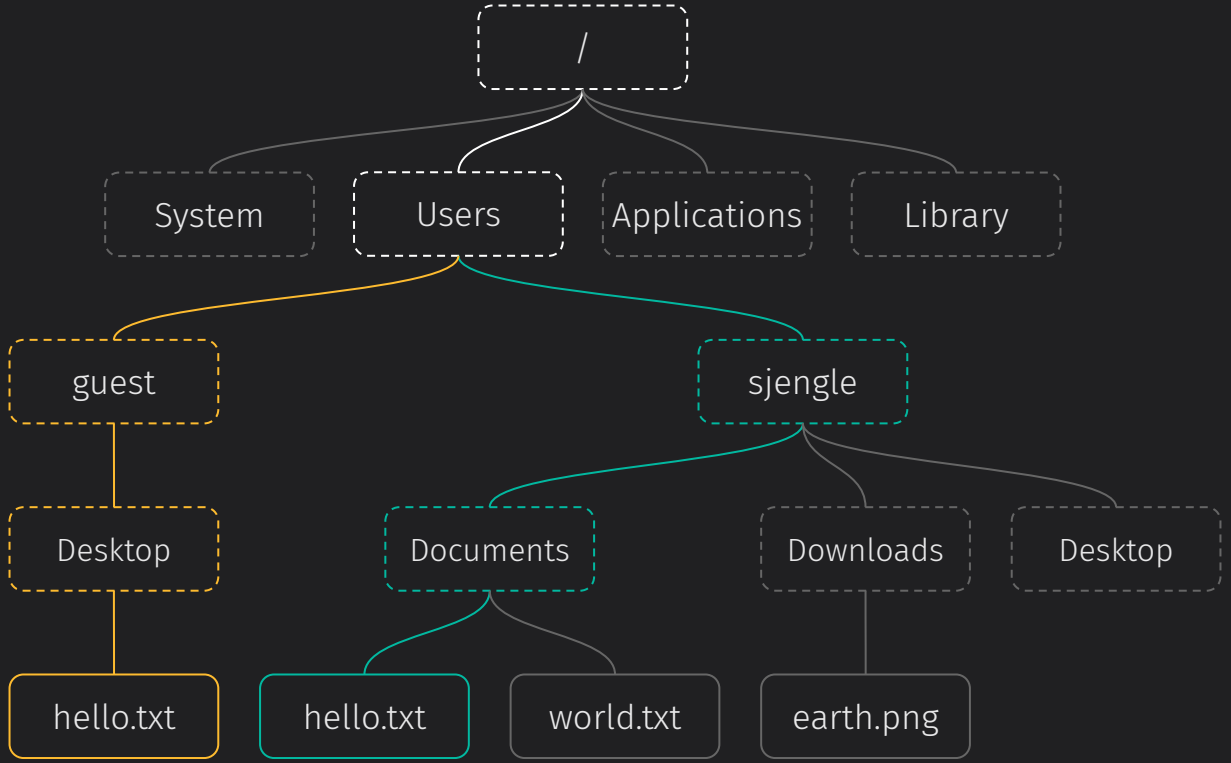
- Package **`java.io`** (input/output) was originally introduced in JDK 1.0 in 1996
- Package **`java.nio`** (non-blocking I/O) was originally introduced in J2SE 1.4 in 2002
- Package **`java.nio.file`** (new I/O) was originally introduced in Java SE 7 in 2011

https://www.cs.usfca.edu/~cs272/javadoc/api/java.base/java/util/doc-files/coll-index.html

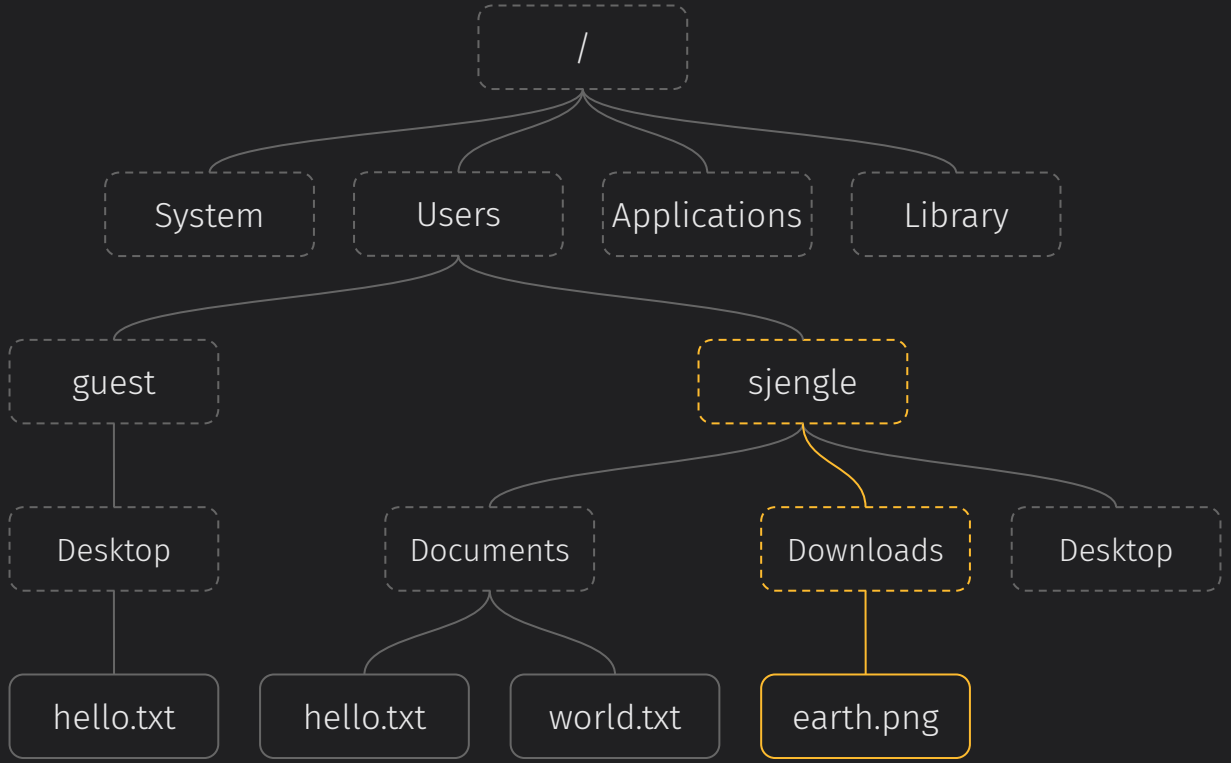
Terminology

- File systems are **hierarchical tree** structures
  - Has a **root** node (**/** on *nix or **C:** on Windows)
  - Nodes may have children (**directories** or **folders**)
- A **path** is a location in the file system
  - Slash separates levels (**/** on *nix or **** on Windows)
  - May be **absolute** (starts with root) or **relative**

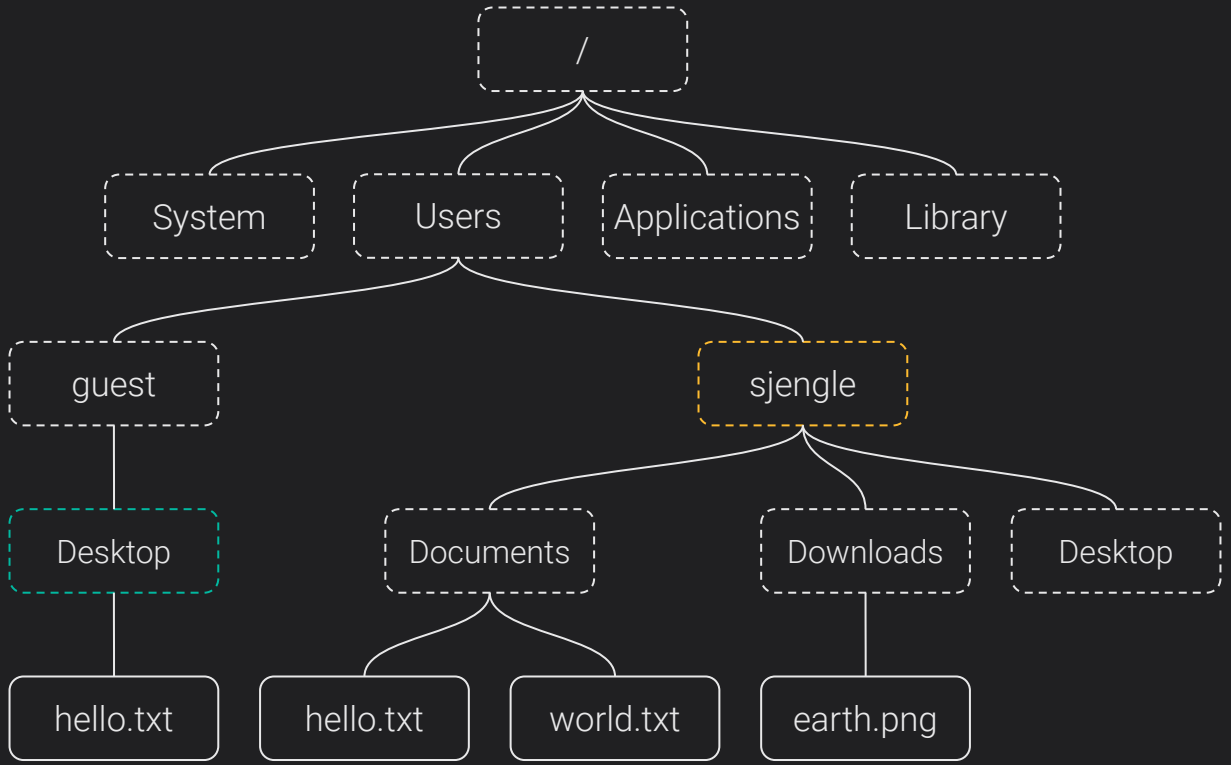

/
System
Users
Applications
Library
guest
sjengle
Desktop
Documents
Downloads
Desktop
hello.txt
hello.txt
world.txt
earth.png



/Users/guest/Desktop/hello.txt vs **/Users/sjengle/Documents/hello.txt**



~/Downloads/earth.png vs **Downloads/earth.png** vs **/Users/sjengle/Downloads/earth.png**



Desktop vs **./Desktop** vs **../guest/Desktop**

Java IO vs NIO.2

Package `java.io`	Package `java.nio.file`

Manipulating Paths

Java IO vs NIO.2

Package java.io	Package java.nio.file
java.io.File	java.io.Path
File.getParent()	Path.getParent()
File.getAbsolutePath()	Path.toAbsolutePath()
File.exists()	Files.exists()
File.canRead()	Files.isReadable()

Manipulating Paths

Java IO vs NIO.2

Class `java.io.File`	Package `java.nio.file`

Listing Directories

Java IO vs NIO.2

Class java.io.File	Package java.nio.file
File.list()	Files.list()*
File.listFiles()	Files.walk()*
	Files.walkFileTree()
	Files.newDirectoryStream()

Listing Directories

Java IO vs NIO.2

Class `java.io.File`	Package `java.nio.file`

Java IO vs NIO.2

Class java.io.File	Package java.nio.file

`BufferedReader in =`
`  new BufferedReader(`
`  new FileReader(`
`  new File("hello.txt")));`
	`Files.readString()`

	`Files.lines()`
	`Files.readAllLines()`
	`Files.newBufferedReader()`

Replacements for java.io.File

- Use **`Path`** to represent and manipulate a location
- Use **`Files`** to learn more about what is at a **`Path`**
- Use **`Files`** to read or write small files
- Use **`Files`** to create **`BufferedReader`**/**`Writer`** and **`DirectoryStream`** objects for other operations

Questions?