Programming and Data Structures
Active Learning Activity 6: Recursion

Activity Objectives

At the end of this activity, students should be able to:

1. Write recursive methods to solve a given problem
2. Test recursive methods

Activity

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1. Write two recursive methods as described below:
   a. **`long getSize(String name)`** that returns the total size of the directory **`name`** in bytes. If **`name`** is a file, the method returns the size of the file. If **`name`** is neither a directory nor a file, the method returns 0.

   b. **`int fileCount(String name)`** that returns the number of files in the directory **`name`**. Only files are included in the count (subdirectories are not counted).

2. Write a program named "**`Recursion.java`**" that prompts the user to enter a directory name and displays the size of the directory in bytes and the number of files in the directory.
   Display the total size with the appropriate suffix as shown in the examples below.
   Size = 52,000 bytes, the program should display "52 Kbytes"
   Size = 2,000,000 bytes, the program should display "2 Mbytes"
   Size = 9,000,000,000 bytes, the program should display "9 Gbytes"

3. Do not forget to include Javadoc comments in your code. Submit your file **`Recursion.java`** on coursesite.

A sample run is provided below:

```
Enter a directory name:
/Users/houdghiri/Desktop/General
Total size of /Users/houdghiri/Desktop/General is 34 Mbytes
Total number of files in /Users/houdghiri/Desktop/General is 21
files (not including directories)
```

Useful methods from class **`File`**

1. **`boolean isFile()`** returns true if the File object is a file
2. **`boolean isDirectory()`** returns true if the File object is directory
3. **`File[] listFiles()`** returns an array that contains the list of files and folders in the File object
4. **`String getName()`** returns the name of the file/directory of the File object
5. **`String getPath()`** returns the path to the File object
6. **`long length()`** returns the size of the File object (files only).