Java Programming II

Lab2

514770-1
Fall 2020
9/22/2020

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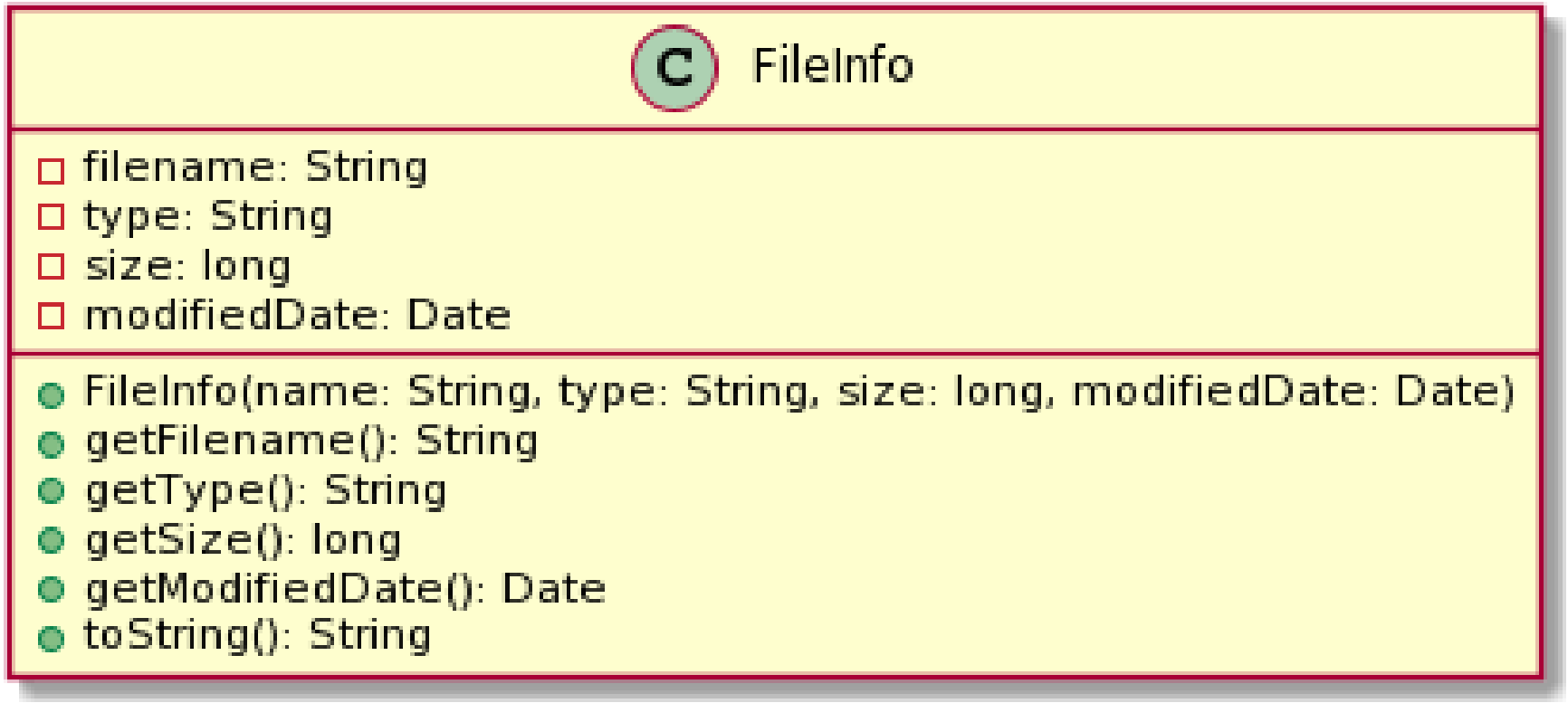
Lab2

- Practice to write a **file sort** program that compares and sort file by **file attributes** using **Strategy pattern.**
- Example
  - Similar to Windows' File Explorer, you can sort the files by filename, last modified date, file size, type, etc.
  - FileInfo class contains filename, date, size, type
  - The sorting algorithm should be implemented as a general sorting method, e.g., bubble sort

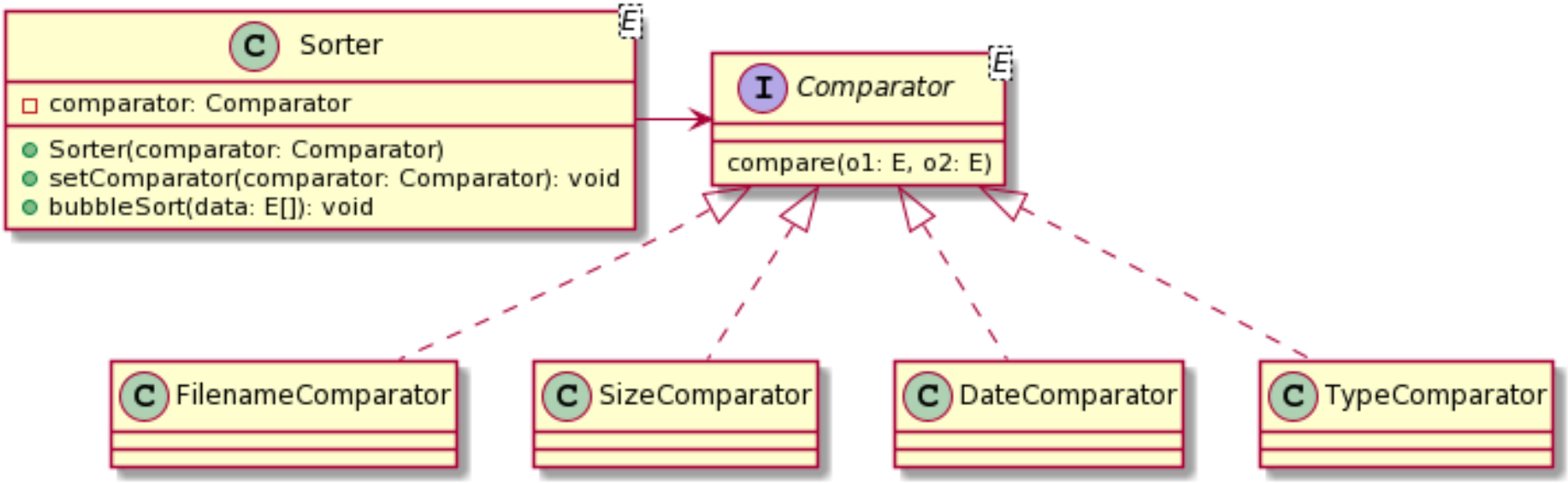
Lab2

- FileInfo Class Diagram



Lab2

- Sorter Strategy Pattern



Lab2

- Bubble sort algorithm for sorting integer values

```
void bubbleSortInts(int[] data) {
  for (int i = 0; i < data.length - 1; i++) {
    for (int j = 0; j < data.length – i - 1; j++) {
      if (data[j] > data[j + 1]) { // swap
        int temp = data[j];
        data[j] = data[j + 1];
        data[j + 1] = temp;
      }
    }
  }
}
```

Lab2

- Bubble sort algorithm for sorting String values

```
void bubbleSortStrings(String[] data2) {
  for (int i = 0; i < data2.length - 1; i++) {
    for (int j = 0; j < data2.length – i - 1; j++) {
      if (data2[j].compareTo(data2[j + 1]) > 0) {
        String temp = data2[j];
        data2[j] = data2[j + 1];
        data2[j + 1] = temp;
      }
    }
  }
}
```

Lab2

- Bubble sort algorithm for sorting Date values

```
void bubbleSortDates(Date[] data3) {
  for (int i = 0; i < data3.length - 1; i++) {
    for (int j = 0; j < data3.length – i - 1; j++) {
      if (data3[j].compareTo(data3[j + 1]) > 0) {
        Date temp = data3[j];
        data3[j] = data3[j + 1];
        data3[j + 1] = temp;
      }
    }
  }
}
```

Lab2

- Implement the general bubbleSort method in the Sorter class.
- Use a strategy pattern to sort for each of the FileInfo properties by using the bubbleSort() method
- In the main() method, FileInfo is sorted by each FileInfo property and displayed on the screen.

```
class Sorter<E> {
    private Comparator comparator = null;
    public bubbleSort(E[] data) {
        . . .
    }

}
```

Lab2

- MainTest class
  - public void printFileInfos(FileInfo[] fileList) // print FileInfo array
  - public FileInfo getFileInfo(String filename) // get FileInfo object from filename
  - public List<FileInfo> getFileInfos(String dirPath) // get FileInfo list from directory path name – recursive call & getFileInfo
  - main() method
    1. Get the list of FileInfo from your specified directory pathname
    2. Print the original list
    3. Print the sorted list by filename, type, size, modifiedDate
    4. And your code…
  - Possible result is included in the file (Lab2Result.txt).

Submit to e-learning

- Add your code (e.g., additional method, class, routine, etc) in the Lab2 assignment.
- Submit the Lab2 assignment (including the report) to e-learning.