Programowanie w języku JAVA

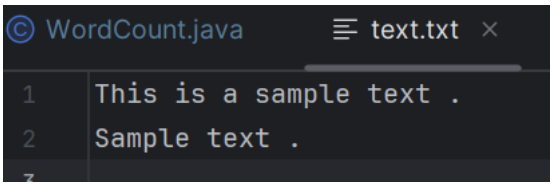
Laboratorium 5

Marcin Godfryd grupa 31

```java
import java.io.*;
import java.nio.file.*;
import java.util.*;
import java.util.concurrent.*;
import java.util.regex.*;

public class WordCount {

    public static void main(String[] args) {
        if (args.length != 2) {
            System.err.println("java WordCount <number_of_threads>
<file_path>");
            return;
        }

        int numberOfThreads;
        try {
            numberOfThreads = Integer.parseInt(args[0]);
        } catch (NumberFormatException e) {
            System.err.println("Liczba wątków musi być liczbą całkowitą.");
            return;
        }

        String filePath = args[1];
        Path file = Paths.get(filePath);
        if (!Files.exists(file)) {
            System.err.println("Taki plik nie istnieje: " + filePath);
            return;
        }

        try {
            new WordCounter(numberOfThreads, file).countWords();
        } catch (IOException | InterruptedException e) {
            System.err.println("Błąd działania aplikacji: " +
e.getMessage());
        }
    }
}

class WordCounter {
    private final int numberOfThreads;
    private final Path file;
    private final ConcurrentHashMap<String, Integer> wordCounts = new
ConcurrentHashMap<>();
    private final ExecutorService executor;
    private final ConcurrentHashMap<Integer, Integer> linesPerThread = new
ConcurrentHashMap<>();

    public WordCounter(int numberOfThreads, Path file) {
        this.numberOfThreads = numberOfThreads;
        this.file = file;
        this.executor = Executors.newFixedThreadPool(numberOfThreads);
    }

    public void countWords() throws IOException, InterruptedException {
        List<String> lines = Files.readAllLines(file);

        for (int i = 0; i < lines.size(); i++) {
            int threadIndex = i % numberOfThreads;
            executor.execute(new WordCountTask(lines.get(i), threadIndex,
wordCounts, linesPerThread));
```

```
        }

        executor.shutdown();
        executor.awaitTermination(1, TimeUnit.HOURS);

        printResults();
    }

    private void printResults() {
        linesPerThread.forEach((threadId, lineCount) ->
System.out.println("Thread " + threadId + ": " + lineCount));
        wordCounts.entrySet().stream()
                .sorted(Map.Entry.comparingByKey())
                .forEach(entry -> System.out.println(entry.getKey() + " " +
entry.getValue()));
    }
}

class WordCountTask implements Runnable {
    private final String line;
    private final int threadIndex;
    private final ConcurrentHashMap<String, Integer> wordCounts;
    private final Map<Integer, Integer> linesPerThread;

    public WordCountTask(String line, int threadIndex,
ConcurrentHashMap<String, Integer> wordCounts, Map<Integer, Integer>
linesPerThread) {
        this.line = line;
        this.threadIndex = threadIndex;
        this.wordCounts = wordCounts;
        this.linesPerThread = linesPerThread;
    }

    @Override
    public void run() {
        String[] words = line.split("\\s+");
        for (String word : words) {
            word = word.replaceAll("[^a-zA-Z]", "").toLowerCase();
            if (word.length() > 1) {
                wordCounts.merge(word, 1, Integer::sum);
            }
        }

        linesPerThread.merge(threadIndex, 1, Integer::sum);
    }
}
```

```
PS C:\Projects\Java\java-labs-studies> java WordCount.java 2 text.txt
Thread 0: 1
Thread 1: 1
is 1
sample 2
text 2
this 1
```


WordCount.java
text.txt
1 This is a sample text .
2 Sample text .