# Design and Architecture

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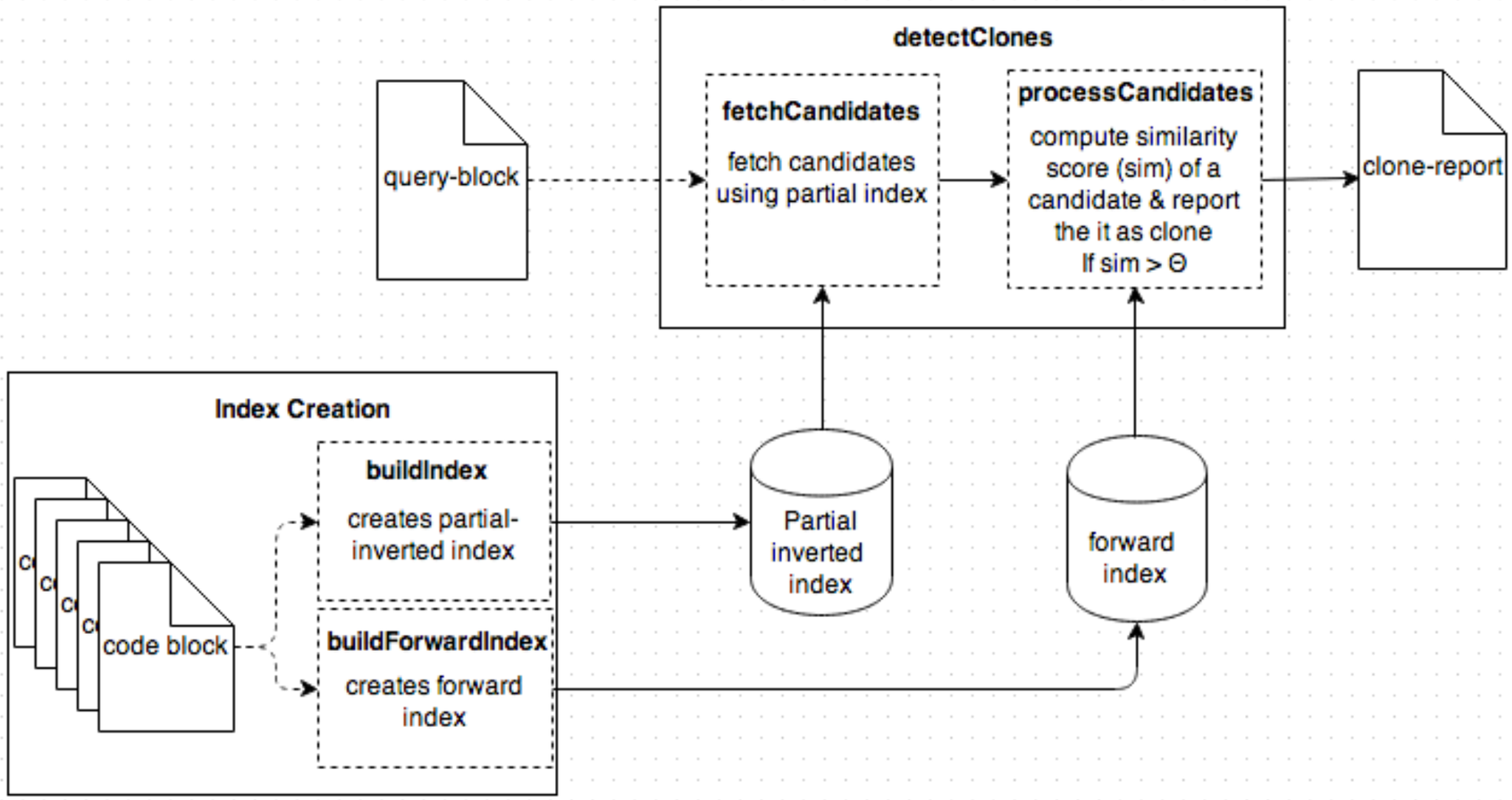
# Clone Detection

## Algorithm

```
1  buildIndex(B, sim, θ)
2  begin
3      I, R ← {}
4      for each code block b1 in B do
5          b1 ← sort (b1,globalTermPosotionMap)
6          i ← 0
7          while i ≤ (|b1|-⌈ θ |ḃ1| ⌉+1) do
8              It ← It ∪ id(b1)
               /* Here t is a term at b1[i]
9              b1[i] ← 0
10         end
11     end
12     return R
13 end
14 buildForwardIndex(B)
15 begin
16     FI ← {}
17     for each code block b1 in B do
18         FI_id(b1) ← terms(b1)
19     end
20 end
21 detectClones(b1, I, sim, t)
22 begin
23     candidatesList ← new ArrayList()
24     cloneSet ← {}
25     b1 ← sort (b1,globalTermPosotionMap)
26     for each term t in prefix(b1) do
27         for each id(b2) in It do
28             candidatesList.add(id(b2))
29         end
30     end
31     for each id(b2) ∈ candidatesList do
32         simVal ← sim(b1, FI_id(b2))
33         if simVal ≥ θ then
34             cloneSet ← cloneSet ∪ {id(b1), id(b2), simVal}
35         end
36     end
37     return cloneSet
38 end
```




# Architecture

# User Interface

Step 1

marker showing
clones detected for this method

Java – codeclonedetection/src/indexbased/SearchManager.java – Eclipse – /Users/vaibhavsaini/Documents/workspace

Package Explorer

- clone-detection
- code-browser
- codeclonedetection [codeclonedetection master]
  - src
    - indexbased
      - CloneNoFilter.java
      - CodeIndexer.java
      - CodeSearcher.java
      - CustomCollector.java
      - CustomCollectorFwdIndex.java
      - InputGen.java
      - SearchManager.java
      - TermFreq.java
      - TermSearcher.java
      - TermSorter.java
    - models
    - noindex
    - postprocessing
    - utility
    - validation
  - Referenced Libraries
  - JRE System Library [Java SE 6 (MacOS X Default)]
  - build
  - dist
  - index
  - input
  - lib
  - output10
  - output7.5
  - output8
  - output8.5
  - output9
  - output9.5
  - build.xml
  - dist.zip
  - input.backup-march18.zip
  - input.zip
  - README.md
  - run.sh
  - runAggregator.sh

SampleHandler.java | ReflectionHelloWorld.java | SearchManager.java

```
136            System.out
137                    .println("Please provide all 3 command line arguments, exiting now.");
138            System.exit(1);
139        }
140    }
141
142    private void genReport() {
143        String header = "";
144        if (!this.appendToExistingFile) {
145            header = "fwd_index_time, inverted_index_time, "
146                    + "globalTokenPositionCreationTime,num_candidates, "
147                    + "num_clonePairs, total_run_time, searchTime,"
148                    + "timeSpentInSearchingCandidates,timeSpentInProcessResult,"
149                    + "isPrefixmode,operation,sortTime_during_indexing\n";
150        }
151        header += this.timeFwdIndex + ",";
152        header += this.timeInvertedIndex + ",";
153        header += this.timeGlobalTokenPositionCreation + ",";
154        header += this.numCandidates + ",";
155        header += this.clonePairsCount + ",";
156        header += this.timeTotal + ",";
157        header += this.timeSearch + ",";
158        header += this.timeSpentInSearchingCandidates + ",";
159        header += this.timeSpentInProcessResult + ",";
160        header += this.isPrefixMode + ",";
161        if(this.action.equalsIgnoreCase("index")){
162            header += this.action + ",";
163            header += this.indexer.bagsSortTime;
164        }else{
165            header += this.action;
166        }
167
168
169
170        Util.writeToFile(this.outputWriter, header, true);
171    }
172
173    private void doIndex() throws IOException, ParseException {
174
```

Developer
Working on
this method

Problems | Javadoc | Declaration | Search | Console

<terminated> HelloWorld [Java Application] /Library/Java/JavaVirtualMachines/jdk1.7.0_09.jdk/Contents/Home/bin/java (Apr 28, 2014 2:25:40 PM)

Foo
I am bar

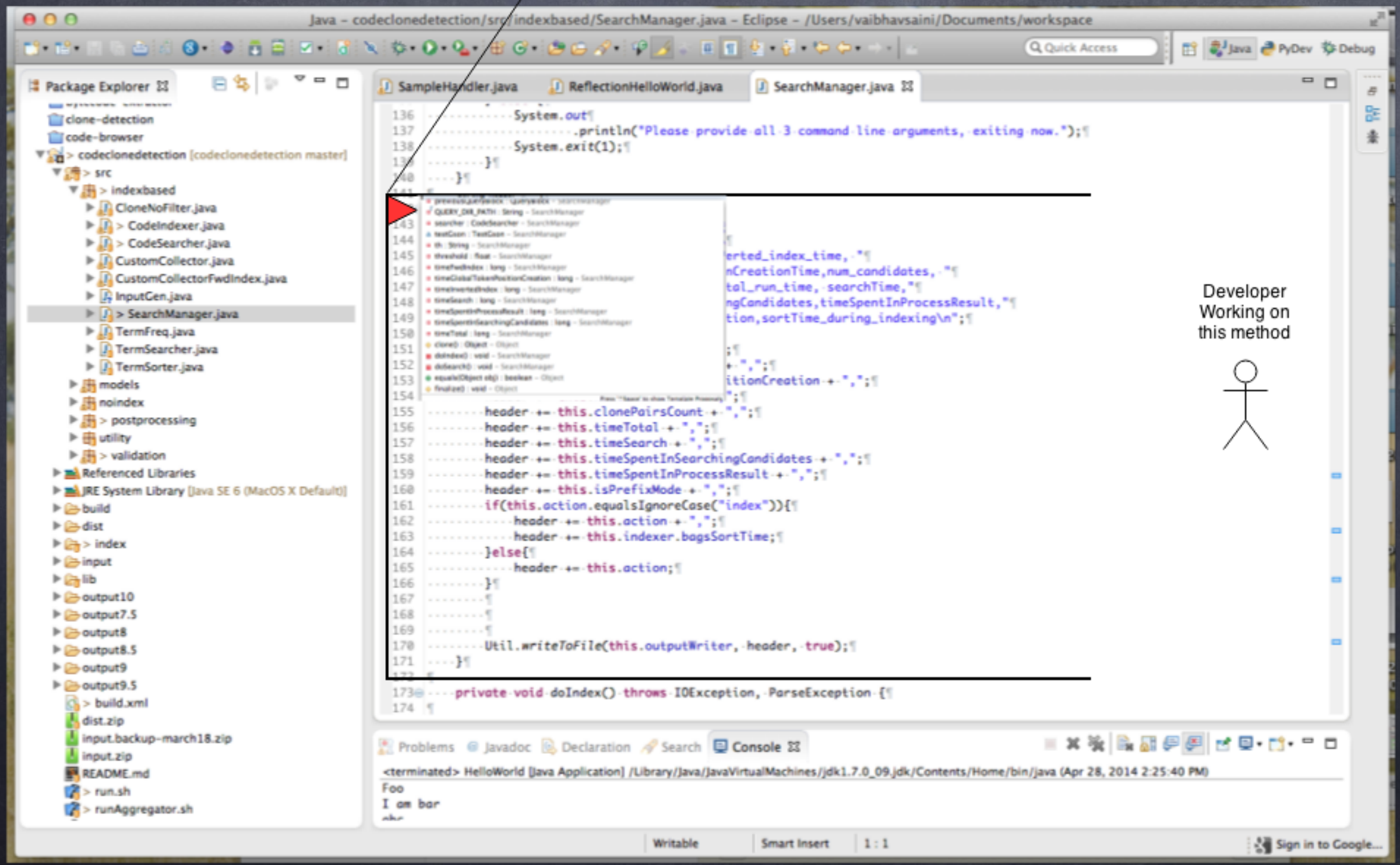
Writable | Smart Insert | 1 : 1

# User Interface

Step 2

on clicking the marker
developer sees the similar methods
sorted by their similarity score

Developer
Working on
this method



# User Interface

Step 3

# There is no step 3

:) Thanks