

# Worksheet: Finding maximal index of goal in matrix

Below is a code fragment intended to find the maximal (largest) index of a goal value that occurs multiple times in the input matrix. Could we make the code more efficient? If so, explain why?

```
1. class AsyncFinishEurekaSearchMaxIndexOfGoal {
2.     HjEureka eurekaFactory() {
3.         comparator = (cur, newVal) -> { // cur is initially [-1, -1]
4.             (cur.x==newVal.x) ? (newVal.y - cur.y) : (newVal.x - cur.x) }
5.         return new MaximaEureka([-1, -1], comparator)
6.     }
7.     int[] doWork(matrix, goal) {
8.         val eu = eurekaFactory()
9.         finish (eu, () -> { // eureka registration
10.             forasync (0, matrix.length - 1, (r) ->
11.                 procRow(matrix(r), r, goal));
12.             });
13.         return eu.get()
14.     }
15.     void procRow(array, r, goal) {
16.         for (int c = 0; c < array.length(); c++)
17.             check([r, c]) // terminate if comparator returns negative
18.             if goal.match(array(c)) offer([r, c]) // updates cur in eureka
19.         }
20.     }
```

