

# CS180 Homework 6

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## 1 King of the tournament

- (a)
- (b)

## 2 Same real number in two sets

- (a) The algorithm's given in alg ?? . We first sort the set  $S_1$  ( $O(n \log n)$ ), then for every element in a  $S_2$ , we do a binary search in the  $S_1$  ( $O(n \log n)$  for this process). Thus the algorithm is  $O(n \log n)$ . The correctness is obvious.

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**Algorithm 1** Same real number in two sets

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```
1: function SAMENUMBER(S1, S2)
2:    $S'_1 \leftarrow \text{sort}(S_1)$ 
3:   for  $i \in S_2$  do
4:     if  $\text{binarySearch}(i, S'_1) = \text{true}$  then
5:       return true
6:   return false
```

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- (b)

## 3 Find different binary number

## 4 Modified radix sort