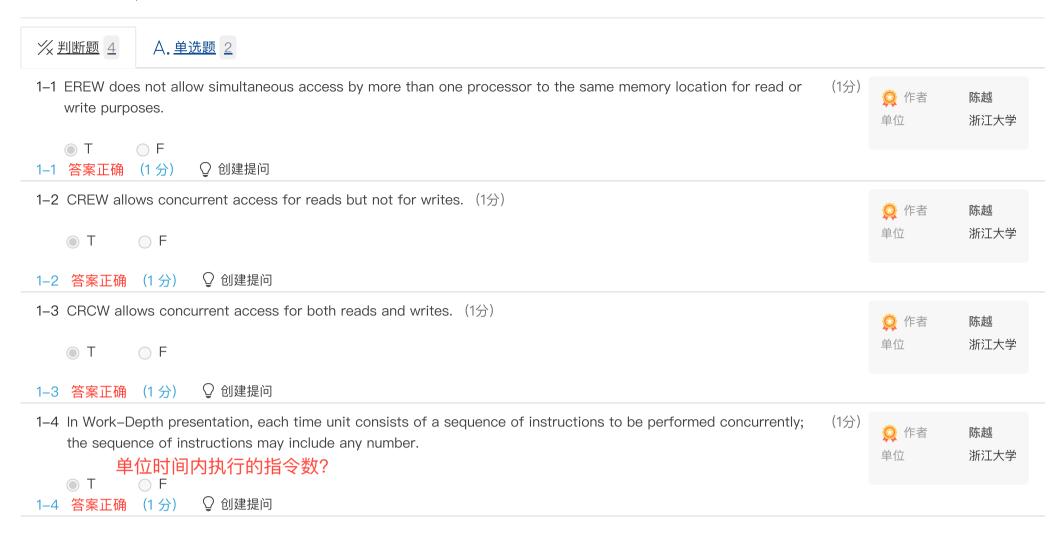


ZJU-ADS-HQM2020-WK13





ZJU-ADS-HQM2020-WK13



△.单选题 2

2-1 The prefix-min problem is to find for each $i, 1 \leq i \leq n$, the smallest element among $A(1), A(2), \cdots, A(i)$. What is the run time and work load for the following algorithm? (3 2)



○ 作者

单位

沈鑫

浙江大学

```
for i, 1≤i≤n pardo
    B(0, i) = A(i)
for h=1 to log(n)
    for i, 1≤i≤n/2^h pardo
        B(h, i) = min {B(h-1, 2i-1), B(h-1, 2i)}
for h=log(n) to 0
    for i even, 1≤i≤n/2^h pardo
        C(h, i) = C(h+1, i/2)
    for i=1 pardo
        C(h, 1) = B(h, 1)
    for i odd, 3≤i≤n/2^h pardo
        C(h, i) = min {C(h + 1, (i - 1)/2), B(h, i)}
for i, 1≤i≤n pardo
        Output C(0, i)
```

- \bigcirc A. O(n), O(n)
- \bigcirc B. O(logn), O(logn)
- \bigcirc C. O(log n), O(n)
- \bigcirc D. O(n), O(lof n)
- 2-1 答案正确 (3分) ♀ 创建提问
- 2-2 Which one of the following statements about the Maximum Finding problem is true? (3分)
 - igcup A. There exists a serial algorithm with time complexity being O(logN).
 - igcup B. No parallel algorithm can solve the problem in O(1) time.
 - \bigcirc C. When partitioning the problem into sub-problems and solving them in parallel, compared with \sqrt{N} , choosing loglogN as the size of each sub-problem can reduce the work load and the worst-case time complexity.
 - \odot D. Parallel random sampling algorithm can run in O(1) time and O(N) work with very high probability.

2-2 答案正确 (3分) ♀ 创建提问