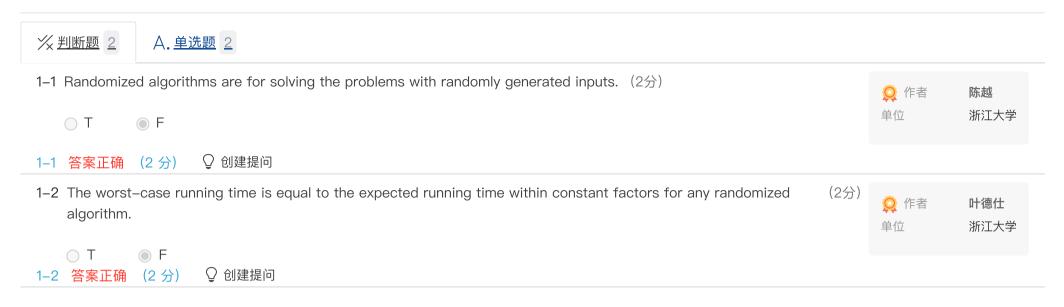


## ZJU-ADS-HQM2020-WK12



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A. 单选题 2

2–1 If we repeatedly perform independent trials of an experiment, each of which succeeds with probability p>0, then the expected number of trials we need to perform until the first success is: (3分)



- $\bigcirc$  A. p/(1-p)
- $\bigcirc$  B. 1/(1-p)
- $\odot$  C. 1/p
- D. None of the above

 $Pi = (1-p)^{i-1}p$ 

## ○ 创建提问 2-1 答案正确 (3分)

2-2 Given a 3-SAT formula with k clauses, in which each clause has three variables, the MAX-3SAT problem is to find a truth assignment that satisfies as many clauses as possible. A simple randomized algorithm is to flip a coin, and to set each variable true with probability 1/2, independently for each variable. Which of the following statements is FALSE? (3 分)



- $\bigcirc$  A. The expected number of clauses satisfied by this random assignment is 7k/8.
- $\odot$  B. For every instance of 3–SAT, there is a truth assignment that satisfies at least a 7/8 fraction of all clauses.
- ullet C. If we repeatedly generate random truth assignments until one of them satisfies  $\geq 7k/8$  clauses, then this algorithm is a 8/7-approximation algorithm.
- D. The probability that a random assignment satisfies at least 7k/8 clauses is at most 1/(8k).
- 2-2 答案正确 (3分)
- 创建提问