# Homework 2: Q3

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## 1 Algorithm Idea

Begin Algorithm Idea: set n be the number of student s and engineers e, and $m = n^2$. So that $m > n$ will always be satisfied. In this algorithm, I will set each student meet with all the engineer possible. However, it will be ended up pairing them as $(s_1, e_n)$, $(s_2, e_{n-1})$, ……, $(s_n, e_1)$.

## 2 Algorithm Details

**Algorithm:** Algorithm1

```
Initially all student and engineer are free
for s ∋ n, 1….n   //loop through all the student
    for e ∋ n, 1….n  //loop through all the engineer
        if e is the last engineer
          pair (s, e)  //pair up each student and engineer as (s1, en), (s2, en-1), ……, (sn, e1)
        else
          student meet with engineer and leave itself
        endif
    endfor
endfor
```

## 3 Proof Idea

Begin Proof Idea: In this algorithm, we will be demonstrating an example of n=2, m=4. Whereas m>n. I'll let the first student meet with all the engineer, if he is the last engineer they will match. However, student will meet with another engineer and do nothing. So on so forth, when it iterate all the student the result should be $(s_1, e_n)$, $(s_2, e_{n-1})$, ……, $(s_n, e_1)$, which no one gets stood-up.

# 4 Proof Details

Begin Proof Details

| CSE Major | Slot 1 | Slot 2 | Slot 3 | Slot 4 |
|---|---|---|---|---|
| $S_1$ | $E_1$ | Free | $E_2$ (truncate here) | |
| $S_2$ | Free | $E_1$ (truncate here) | | |

Based on the schedule we can see that there is n (which is 2) number of students and engineers, and m ($n^2$=4) slots. While we iterate through all the students, we check if he meets the last engineer which is $E_2$ in this case. Before he has met $E_2$, he will first meet with $E_1$. However, he will just go talk to the $E_1$ and not do anything until he met $E_2$ and assigned with $E_1$. For $S_2$, since our n=2, we will pair $S_2$ with $E_{n-1}$ which is $E_2$ and not care about the rest.