The algorithm is stated as follow:

Algorithm 1 Algorithm for problem 2

Sort the m students by their days a_i in chronological order $S_1, S_2 \cdots S_m$
Sort the n employees by their interval starting days s_i in chronological order $E_1, E_2, \cdots E_n$
While select student S_i in reverse chronological order (From S_m to S_1)
    While select employee E_j from E_n to E_1
        If $s_i \leq a_j \leq f_i$
            Match S_i and E_j
            Break
        End if
    End while
End while
Return the set M of matched pairs.

Proof of Correctness (referred to class note)**:** For employees E_1 to E_m corresponding to students S_1 to S_m, we want to prove each s_i is as late as possible. Considering another solution e'_1 to e'_k, we need to prove $s_i \geq s'_i$ by induction on i.

Base case: $i = 1$: $s_i \geq s'_i$ since it is our rule

Induction: For $i \geq 2$, E' has no more options before s_i, and the algorithm select the latest s_{i+1}. Hence, this algorithm is correct.

Time Complexity Analysis:
The complexity of selecting each student is $O(m)$.
For each student, the complexity of selecting each employee is $O(n)$.
m students $\times$ n employees $= O(mn)$