

Algorithms

Examples

1. Demonstrate bubble sort to sort the list 3, 4, 2, 1.
2. Demonstrate the quick sort to sort the list 3, 6, 2, 5, 1, 4.
3. Demonstrate the stable matching algorithm when men and women have the preferences $m_1 : w_1 > w_2, m_2 : w_1 > w_2$ and $w_1 : m_1 > m_2, w_2 : m_1 > m_2$.

Problems

4. True False The stable matching algorithm with always produce a matching that is stable.
5. True False There is only one stable matching.
6. Three women A, B, C are proposing to men E, F, G. Their preferences are as follows:

A	B	C	E	F	G
$E > G > F$	$E > G > F$	$G > E > F$	$C > A > B$	$A > B > C$	$B > C > A$

Show the stable matching algorithm with the women proposing to the men by clearly showing all rounds in a table.

7. Sort the list 2, 1, 6, 4, 5, 3 using both bubble sort and quicksort.
8. Find and prove a formula for $1 + 2 + 3 + \dots + n$