

# ALGORITHM DESIGN 1 (CS3131)

## Homework-1

**Note:** Before Pseudocode You have to mention the input as well as output.

1. Write the pseudo code for solving following problems
  - (a) Searching a number in a given array
  - (b) Finding the maximum number in a given array
  - (c) Multiply two matrices
  - (d) Find whether a number is prime or not
2. Is assignment X-C, Y-A, Z-B is stable? If not find unstable pair?

Men's Preference List      Women's Preference List

Men	1	2	3
X	C	B	A
Y	C	A	B
Z	C	B	A

Women	1	2	3
A	Z	X	Y
B	Z	Y	X
C	Z	Y	X

3. Run Gale-Shapley algorithm to find stable matching for the problem mentioned in Q2?  
Find any other stable matching if exit?
4. Find a stable matching using the Gale-Shapley algorithm with men's making proposals.

Men's Preference List

Men	1	2	3	3
Amir	S	T	U	V
Bengt	S	V	U	T
Ceasar	S	U	T	V
David	U	V	T	S

Women's Preference List

Women	1	2	3	3
Susanne	D	A	B	C
Tana	A	D	C	B
Ursula	C	D	B	A
Verginia	A	C	D	B

5. Solve Q4 with women making proposals.
6. Write pseudo code for Gale-Shapley algorithm and implement it using java?

Note: Programming questions may be added, removed, or modified as per requirement