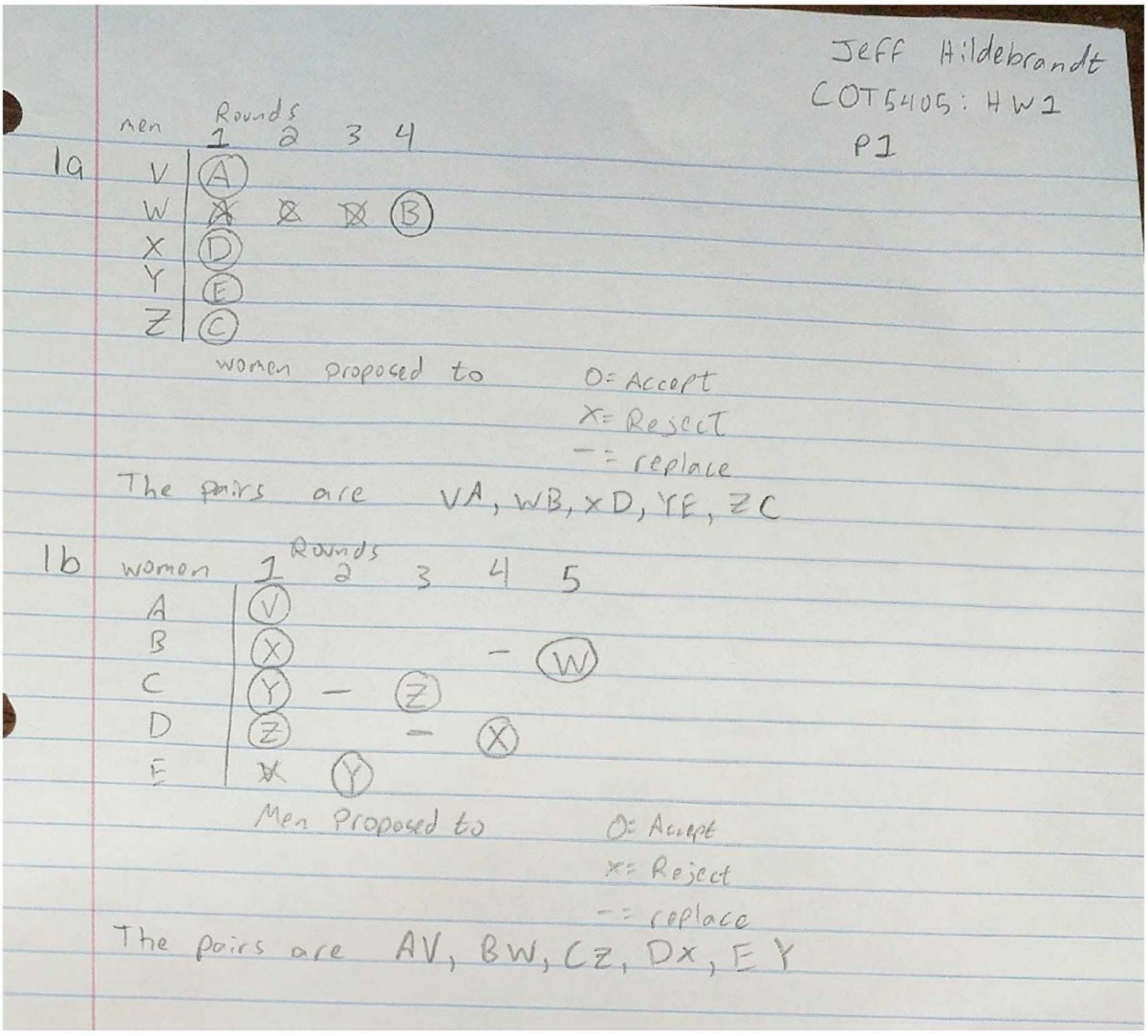
Jeff Hildebrandt
COT 5405: HW1
09/17/2017



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2 Adjacency Matrix

	A	B	C	D	E	F
A	0	(1)	1	(1)	0	0
B	(1)	0	1	1	0	0
C	1	1	0	1	1	1
D	(1)	1	1	0	(1)	0
E	0	0	0	(1)	0	1
F	0	0	1	0	1	0

circle shows the red highlighted edges

Adjacency List

A (B) → C → (D)
B (A) → C → D
C A → B → D → E → F
D (A) → B → C → (F)
E C → (D) → F
F C → E

circle shows the red edges

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node	# of connections
a	2
b	1
c	1
d	1
e	1
f	0

Topological orderings

b, c, d, and e all have the same value, so they can be in any order. The number of possible combinations for 4 numbers with no repeats is 4!

1 a b c d e f

⋮

24 a e d c b f

so there are 4! = 24 possible combinations

4)
After initialization

Vertex (v)	In S (T if in S F if not)	Cost (D(v) INF means infinate)	Path (D(w) N/A if none exists)
A	T	0	N/A
B	F	4 < INF so 4	A
C	F	10 < INF so 10	A
D	F	3 < INF so 3	A
E	F	INF	N/A
F	F	INF	N/A

Iteration 1:

Vertex (v)	In S (T if in S F if not)	Cost (D(v) INF means infinate)	Path (D(w) N/A if none exists)
A	T	0 < 4 so 0	N/A
B	T	4	A
C	F	10 < 12 so 10	A
D	F	3 < 12 so 3	A
E	F	INF	N/A
F	F	INF	N/A

Iteration 2:

Vertex (v)	In S (T if in S F if not)	Cost (D(v) INF means infinate)	Path (D(w) N/A if none exists)
A	T	0 < 10 so 0	N/A
B	T	4 < 18 so 4	A
C	T	10	A
D	F	3 < 17 so 3	A
E	F	11 < INF so 11	C

F	F	19 < INF so 19	C

Iteration 3:

Vertex (v)	In S (T if in S F if not)	Cost (D(v) INF means infinate)	Path (D(w) N/A if none exists)
A	T	0 < 3 so 0	N/A
B	T	4 < 9 so 4	A
C	T	10 = 10 so 10	A
D	T	3	A
E	F	11 > 5 so 5	D
F	F	19	C

Iteration 4:

Vertex (v)	In S (T if in S F if not)	Cost (D(v) INF means infinate)	Path (D(w) N/A if none exists)
A	T	0	N/A
B	T	4	A
C	T	10 > 6 so 6	E
D	T	3 < 7 so 3	A
E	T	5	D
F	F	19 > 10 so 10	E

Iteration 5:

Vertex (v)	In S (T if in S F if not)	Cost (D(v) INF means infinate)	Path (D(w) N/A if none exists)
A	T	0	N/A
B	T	4	A
C	T	6 < 19 so 6	E
D	T	3	A

E	T	5 < 15 so 5	D
F	T	10	E

Shortest Path:

Vertex (v)	**Shortest Path (Traversing using D(w) backwards)**
A	A
B	A, B
C	A, D, E, C
D	A, D
E	A, D, E
F	A, D, E, F