

Sam Hopkins
Hw 19

1

∞	58	96	916	3
76	83	81	144	3
5	46 ³	9	16	5
96	76	812	100	3

-	5	0	98
0	-	3	110
0	3	-	10
6	0	2	-
0	0	0	1

Reduced cost matrix

-	5	0	8
0	-	3	10
0	3	-	0
6	0	2	-

$$\text{Lower bound: } 3+3+5+3+1 = \boxed{16}$$

2.9.3) a) a set of subsets that is a partial solution to the Set Cover problem
b) which new set has the most ~~elements~~ elements that are unique will be expanded
c) all remaining subsets will be numbered as to how many unique elements they contain, and the one with the most will be chosen to expand the subproblem
d) The minimum number of sets that we can feasibly put in a set to cover all elements, whether or not that is possible.

I think this will work for typical instances of the problem because it enumerates the choices based on unique elements, which could be anything, so the algorithm is fairly universal.

2)

	A	B	C	D	IS
A	-	4	0	8	
B	0	-	3	10	
C	0	3	-	0	
D	6	0	2	-	

exclude \nwarrow private $\searrow A \rightarrow D$ include $23 - 15 = 8$

	A	B	C	D	23	IS
A	-	4	0	0		
B	0	-	3	2		
C	0	3	-	-		
D	6	0	2	-		

exclude \nwarrow private $\searrow B \rightarrow A$ include 15

	A	B	C	D	21	IS
A	-	4	0	-		
B	-	-	3	-		
C	-	-	-	-		
D	0	0	-	-		

private \nwarrow exclude \searrow include $B \rightarrow B$

	A	B	C	D	1d	IS
A	-	0	0	-		
B	-	-	-	-		
C	-	-	-	-		
D	-	-	-	-		

(4)

IS
15

$A \rightarrow C$
include/exclude game

-	-	-
-	-	-
-	-	-
-	-	-
-	-	-