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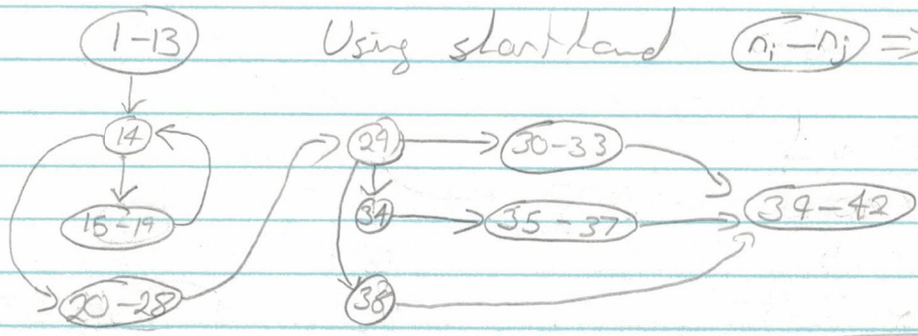
ECSE 429: Assignment 2

1.a)



Using shorthand $(n_i - n_j) \Rightarrow (n_i \rightarrow n_{i+1} \rightarrow \ldots \rightarrow n_j)$

each number is a
line number in the

b) Using shorthand $(n_i - n_j) \Rightarrow (n_i, n_{i+1}), (n_{i+1}, n_{i+2}), \ldots, (n_{j-1}, n_j)$

$p_1 = \{(1-13), (13,14), (14,15), (15-19), (19,14), (14,20), (20-28), (28,29), (29,30), (30-33), (33,39), (39-42)\}$

$p_2 = \{(1-13), (13,14), (14,15), (15-19), (19,14), (14,20), (20-28), (28,29), (29,34), (34,35), (35-37), (37,39), (39-42)\}$

$p_3 = \{(1-13), (13,14), (14,20), (20-28), (28,29), (29,38), (38,39), (39-42)\}$

c)

Variables	Declared	Defined	Used
logicB	2	13, 19	14, 16
statsB	2	15	17
biologyB	2	15	18
logicBPrice	3	7	24
statsBPrice	3	8	25
biologyBPrice	3	9	26
totalLogicB	4	10, 16	16, 21, 24
totalStatsB	4	11, 17	17, 22, 25
totalBiologyB	4	12, 18	18, 23, 26
logicBSales	5	24	27
statsBSales	5	25	27
biologyBSales	5	26	27
sales	6	27	28, 29, 33, 34, 37, 38
commission	6	31, 32, 33, 36, 37, 38	32, 33, 37, 41

2.a) Node Coverage = $\{n_0, n_1, n_2, n_3, n_4, n_5, n_6, n_7, n_8, n_9\}$

Edge Coverage = $\{(n_0, n_3), (n_0, n_4), (n_1, n_4), (n_1, n_5), (n_2, n_5), (n_2, n$
$(n_3, n_7), (n_4, n_7), (n_4, n_8), (n_5, n_8), (n_5, n_9), (n_6, n$

Prime Path Coverage = $\{(n_0, n_3, n_7), (n_0, n_4, n_7), (n_0, n_4, n_8),$
$(n_1, n_4, n_7), (n_1, n_4, n_8), (n_1, n_5, n_8), (n_1, n_5, n_9$
$(n_2, n_5, n_8), (n_2, n_5, n_9), (n_2, n_6, n_9)\}$

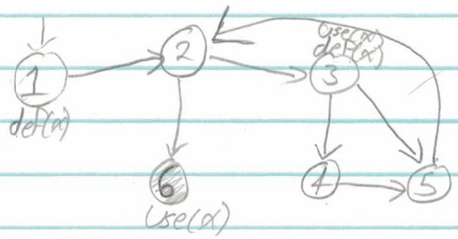
b) $P_1 = \{(n_0, n_3), (n_3, n_7)\}$ | $P_3 = \{(n_2, n_5), (n_5, n_9)\}$
$P_2 = \{(n_1, n_4), (n_4, n_8)\}$ | $P_4 = \{(n_2, n_6)\}$

Missing edges $(n_0, n_4), (n_4, n_7), (n_1, n_5), (n_5, n_8), (n_6, n_9)$ therefore
Node coverage but not edge coverage.

c) $P_1 = \{(n_0, n_3), (n_3, n_7)\}$ | $P_4 = \{(n_1, n_5), (n_5, n_8)\}$
$P_2 = \{(n_0, n_4), (n_4, n_7)\}$ | $P_5 = \{(n_2, n_5), (n_5, n_9)\}$
$P_3 = \{(n_1, n_4), (n_4, n_8)\}$ | $P_6 = \{(n_2, n_6), (n_6, n_9)\}$

Missing paths $(n_0, n_4, n_8), (n_1, n_4, n_7), (n_1, n_5, n_9), (n_2, n_5, n_8)$ therefo
edge coverage but not prime path coverage.

3.a)



b)

du-pair	path(s)
(1, 6)	$\{(1,2), (2,6)\}$
(1, 3)	$\{(1,2), (2,3)\}$
(3, 3)	$\{(3,4), (4,5), (5,2), (2,3)\}$
	$\{(3,5), (5,2), (2,3)\}$
(3, 6)	$\{(3,4), (4,5), (5,2), (2,6)\}$
	$\{(3,5), (5,2), (2,6)\}$

c) $T_1 = \{(1,2), (2,3), (3,5), (5,2), (2,6)\}$
(def$_1$) (use$_1$, def$_3$) (use$_3$)

d) $T_1 = \{(1,2), (2,6)\}$, $T_2 = \{(1,2), (2,3), (3,5), (5,2), (2,3), (3,5), (5,2), (2,$
(def$_1$) (use$_1$) (def$_1$) (use$_1$, def$_3$) (use$_3$, def$_3$)