Assignment 46

(4.1 a)

def dijustras (G, S):

for v in V:

dist [v] = 00

prev [v] = nil

dist[s] = 0

a = priority aueu()

Q.push-back (E)

while IQI > 0:

u = Q.pop() // pops the smallest item

for u, v in E:

if dist[v] > dist[u] + Wur

Q. update (v, dist [v])

prev [v] = u

- 12	1								
	A	B	C	D	E	F		G / 1-	1
1	0	00	.00	00	00	000	00	1 W	
2	0	1	00	00	00	00	00	l x	0+1<00 A>B
3	0	1	00	00	4	000	00	0	0 1 4 6 00 A >E
4	0	1	000	8	H	8	00	00	0+8 c 00 A -> F
5	0	1	3	00	4	8	10	00	1+2 L 00 B > 6
6	0	1	3	∞	4	7	100	8	1+6(8 B-) F
7	0	1	3	100	4	7	7	100	116 L 00 B -> 6
8	0	1	3	4	4	7	7	∞	3+1/6 C -> D
9	0	1	3	4	4.	7	5	000	3+2(47 C->6
10	0	1	3	4	4	7	5	00	4+1±5 D7G
11	0	1	3	4	4	7	5	8	4+4600 674
12	0	1	3	4	4	6	5	8	s+147 6 -> F
13	0	1	3	4	4	6	5	6	5+1L8 6-7H
14	0	1	3	4	4	6	5	6	4+9>6 E7F
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(4.12)

e=A>C

Dijkstra's Algorithm

Shortest Cycle (G, e): e(u,v) 51 = dijhstras(u) 52 = dishstas(v) 53 = min(51, 52)

return 53 + e. Key

E A
A -C
C -B
B C
A -B
C -E
E -D
B - D
E

smallest cycle
= scc with least
of items
containing e