HW11

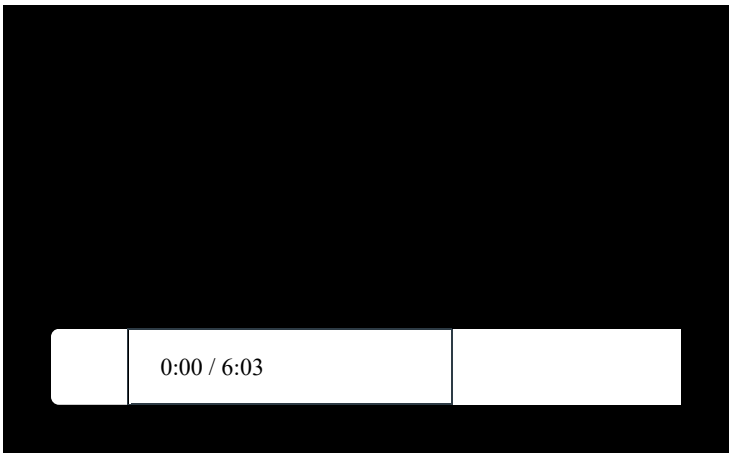
- Due Apr 25 at 11:59pm
- Points 40
- Questions 17
- Available Apr 18 at 12am - Apr 26 at 11:59am
- Time Limit None
- Allowed Attempts 7

Instructions

Question text:

Assignment11.pdf (https://k-state.instructure.com/courses/151504/files/38096946?wrap=1) (https://k-state.instructure.com/courses/151504/files/38096946/download?download_frd=1)

Explanation:



Attempt History

	Attempt	Time	Score
KEPT	Attempt 7	2 minutes	40 out of 40
LATEST	Attempt 7	2 minutes	40 out of 40
	Attempt 6	12 minutes	35 out of 40
	Attempt 5	12 minutes	32 out of 40
	Attempt 4	9 minutes	26.33 out of 40

Attempt	Time	Score
Attempt 3	16 minutes	20.33 out of 40
Attempt 2	14 minutes	14.5 out of 40
Attempt 1	27 minutes	8.83 out of 40

Correct answers are hidden.

Score for this attempt: 40 out of 40
Submitted Apr 25 at 3:56pm
This attempt took 2 minutes.

First some questions about Exercise 1.

Question 1
3 / 3 pts

What is h[i] when

i = 2

1

i = 3

1

i = 4

infinity

i = 5

5

i = 6

5

i = 7

5

Question 2
8 / 8 pts

To compute h, what should be the action of

PreNode on a node u

h[u] <- infinity

PreEdge on a tree edge from u to w

do nothing

PostEdge on a tree edge from u to w

h[u] <- min(h[u], h[w])

OtherEdge on a back edge from u to w

h[u] <- min(h[u], d[w])

Question 3
2 / 2 pts

When will a back edge from u to w be a bridge?

- iff h[u] = d[w]
- always
- never

Question 4
5 / 5 pts

A tree edge from u to w will be determined to be a bridge by [Select] Edge iff

h(w) [Select] d(u)

Answer 1:

Other

Post

Pre

Answer 2:

=

<=

>=

<

>

Question 5

2 / 2 pts

We have derived an algorithm for finding bridges.
What is its asymptotic running time, as simplified as possible?

- Theta(|V| + |E|)
- Theta(|V|)
- Theta(|V| |E|)
- Theta(|E|)

Next some questions about Exercise 2.

First about the 1st iteration of Edmonds-Karp.

Question 6

1 / 1 pts

Which nodes occur in the shortest augmenting path?

- [x] a
- [ ] b
- [ ] e

- [x] f
- [ ] d
- [ ] c

Question 7
1 / 1 pts

What is the minimum capacity of the edges in that path?

5

Question 8
1 / 1 pts

In the resulting residual network, what is the capacity of the edge from s to a?

1

Next about the 2nd iteration of Edmonds-Karp.

Question 9
1 / 1 pts

Which nodes occur in the shortest augmenting path?

- [ ] d
- [x] b
- [x] a
- [ ] f
- [x] c
- [ ] e

Question 10
1 / 1 pts

What is the minimum capacity of the edges in that path?

1

Question 11
1 / 1 pts

In the resulting residual network, the source s has an edge to which nodes? (check all that apply)

- [ ] a
- [x] d
- [ ] b

Question 12
2 / 2 pts

In the resulting residual network, what is the capacity of

the edge from a to b?

8

the edge from b to a?

1

Next about the 3rd iteration of Edmonds-Karp.

Question 13
1 / 1 pts

Which nodes occur in the shortest augmenting path?

- [x] f
- [x] c
- [x] d
- [x] e
- [x] a

b

Question 14
1 / 1 pts

What is the minimum capacity of the edges in that path?

2

Question 15
4 / 4 pts

In the resulting residual network, what is the capacity of the edge

from a to b

6

from b to a

3

from a to f

2

from f to a

3

Finally, we consider the flow we have computed (by adding the flows from the augmenting paths).

Question 16
5 / 5 pts

What is that flow on the edge

from s to a

6

from a to b

3

from a to f

3

from s to d

2

from f to t

5

Question 17
1 / 1 pts

What is the value of that flow? (which will be the maximum flow for the given network)

8

Quiz Score: 40 out of 40