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Dong Gao

🏠   Weekly Quizzes   **Review Test Submission: Week 04 Quiz**

Review Test Submission: Week 04 Quiz

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User	Dong Gao
Subject	Algorithms and Complexity
Test	Week 04 Quiz
Started	23/03/16 11:41 PM
Submitted	24/03/16 12:02 AM
Due Date	6/04/16 11:59 PM
Status	Completed
Attempt Score	4 out of 4 points
Time Elapsed	20 minutes
Instructions	You should attempt the quiz after the lecture and your tutorial. The quiz is available for a period of 10 days. You may attempt the quiz multiple times (if you happen to get a question wrong, you can do it again) Your score on the quiz will be recorded in the grade book. The score is not used when determining your final mark in this subject The quiz might not display equations correctly in some browsers. If you experience problems, we recommend that you use Firefox. Note: you must complete at least eight of the weekly quizzes to meet one of the hurdle requirements in this subject
Results Displayed	All Answers, Submitted Answers, Correct Answers, Feedback

Question 1

1 out of 1 points

For one of these four directed graphs, the 8 nodes will be visited in the same order by BFS and DFS (given the usual assumption that ties are resolved by using alphabetical order, and assuming that the starting node is 'a'). Click on that graph.

Selected Answer: ✅   162, 428
Correct Answer: ✅ Top Left Coordinates (14, 324) Bottom Right Coordinates (314, 605)
Instructor selection and student response
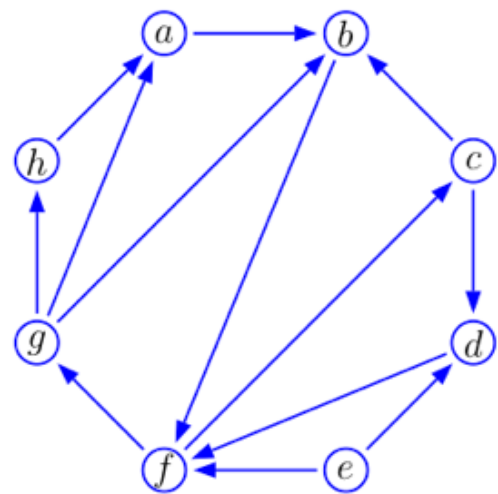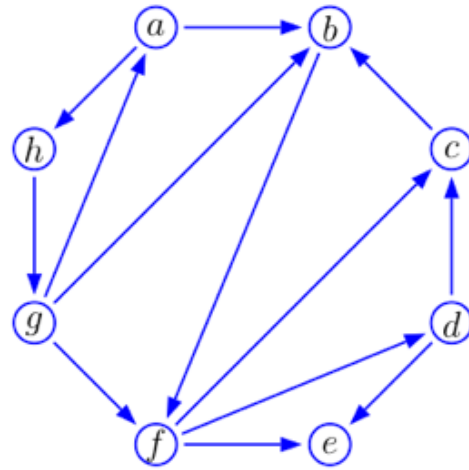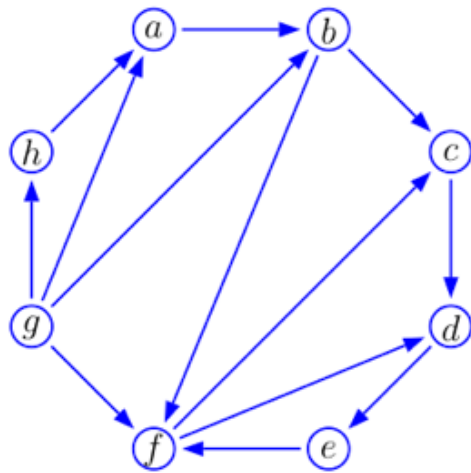
Response Feedback: Yes, well done. Whether we use DFS or BFS the sequence will be *a b f c d e g h.*
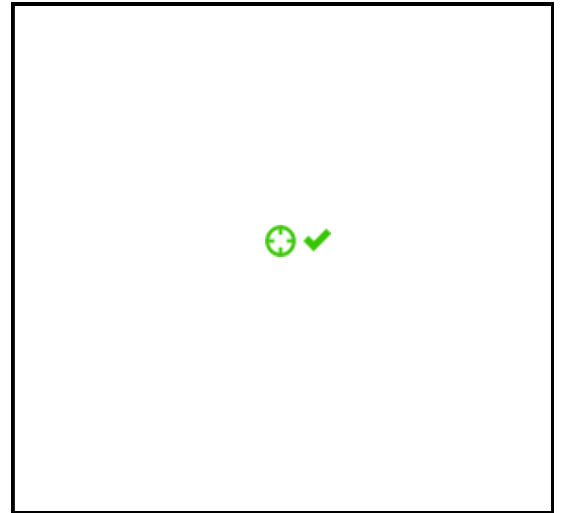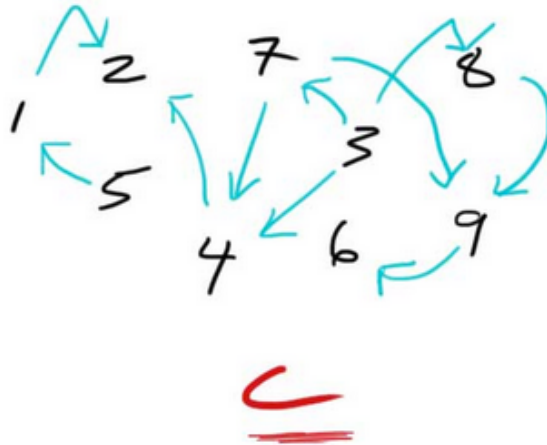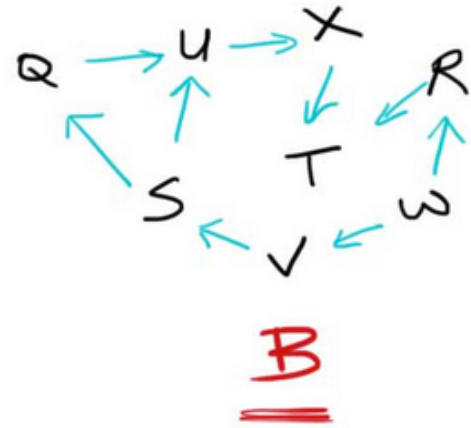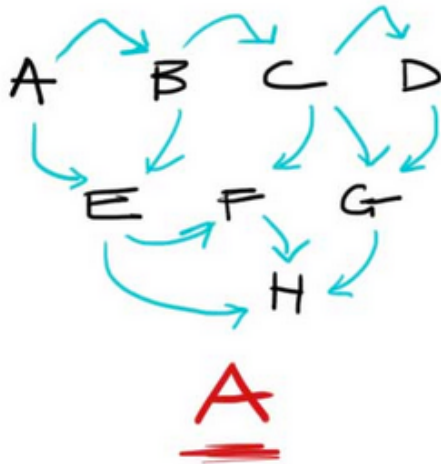

Question 2

1 out of 1 points

One of the directed graphs below **cannot** be topologically sorted. Click on that graph.

Selected Answer: ✅ 530, 495

Correct Answer: ✅ Top Left Coordinates (383, 365) Bottom Right Coordinates (678, 643)

Instructor selection and student response

Response Feedback: Yes indeed. Graph D is cyclic.

Question 3

1 out of 1 points

Consider the dag with set of nodes V = {V1, V2, V3, V4, V5, V6, V7} and set of edges {(V1,V2), (V1,V3), (V1,V4), (V2,V5), (V3,V5), (V3,V6), (V4,V6), (V5,V7), (V6,V7)}. Which of the following node sequences are topologically sorted?

✓ b. V1, V4, V3, V2, V6, V5, V7

✓ d. V1, V3, V4, V6, V2, V5, V7

Answers: a. V1, V2, V5, V3, V4, V6, V7

✓ b. V1, V4, V3, V2, V6, V5, V7

c. V1, V3, V4, V5, V2, V6, V7

✓ d. V1, V3, V4, V6, V2, V5, V7

e. V1, V3, V2, V6, V4, V5, V7

Response Feedback: Yes, absolutely. Well done.

Question 4

1 out of 1 points

Find the time complexity for the following function (the basic operation is the innermost loop body's assignment).

```
function f(n)
    r ← 0
    m ← 1
    for i ← 1 to n do
        m ← 3 × m
        for j ← 1 to m do
            r ← r + j
    return r
```

Selected Answer: $\Theta(3^n)$
                    ✅ c.

Answers: $\Theta(n \log n)$
                    a.

                    $\Theta(n)$
                    b.

                    $\Theta(3^n)$
                    ✅ c.

                    $\Theta(n^2)$
                    d.

                    $\Theta(n^3)$
                    e.

Response Feedback: Yes, this requires a formula for the geometric series $3 + 3^2 + 3^3 + \ldots + 3^n$. (Actually it is easy enough to find $x = 3 + 3^2 + 3^3 + \ldots + 3^n$, by observing that we get back to x if we multiply the sum by 3, then add 3, and subtract 3^{n+1}. So just solve the equation $x = 3 + 3x - 3^{n+1}$.)

Saturday, 4 June 2016 11:14:23 PM EST

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