

by Chris



Review Test Submission: Week 03 Quiz

User	Haoyu Lin
Subject	Algorithms and Complexity
Test	Week 03 Quiz
Started	16/03/16 3:31 PM
Submitted	16/03/16 3:32 PM
Due Date	24/03/16 11:59 PM
Status	Completed
Attempt Score	5 out of 5 points
Time Elapsed	0 minute
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 All Answers, Submitted Answers, Correct Answers, Feedback
 Displayed

https://app.lms.unimelb.edu.au/webapps/assessment/review/review.jsp?attempt_id=12147183_1&course_id=289856_1&content_id=5261363_1&outcome_id=10956402_1&outcome_definition_id=1234467_1&... 1/5

Question 1

1 out of 1 points

One of my books has 589 pages, numbered consecutively. Every page has a page number, the first being 1. How many decimal digits were used to type the 589 page numbers?

Selected Answer: a. 1659

Answers: a. 1659

b. 1667

C. 1657

d. 1660

e. 1661

Response Feedback: Right - there are 9 page numbers of length 1, 90 of length 2, and 490 of length 3.

$$\begin{array}{r} 1 \sim 9 = 1 \times 9 \\ 10 - 99 = + 2 \times 90 \\ 100 - 589 = + 3 \times 490 \\ \hline 1659 \end{array}$$

Question 2

1 out of 1 points

This function uses a curious mix of iteration and recursion:

```
function F(n)
  if n < 1
    return 1
  t <- 0
  for i <- 0 to n
    for j <- i to n
      t <- t + j
  return t + F(n-1)
```

The number of basic operations (additions and subtractions) performed is:

Selected Answer: $\Theta(n^3)$

 d.

Answers: $\Theta(n^2 \log n)$

a.

n^2 for each level
 n^3 in total.

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- $\Theta(n^4)$
- b.
- $\Theta(n^2)$
- c.
- $\Theta(n^3)$
- ☒ d.
- $\Theta(n)$
- e.

Response Feedback: Well done.

Question 3

1 out of 1 points

In Lecture 5 we discussed the brute-force approach to string search. How many character comparisons will the algorithm make when searching for 'lido' in the string

'supercalifragilisticexpialidocious' ?

(Handwritten: 3 3 4 over 'supercal', 'fragilistic', 'expialidocious' respectively)

Selected Answer: ☒ 33

Correct Answer: ☒ 33

Answer range +/- 0 (33.0 - 33.0)

Response Feedback: That's right - well done.

(Handwritten: 7+3+6+3+10+4=33)

Question 4

1 out of 1 points

In Lecture 6 we gave a recursive algorithm for solving the Tower of Hanoi puzzle. Assume we have a tower of 24 disks to move, and each move (moving one disk from one peg to another) takes one minute. The total time taken will be:

Selected Answer: Approximately 32 years

- ☒ b.

Answers:

(Handwritten: 2^n - 1 for n disks.)

- a. Approximately six days
- Approximately 32 years
- ☒ b.
- Approximately one year
- c.
- Approximately ten years
- d.
- Approximately two months
- e.

Response Feedback: Yes, that's correct. The original puzzle, by Edouard Lucas, asked how long it would take to move 64 disks, not 24. Now try to estimate that. Hint: It will take longer than the estimated age of the universe!

(Handwritten: (2^24 - 1) min ≈ 31.9 years)

Question 5



1 out of 1 points


Consider this instance of the Assignment Problem (introduced in tutorial exercise 22).

	Job 1	Job 2	Job 3	Job 4
Contractor 1	13	16	12	<u>11</u>
Contractor 2	15	17	<u>12</u>	12
Contractor 3	<u>14</u>	14	13	13
Contractor 4	13	<u>10</u>	10	11

Match each contractor to a job so as to minimise the cost.

- Question
- Correct Match
- Selected Match
- Contractor 1 ☒ a. Job 4 ☒ a. Job 4
- Contractor 2 ☒ b. Job 3 ☒ b. Job 3

Contractor 3  c. Job 1  c. Job 1

Contractor 4  d. Job 2  d. Job 2

All Answer Choices

- a. Job 4
- b. Job 3
- c. Job 1
- d. Job 2

Response Feedback: Yes, that's right.

Monday, 30 May 2016 11:04:44 PM EST

← OK