Quiz 1 EECE4040 Spring 2022

Due Jan 19 at 11:59pm **Points** 10 **Questions** 10
Available Jan 19 at 10am - Jan 19 at 11:59pm about 14 hours **Time Limit** 15 Minutes

Instructions

Good luck!

This quiz was locked Jan 19 at 11:59pm.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	6 minutes	7 out of 10

Score for this quiz: **7** out of 10
Submitted Jan 19 at 7:44pm
This attempt took 6 minutes.

Question 1

1 / 1 pts

The problem of computing n from b, p and $b^n \bmod p$ is known as the

Correct!

- (●) Discrete Logarithm Problem
- ( ) Cryptography Problem
- ( ) Powers Problem
- ( ) Discrete Exponentiation Problem

Modular Exponentiation Problem

Question 2

0 / 1 pts

The most multiplications performed by the left-to-right binary method for powers **in terms of the number n of digits** is about:

n log n

n^2

ou Answered

2log n

$2n^2$

orrect Answer

2n

The left-to-right binary method scans the binary representation from left to right starting with the second position. In the worst case 2 multiplications are performed each time for a total of $2(n - 2) = 2n - 2$, which is approximately $2n$, where n is the number of binary digits.

Note that n is approximately $\log_2 p$, where p is the exponent, but the question ask for the most multiplications in terms of **the number of digits *n***, so $2\log_2 n$ is the wrong answer.

Question 3

1 / 1 pts

Which best describes an algorithm?

Correct!

- (selected) Sequence of steps for solving a problem
- Logarithm for solving a problem
- Application of the problem
- Search engine
- Methodology for the problem

Question 4

1 / 1 pts

A formal definition of an algorithm uses the following concept:

- Tour machine
- Phat machine

Correct!

- (selected) Turing machine
- Algorithm machine
- AI machine

Question 5

1 / 1 pts

The number of octal digits of an integer n is approximately equal to:

- $\log_2 n$
- 2^n

- $\log_{10}n$

Correct!

- (selected) $\log_8 n$
- 8^n

Question 6

1 / 1 pts

Data structure that can used to implement recursion and convert any recursive algorithm, i.e., involving recursive calls to itself, to a non-recursive implementation of the algorithm:

- priority queue
- list
- queue
- binary tree

Correct!

- (selected) stack

Question 7

1 / 1 pts

Which is not a major algorithm design strategy

- Divide-&-Conquer

Correct!

- (selected) Algorithm Paradigm
- Branch-&-Bound

- Greedy Method
- Dynamic Programming

Question 8

1 / 1 pts

Major design strategies that apply recursion.

- Genetic Algorithms, Dynamic Programming, Backtracking
- Heuristic Paradigm, Divide-&-Conquer, Dynamic Programming
- Backtracking, Dynamic Programming, Algorithm Paradigm

Correct!

- (selected) Divide-&-Conquer, Dynamic Programming, Backtracking
- Branch-&-Bound, Divide-&-Conquer, Backtracking

Question 9

0 / 1 pts

The cryptographic key K that Bob and Alice compute using their private numbers m and n respectively, is

orrect Answer

- $b^{mn} \bmod p$

ou Answered

- (selected) $b^{m+n} \bmod p$
- None of the above
- $b^{p} \bmod (mn)$

$b^p \bmod (m + n)$

Question 10

0 / 1 pts

The sequence of computations in the action of the left-to-right binary method for the power 33 are:

$x \to x^2 \to x^3 \to x^4 \to \dots \to x^{32} \to x^{33}$

orrect Answer $x \to x^2 \to x^4 \to x^8 \to x^{16} \to x^{33}$

$x \to x^3 \to x^7 \to x^{15} \to x^{32} \to x^{33}$

ou Answered $x \to x^3 \to x^6 \to x^{12} \to x^{16} \to x^{33}$

$x \to x^2 \to x^4 \to x^8 \to x^{16} \to x^{32} \to x^{33}$

Quiz Score: **7** out of 10