Homework Quiz - Week 16 Results for Murshed SK

ⓘ Correct answers are hidden.

Score for this attempt: 10 out of 10
Submitted Feb 21 at 11:50pm
This attempt took 9 minutes.

Question 1
1 / 1 pts

What is Grover's algorithm primarily designed for in quantum computing?

- (•) Unstructured Search
- ( ) Prime factorization
- ( ) Quantum teleportation
- ( ) Quantum key distribution
- ( ) Quantum error correction

Question 2
1 / 1 pts

In Grover's algorithm, what is the purpose of the oracle?

- ( ) To perform quantum entanglement
- (•) To amplify the amplitudes of marked states
- ( ) To measure the quantum state
- ( ) To apply quantum gates
- ( ) To generate random quantum states

Question 3
1 / 1 pts

What is the significance of the amplitude amplification step in Grover's algorithm?

- ( ) It reduces quantum decoherence
- (•) It increases the probability of measuring the correct solution
- ( ) It introduces quantum entanglement
- ( ) It performs quantum teleportation
- ( ) It prevents quantum superposition

Question 4
1 / 1 pts

In Grover's algorithm, what is the role of the Hadamard transform in the initialization step?

- (●) It creates superposition
- ( ) It performs quantum entanglement
- ( ) It applies quantum gates
- ( ) It measures the quantum state

Question 5
1 / 1 pts

What is the optimal number of iterations (grover iterations) in Grover's algorithm for searching an unsorted database?

- (●) $\sqrt{N}$
- ( ) $N/2$
- ( ) $2\sqrt{N}$
- ( ) N
- ( ) $N/\sqrt{2}$

Question 6
1 / 1 pts

If the Grover algorithm is applied to search a database with eight items, how many qubits are required to represent the database?

- ( ) 2
- (●) 3
- ( ) 4
- ( ) 5
- ( ) 6

Question 7
1 / 1 pts

If the Grover algorithm is applied to search a database with 64 items, how many qubits are required to represent the database?

- ( ) 2
- ( ) 3

- 4
- 5
- 6

Question 8
1 / 1 pts

Grover’s Algorithm takes advantage of which of these quantum principles?

- Entanglement
- Superposition
- Interference
- Superposition and Interference
- Entanglement and Superposition

Question 9
1 / 1 pts

Which gate serves as our oracle in 1 qubit Grover’s Algorithm?

- The X Gate
- The Z Gate
- The H Gate
- The CNOT Gate
- The I Gate

Question 10
1 / 1 pts

Which gate serves as our diffusion operator in the 1 qubit Grover’s Algorithm?

- The X Gate
- The Z Gate
- The H Gate
- The CNOT Gate
- The I Gate

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