Homework 5 Results for SevdanurGenc

ⓘ Correct answers are hidden.

Score for this attempt: **20** out of 20

Submitted May 25 at 3:04pm

This attempt took less than 1 minute.

Question 1

3 / 3 pts

[**Q92-01**] Which one is true about Grover's Search?

- ○ You need to know what is inside the oracle to flip the sign of the marked element.
- ○ In Grover's search, if you run the algorithm for more iterations you get a better result.
- ○ Grover's search provides exponential speedup.
- ○ All of the above.
- ◉ None of the above.

Question 2

2 / 2 pts

[**Q92-02**] In Grover's algorithm, how do we flip the sign of the marked element without knowing which element is marked?

- ◉ We use a procedure called phase kickback.
- ○ We multiply all amplitudes by -1.
- ○ We can not, we should know the marked element beforehand.

Question 3

4 / 4 pts

[**Q92-04**] This question relates to Grover's algorithm. You are given a circuit named mycircuit and a quantum register named qreg. There are 32 elements in the search space.

You are given the following code piece:

```
for i in range(a):
    mycircuit.b(qreg[i])
```

What should replace a and b to create an equal superposition of the elements in the search space?

(Assuming that qubits starting from 0 represent the search space)

Write your answer as a,b e.g. 10,x

5,h

Question 4

2 / 2 pts

[**Q92-03**] In Grover's algorithm, which operator(s) do you apply to set the ancilla qubit to the state $|-\rangle$?

- (•) First X, then H
- ( ) X
- ( ) Z
- ( ) H

Question 5

3 / 3 pts

[**Q84-01**] For Grover's algorithm, let's say we have 4 elements in the database. If after the first query phase the resulting state is $\frac{|00\rangle-|01\rangle+|10\rangle+|11\rangle}{2}$

, which one is the marked element?

- (•) $|01\rangle$
- ( ) $|00\rangle$
- ( ) $|10\rangle$
- ( ) $|11\rangle$

Question 6

3 / 3 pts

[**Q84-02**] This question relates to Grover's algorithm.

Suppose that there are 32 elements in the search space. How many qubits do you need to represent 32 elements? (Don't count any extra qubits, only the ones required to represent the elements)

- (•) 5
- ( ) 8
- ( ) 16
- ( ) 32

Question 7

3 / 3 pts

[**Q88-01**] When represented visually, what does the inversion phase in Grover's algorithm correspond to?

- (•) Reflection over the equal superposition state.
- ( ) Reflection over 45 degrees.
- ( ) Reflection over y-axis.

- Reflection over x-axis.

Quiz Score: **20** out of 20