Quiz 9: Indexing and Physical DB Design

Initial Score (out of 10)

Taken by: _______________________________________________
Name
Student ID

- We will discuss the answers right after the quiz.
- You are to self-grade and record your actual initial score (above) as we do so.
- You should also record the correct answers for any problems that you miss.
- A full 10 points for taking this quiz will be included as part of your quiz grade.

1. (7 points) Let’s turn yet again to our favorite Diver DB example:

Diver\((did, \text{firstname}, \text{lastname}, \text{age})\) -- info about Divers
Purchases\((did, \text{eid}, \text{date})\) -- Divers can buy multiple equipment
Equipment\((\text{eid}, \text{name}, \text{price})\) -- info about Equipment

Consider the B+ tree index on Equipment.price pictured below:

(a) (2 pts) Draw what this index will look like after adding an equipment record that costs $39:

(b) (2 pts) How many page reads will the insert operation take? How many page writes?

# reads: ___2______  # writes: ___5____
(c) (1 pt) Suppose a frequent query asks for the maximum price of the equipments in the store. This index should be:  ( ) Clustered   ( ) Unclustered   (X) Either

(d) (2 pts) Draw what the original B+ Tree index from the previous page will look like after selling (removing) the piece of equipment that costs $40:

![B+ tree index](image)

(e) (1 pts) Write a SQL query that this B+ tree index should be clustered to be as useful as possible:

```sql
Select (*) from Equipment e where e.price > 10; //This is just one example
```

(2) (2 points) Consider next the static hashed index on Diver.did pictured below:

![Hashed index](image)

(a) (1 pt) How many page reads will it take to locate the diver whose id is 33?

# reads: 2

# reads: 2
(b) (1 pt) Draw what the static hashed index will look like after adding a new diver with a did of 74.