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Project Bonus - Two Phase Merge Sort

Deadline - 11:59 PM, 30th November 2021

For the bonus you have to implement the `SORT` command using the Two-Phase Merge Sort algorithm. You may assume that the data that is provided to you is within the algorithmic constraints. Note that the data can contain duplicates.

Syntax

The following syntax has been implemented in the codebase for you

```
<new_table_name> <- SORT <table_name> BY <column_name> IN ASC | DESC
```

Here `<table_name>` represents the table that has to be sorted and `<column_name>` is the column in the table that the sort order is based on. `ASC` or `DSC` are used to denote ascending or descending orders.

First, we want you to overload the syntax with the following additional BUFFER option

```
<new_table_name> <- SORT <table_name> BY <column_name> IN ASC | DESC
   BUFFER <buffer_size>
```

Here, the optional parameter `<buffer_size>` denotes the number of main memory buffer blocks you are allowed to use to carry out the sorting operation. You can assume the buffer size is at atleast 3.If no buffer option is provided, you have to assume the default buffer size is 10

The following are examples of valid sort commands invoked on table `A(B, C, D, E)`

```
A1 <- SORT A BY B IN ASC          //uses 10 buffer blocks to sort
A2 <- SORT A BY C IN DSC          //uses 10 buffer blocks to sort
A3 <- SORT A BY B IN ASC BUFFER 4 //uses 4 buffer blocks to sort
A4 <- SORT A BY B IN DSC BUFFER 3 //uses 3 buffer blocks to sort
```

- Like in Phase 2, you have to implement all syntactic and semantic checks.
- You will be graded on the correctness of your implementation

Submission Guidelines

- To create a submission for this bonus assignment, create a branch in your project repository titled `bonus` and push all the relevant code there.
- Note that all your submissions will be checked with the `EXPORT` command so ensure it works fine.
- The code for the bonus assignment is independent of the code you've written for other phases, so commands written for other phases need not work on the bonus code submission

No late days can be used for this bonus assignment.

This course is intolerant of plagiarism. Any plagiarism will lead to an F in the course.