Milestone 2

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Durability & Bufferpool Extension



- New **PageDirectory** works at the granularity of **PageRanges**

- Two modes, in-memory and on-disk (automatic)

RID

- TLB has been updated to work with PageRanges
 - Dirty and Pinned bits
- New PageAccessor works with FileService, pulling from and writing to disk

Bufferpool (TLB)

- New columns, **Dirty** and **Pinned**
- When an entry is deleted, updated, or added to, it is marked as **Dirty**
- When an entry is being merged, it is **Pinned**

RID

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FileService

- DataBase is read from / written to a single .db file
 - No Pickle used; organized and parsed through from scratch
- FileService has 3 Functions:
 - load_tables
 - pull_page_range
 - merge_tables



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Merge

- Creates copy of new base page
- Updates the records of the old base page
- All prior tail records marked as deleted
- Old base page also marked as deleted
- Appends the new copy of the base page



Indexing

- Create_index
 - Create a new RHash object
 - Scan through all table records and call the index's insert function for the corresponding column
- Drop_index
 - Deletes the index of the specified column from memory
- New seeding scheme
 - 1% chance to add a seed after an index insert
 - Smallest value is always one of the seeds
 - Max number of seeds is 25% of the total number of records
- Indices are persisted in the .db file





Searching for 57-70

Milestone 1 vs Milestone 2

Milestone 1 Performance benchmark



Milestone 2 performance benchmark



System: Ryzen 7 2.9 Ghz with 8MB L3 cache, 16GB ram Workload: __main__.py

Thank You!