Project Description

Part 1: Implement a paged file system and operations of records (in the API data format)

- Primary folder: rbf
- Involved classes in this part: PagedFileManager, FileHandle, RecordBasedFileManager
- Key functions implemented by me: insertRecord (insert a record in the heap file), printRecord (print out a record in the specified format)
- Project Report: Please refer to "Project1 Report.pdf", which elaborates on our DBMS's design of Internal Record Format and Data Page Format.
- Please refer to the following link for more details: https://grape.ics.uci.edu/wiki/public/wiki/cs222p-2017-fall-project1-description

Part 2: Implement operations of tables and tuples

- Primary folder: rm
- Involved classes in this part: RelationManager, RM_ScanIterator
- Key functions implemented by me: updateRecord (update a record in the heap file), readAttribute (read a specific attribute of a tuple)
- Project Report: Please refer to "Project2 Report.pdf", which elaborates on our DBMS's design of Catalogue and Heap File Format.
- Please refer to the following link for more details: https://grape.ics.uci.edu/wiki/public/wiki/cs222p-2017-fall-project2-description

Part 3: Implement operations of B+ tree indexes

- Primary folder: ix
- Involved classes in this part: IndexManager, IX_ScanIterator, IXFileHandle
- Key functions implemented by me: insertEntry (insert an index entry in the index file), printBtree (print the B+ tree in the JSON format). I also wrote unit tests to verify that the resulting B+ tree is valid.
- Project Report: Please refer to "Project3 Report.pdf", which elaborates on our DBMS's design of Index Entry Format, Index Page Format, and Index File Format.
- Please refer to the following link for more details: https://grape.ics.uci.edu/wiki/public/wiki/cs222p-2017-fall-project3

Part 4: Implement relational operators

- Primary folder: qe
- Involved classes in this part: RM_IndexScanIterator, Iterator, Filter, Project, BNLJoin, INLJoin, Aggregate
- Key functions implemented by me: BNLJoin (join two tables using Block Nested-Loop Join), Aggregate (calculate MIN, MAX, SUM, AVG, and COUNT of a field)
- Project Report: Please refer to "Project4 Report.pdf", which elaborates on the implementation details of each relational operator.
- Please refer to the following link for more details: https://grape.ics.uci.edu/wiki/public/wiki/cs222p-2017-fall-project4