CSE 444 Lab 1

1. In the Lab 1, I implemented the following components:

- Tuple: also known as record in the database, it means the row in a relation.
- TupleDesc: it is the schema in a relation.
- Catalog: it includes all the tables in the database.
- Bufferpool: it can cache the pages read by database.
- HeapPage: it is the physical page that can store the real data, and it is written and read through heapfile.
- HeapFile: it represents the set of physical pages.
- SeqScan: it is a kind of SimpleDB operator, it can read the tuples from HeapPage.

In the Lab 1, I mainly implemented one of the operators of SimpleDB, which is SeqScan. It is based on iterator. The process is following:
When the system call the operator - SeqScan, it means the system would like to scan all the tuples of a table with a specific tableId for identifying. This operator will call the heapfile to get tuples, while the heapfile does not store the data on the disk. The mechanism behind it is iterator. The heapfile will call the heappage one by one to read tuples from the disk. Because the space for single heappage is limited, when there is no tuple can be read on a heappage, the heapfile will move to next heappage to get tuples it wants. And the bufferpool's function is to cache the heappages that been read from the disk. With this process, the operator - SeqScan can be achieved in the SimpleDB.

2. Design decisions:
   I mainly follow the instructions in Lab1, and the instructions are straight forward.
3. Unit test:
   I think it might be great if we could have the unit test for heappage class, for example, we can design test to show how heappage can get tuple from disk, and the test for iterator in the heappage class.
4. API changes:
   I did not change the API.
5. I did not miss the code.