CSIS 3475 - DATA STRUCTURES AND ALGORITHMS

JAVA DATABASE PROJECT SPECIFICATION

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General Database Rules:

* Table Definition
  + Table names and column names cannot have spaces and must be English-language letters. They also cannot be punctuation characters. The string “noJoin” is a reserved keyword and is also not allowed as a table name.
  + Only the following data types are allowed:
    - String
    - Integer
    - Double
    - Date
* Primary Keys
  + The first field the user defines when using the CREATE TABLE command MUST be the primary key, which will always be an Integer.
  + The name of the column must have “PK” in front i.e. “PKcolumnName”.
* Foreign Keys
  + Foreign key definition MUST be done during table creation. The name of the column must have “FK” in front i.e. “FKcolumnName”.
* List of Reserved Words (tables and columns can’t be named these):
  + SELECT
  + FROM
  + INNER
  + JOIN
  + NOJOIN
  + UPDATE
  + IN
  + SET
  + TO
  + DELETE
  + ALL
  + TABLE
  + INSERT
  + ORDERBY

**DB Commands: Proper Syntax and Notes on Usage**

**CREATE TABLE Command**

* + CREATE TABLE tablename

(

PKcolumn1int,

column2datatype,

FKcolumn3datatype,

...

);

* + The supported data types are: String, int, double, and date
  + The first field/column declared must be the primary key, and will always be of the integer data type.
  + Primary keys and foreign keys are declared by having PK or FK in front of the column name. These keys can only be declared during table creation.

**SELECT Command**

* SELECT column1, column2, ... FROM tablename
* SELECT column1, column2, ... FROM tablename INNER JOIN tablename2

**WHERE Command**

* + (some select command)

WHERE column1 operator value operatorcolumn2 operator value, ...

Eg. Column1 >= 1 && columb2 <5

* + The user can include as many conditions has they want

**----------Search Part Specification ---------------------------------------------------------**

* Supported Operators
  + >, <, =, >=, <=, !=, like (Case Insensitive)
  + &&, ||, AND, OR (Case Insensitive)
* Description of Operators
  + A > B : find records whose A field’s value is bigger than B value
  + A >= B : find records whose A field’s value is bigger than or equal to B value
  + A = B : find records whose A field’s value is equal to B value
  + A < B : find records whose A field’s value is smaller than B value
  + A <= B : find records whose A field’s value is smaller than or equal to B value
  + A != B : find records whose A field’s value is not equal to B value
  + A like B : find records whose A fields string includes string B
* Operators’ Order
  + Process “>, <. =, >=, <=, !=, like” operator first, and combine this result with “&&, ||, AND, OR” from left to right
* Error Handling
  + If search clause’s parameters number is not correct, field name is not existing, or there is not supported operator, it generates SearchException.

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**ORDERBY Command**

* + (some select command)

(some where command (optional))

ORDERBY columndirection

* + The user is limited to only one field/column to order by
  + The values for direction is limited to ASC for ascending and DESC for descending

**UPDATE Command**

* UPDATE primaryKey IN tablename SET column TO value
* The user can only update a single field in a table at a time
* The user must specify the primary key of the row they wish to update

**INSERT Command**

* + INSERT tablename

(

PKcolumn1value,

column2value,

FKcolumn3value,

...

);

* + The user must enter values for all columns that exist in the table

**DELETE Command**

* DELETE ALL ROWS tablename
* DELETE TABLE tablename
* DELETE primaryKey FROM tablename