

Database Systems
Revision Notes
Ver 0.1

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1 Introduction

This document is a set of revision notes for the Database Systems^[1] course at the Univerisy of Edinburgh.

2 Relational Algebra

Relational algebra is a syntax and set of rules that allows mathematical like operations to be applied to a relational database.

2.1 Selection

Selection (σ) is a method similar to SELECT in SQL. It allows a data set to be filtered by a, or several, logical expressions.

Name	Age	Sex		Name	Age	Sex
Bob	22	M	$\sigma_{(age>30)}(People)$	Bill	32	M
Bill	32	M		Ben	42	F
Ben	42	F ^[2]				

2.2 Projection

Projection (π) is a method to filter columns out of a data set.

Name	Age	Sex		Name	Age
Bob	22	M	$\pi_{(name,age)}(People)$	Bill	32
Bill	32	M		Ben	42
Ben	42	F			

3 SQL

3.1 Create

```
CREATE TABLE table1
(
    name1 type1,
    name2 type2,
    name3 type3,
    name4 type4,
    PRIMARY KEY (name1),
    FOREIGN KEY (name2) REFERENCES table2 (name1)
);
```

3.2 Select

```
SELECT
    name1, name2
FROM
    table1
WHERE
    name1 = name3
;
```

3.3 Insert

```
INSERT INTO
    table1 (name1, name2)
VALUES
    (value1, value2)
;
```

3.4 Update

```
UPDATE
    table1
SET
    name1=value1, name2=value2
WHERE
    name3 = value3
;
```

3.5 Types

A subsection of the SQL data types^[3].

varchar*[(size)]* A variable sized string. May have defined max length *size*.

text A variable sized string.

bool Boolean True/False.

integer A non-decimal number with *size* digits.

date Date in "YYYY-MM-DD"

timestamp Date and time to second accuracy "YYYY-MM-DD HH:MM:SS"

References

- [1] "Database Systems Home page" by "Peter Buneman"
"http://homepages.inf.ed.ac.uk/opb/dbs/"
- [2] Dont ask
- [3] Specificaly PostgreSQL "http://www.postgresql.org/docs/9.0/
static/datatype.html"