

CS122 Using Relational Databases and SQL

Single-Table Selections

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Selection Queries

- ◆ Retrieve the records that satisfy certain conditions

```
select field(s) from table(s)
[where condition(s)]
[order by field(s) asc|desc];
```

SQL is case insensitive.

Selection Query Examples

- ◆ List the descriptions of all products
- ◆ List all products
- ◆ List all CPU products
- ◆ List all products that cost more than \$80, and order the results by price in descending order
- ◆ List the orders placed in this month
- ◆ List all the Intel products
- ◆ List the orders that are not shipped yet

Values

- ◆ Numbers: 10, 30.2
- ◆ Strings: 'CPU', 'John''s Kitchen'
- ◆ Dates: '2007-06-01'
- ◆ NULL

Operators

- ◆ Arithmetic
 - +, -, *, /, %
- ◆ Comparison
 - <, >, <=, >=, =, <>
 - between
- ◆ Logical
 - and, or, not
- ◆ String
 - like
- ◆ Other
 - is null
 - in

LIKE

- ◆ Pattern matching
 - %: any zero or more characters
 - .: any single character
 - [abc], [a-z], [0-9]: range
 - * -- zero or more instances of the preceding character

```
select * from products where description like '%intel%';
```

About NULL

- ◆ NULL is a special value representing "empty", "no value", or "unknown"
- ◆ Whether an attribute is NULL or not can be checked with IS NULL or IS NOT NULL, but not with comparison operators like = or <>

Expressions

```
(1-0.1) * price  
  
category = 'CPU' and price > 100  
  
description like '%intel%'  
  
order_date between '2007-5-19' and '2007-6-17'  
and shipping_date is null
```

More Selection Query Examples

- ◆ Find the prices of the CPU products after 10% discount
- ◆ Find the hard drives made by Maxtor
- ◆ Find the orders made last month but have not been shipped yet

CASE: switch style

```
SELECT product_id,  
       CASE category  
         WHEN 'MB' THEN 'Motherboard'  
         WHEN 'CPU' THEN 'Processor'  
         ELSE 'ERROR!'  
       END  
FROM products;
```

CASE: if-else style

```
SELECT product_id,  
       CASE  
         WHEN Price > 200 THEN 'Expensive'  
         ELSE 'Cheap'  
       END  
FROM products;
```

DISTINCT

- ◆ Remove duplicate results

select distinct address from customers;

Column Aliases

- Name the result columns

```
select description as 'Intel CPUs' from products  
where category = 'CPU' and description like '%Intel%';
```