

Structured Query Language (SQL)

- ◆Data Definition Language (DDL)
 - n CREATE, DROP, ALTER
- Data Manipulation Language (DML)
 - n SELECT, INSERT, DELETE, UPDATE
- Data Control Language (DCL)
 - n GRANT, REVOKE
 - n COMMIT, ROLLBACK, SAVEPOINT

Sample Schema

Products(product_id, category, description, price)
Customers(customer_id, first_name, last_name, address)
Order(order_id, customer_id, date_ordered, date_shipped)
Order_Details(order_id, product_id, quantity)

Constraints

- Column and table constraints
- Constraints w/o names
- ◆Use ALTER statement to add or remove constraints

Sequence, Index, and View

- Sequence
 - n MINVALUE, MAXVALUE
 - n nextval, currval
- ◆Index
 - n UNIQUE
 - _n Function-based index
- View
 - n CREATE OR REPLACE VIEW

Simple Selections

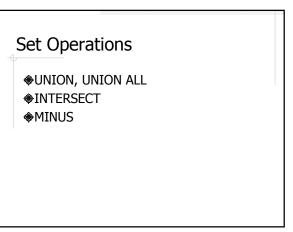
- **♦** SELECT
- LIKE, REGEXP_LIKE
 - n BETWEEN
 - n IN
- n IS NULL
- DISTINCT
- ORDER BY
- dual

- Joins
- n INNER JOIN
 - n OUTER JOIN
 - w LEFT
 - w RIGHT w FULL
 - n (+)

Query Results Column alias W/o AS Use double quotes to preserve case and white spaces Concatenate columns with | | SQL*Plus COLUMN column_name FORMAT W column description format a16 W column price format 9999.9

Date and Time ◆Default date format: DD-MMM-YYYY ◆TO_DATE(x [, format]) ◆TO_CHAR(x [, format]) ◆EXTRACT ◆INTERVAL

Aggregation Queries Aggregation functions COUNT, SUM, MAX, MIN AVG, MEDIAN VARIANCE, STDDEV



```
Subqueries

Subquery that returns
Scalar
Relation
Correlated subquery
```

```
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;
```

Transactions

- **♦**COMMIT
- ◆ROLLBACK
- SAVEPOINT and ROLLBACK TO SAVEPOINT

Start and End of A Transaction

- Start
 - ⁿ First DML statement after connection or the end of last transaction
- End
 - First DDL or DCL statement (except SAVEPOINT) after a transaction starts
 - _n Failed DML statements are automatically rolled back
 - _n Disconnect

Advanced Topics

- Transaction Isolation Level
- Recursive queries
- Stored procedures and triggers
- Objects and collections
- Analytic functions
- ◆LOB and full text search
- ♦XML data

Exercises

Read about the Human Resources (HR) sample schema in Oracle Documentation at http://sun.calstatela.edu/~cysun/documentation/oracle/server.101/b10771/toc.htm. You'll use this schema for Lab 1.