

## Lecture Notes – Introduction To Select Queries

### Section 1: Lecture Summary

Introduction to **SQL clauses** for queries using the **companyDB** database and **Employees** table. Covers **SELECT** for column filtering, **FROM** for table selection, **WHERE** for row filtering, **GROUP BY** for grouping data by column values, **HAVING** for filtering groups, and **ORDER BY** for sorting results. Mentions these are key clauses with execution order covered later.

### Section 2: Key Concepts and Explanations

**SELECT** filters columns from a table; use **\*** for all columns or specify names like **FirstName**, **LastName**, **Salary**.

**FROM** specifies the table(s) to retrieve data from, such as **Employees**.

**WHERE** filters rows based on conditions, e.g., **DeptID = 2** or **JobTitle = 'Manager'**.

**GROUP BY** logically groups rows by a column value like **DeptID** for aggregate operations such as average **Salary** or count of employees per group.

**HAVING** filters groups created by **GROUP BY**, e.g., groups with more than 5 employees.

**ORDER BY** sorts query results by one or more columns, e.g., ascending by **FirstName**.

### Section 3: Example Code and Use Cases

```
USE companyDB;

-- SELECT and FROM: All columns from Employees
SELECT * FROM Employees;

-- SELECT specific columns
SELECT FirstName, LastName, Salary FROM Employees;

-- WHERE: Filter rows
SELECT * FROM Employees WHERE DeptID = 2;

SELECT FirstName, JobTitle FROM Employees WHERE JobTitle = 'Manager';
```

```
-- GROUP BY with aggregate (e.g., count employees per department)
SELECT DeptID, COUNT(*) AS EmployeeCount
FROM Employees
GROUP BY DeptID;

-- GROUP BY with average salary per department
SELECT DeptID, AVG(Salary) AS AvgSalary
FROM Employees
GROUP BY DeptID;

-- HAVING: Filter groups (e.g., departments with >4 employees)
SELECT DeptID, COUNT(*) AS EmployeeCount
FROM Employees
GROUP BY DeptID
HAVING COUNT(*) > 4;

-- ORDER BY: Sort by FirstName
SELECT * FROM Employees
ORDER BY FirstName;
```

#### Section 4: Key Takeaways

**\*\*SELECT\*\*** and **\*\*FROM\*\*** are mandatory for queries. **\*\*WHERE\*\*** filters rows before grouping. **\*\*GROUP BY\*\*** enables aggregates per group; **\*\*HAVING\*\*** filters those groups. **\*\*ORDER BY\*\*** sorts final results. Practice combining clauses on **\*\*Employees\*\*** table for mastery.