



## Practical C6 – Aggregate (Column-Wise) Functions

### Objectives of this practical

- Learn and apply the commonly used aggregate functions: SUM, AVG, MAX, MIN, COUNT and combination with the use of DISTINCT
- Understand the need and use of ISNULL function in computation

### Section A: - Average Function

1. Write the SQL statement to list the **average course fee**, relabeling this column as 'Mean Course Fee'. Sort the result in descending order of average course fee. Is there any **redundant clause** here?
2. Write the SQL statement to list the **average lab fee**, treating **null as it is**, and **average lab fee**, treating **null as zero**. Relabeling the first column as 'Mean Lab Fee' and the second column as 'Mean Lab Fee – Null treated as zero'. Explain the difference in the answers.
3. First, write the SQL statement to list the total fee: course fee plus lab fee, leaving the null value as it is, and the total fee: course fee plus lab fee, treating the null value as zero. Order by first column. Re-label first column as '**Total fee (null as it is)**' second column as '**Total fee (null as zero)**'.

Second, write the SQL statement to list the **average** total fee: course fee plus lab fee, leaving the null value as it is, and the **average** total fee: course fee plus lab fee, treating the null value as zero. Order by first column. Re-label first column as '**Mean total fee (null as it is)**', second column as '**Mean total fee (null as zero)**'.

### Section B: - Sum Function

1. Write the SQL statement to list the total pay of all staff in Royal Poly. Re-label it as 'Total pay'. Does applying ISNULL function on pay to treat null as zero has any effect on the final answer?

### Section C: - String Operator in Column Expression

1. Write the SQL statement to list following output and figure out how the results are computed:

	Total Pay	Total Allowance	SUM(pay)+SUM(allowance)	SUM(pay + allowance)	SUM(isnull(pay,0)+isnull(allowance,0))
1	81280.00	7850.00	89130.00	79180.00	89130.00

### Section D: Count Function

1. Write the SQL statement to find out how many staff is there in Royal Poly.
2. Write the SQL statement to find out how many courses charge lab fee.

### Section E: Max/Min (highest/lowest) Function

1. Write the SQL statement to list the highest and the lowest pay in Royal Poly.

**Section F: Effects of DISTINCT on Argument of Aggregate Function**

1. Write the SQL statement to list the  
'Number of staff on hourly pay', 'Number of different hourly pay'