CS 660 PA4

IntHistogram:

Constructor (IntHistogram::IntHistogram): Sets up the histogram with a specified number of buckets (divisions) and a range of values (from min to max). It calculates how wide each bucket should be.

Add Value (addValue): Places a given number into the correct bucket and keeps track of how many numbers have been added in total.

Estimate Selectivity (estimateSelectivity): Estimates how many values will match a certain condition (like being greater than a specific number). This is useful for database queries.

Average Selectivity (avgSelectivity): Gives a default estimation value.

String Representation (to_string): Converts the histogram information into a text format for easy reading or debugging.

Find Bucket Index (getBucketIndex): Determines which bucket a particular number should go into.

Join:

estimateJoinCost Function:
Purpose: Calculates how much effort (cost) it takes to join two tables.
How It Works: It adds the initial effort needed for the first table to the effort for the second table multiplied by the number of rows in the first table.

estimateTableJoinCardinality Function:
Purpose: Estimates the number of rows you'll get after joining two tables.
How It Works: The calculation depends on the type of join and whether the joining fields are primary keys (unique identifiers). It uses different rules to estimate the size of the joined table.

orderJoins Function:
Purpose: Figures out the best order to join multiple tables to minimize effort.
How It Works: The function tries different combinations of joins, calculates how much each combination would cost, and chooses the most efficient way. It’s incomplete and marked with "TODO" comments, indicating areas that need further development.