TECHNISCHE UNIVERSITÄT MÜNCHEN, QUERY OPTIMIZATION

Exercise 4

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1 EXERCISE 1

DP Table		
Problem	Join Tree	Cost
$\{A\}$	A	10
$\{B\}$	B	20
$\{A,B\}$	$B \bowtie A$	100
$\{C\}$	C	100
$\{A,C\}$	$C \bowtie A$	1.000
$\{B,C\}$	$C \bowtie B$	200
$\{A,B,C\}$	$(C \bowtie B) \bowtie A$	1.200
~~$\{A,B,C\}$~~	~~$(C \bowtie A) \bowtie B$~~	~~2.000~~
$\{A,B,C\}$	$(B \bowtie A) \bowtie C$	1.100

Figure 1.1: DP Table

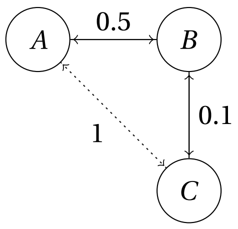

Figure 1.2: Query graph

2 Exercise 2

Sorry in advance: we unfortunately have no code comments for this week's exercise. Important files for GOO implementation:

- **src/compiler/Compiler**: creates an abstract syntax tree which serves as input for the SimpleExecutor. Especially important for this exercise is the method Compiler::generateJoinTree. Here we create out join tree depending on what join ordering implementation shall be used via strategy pattern.
- **src/compiler/SimpleExecutor**: Executes a query via the input of an AST recursively.
- **src/compiler/strategies/OrderStrategy**: abstract class for strategy pattern.
- **src/compiler/strategies/GOOStrategy**: Implementation of the GOO algorithm. Takes a query graph and returns an AST. Basically iterates over all possible joins and selects the one with the minimal expected output, deletes it from the "to be joined"-list and iterates again - while building the AST.

Sorry #2: We don't print the cost.

3 Exercise 3

Make as usual with *"make"* command. Execute via *./bin/homework5*. We are using the provided snapshot of tpch. The files are **not** included in our contribution, but the program will look for the tpch-database at *data/tpch/tpch*. Also, the snapshot data provided interferes with the tinyDB system, as many tuples of the relations have semi-colons in their data - which the parser of tinyDB uses as delimiter. To correct this, please delete all semi-colons in all **.tbl* files (*find/replace all* works great, as their delimiter is the pipe symbol - which will be compiled to the semi-colon...).