



## Query Optimization

5. Exercise

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### Exercise 1

Create the DP table (manually) for the relations  $A$ ,  $B$ ,  $C$  with cardinalities  $|A| = 10$ ,  $|B| = 20$ ,  $|C| = 100$  and selectivities  $f_{AB} = 0.5$ ,  $f_{BC} = 0.1$  (cost function  $C_{out}$ ). Mark the final table entries. Enumerate subsets in the integer order. Consider cross products.

### Exercise 2

Using the program from the last exercise as basis, implement Greedy Operator Ordering. Print the partial steps together with their costs (e.g.,  $P = R_1 \bowtie R_2 200$ ,  $Q = P \bowtie R_3 400$ ), as well as the final join tree.

### Exercise 3

Load the [TPC H](#) data set. (You can use our [snapshot](#) of the data set, the `loadtpch*` script loads the data). Then, execute the following SQL query using the program implemented above. Print the query plan, the results, and the time it took to execute the query:

```
select *  
from lineitem l, orders o, customers c  
where l.l_orderkey=o.o_orderkey and o.o_custkey=c.c_custkey and c.c_name='Customer#000014993'.
```