

**Exercise for Database Systems on Modern CPU Architectures
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<https://db.in.tum.de/teaching/ss19/moderndbs/>

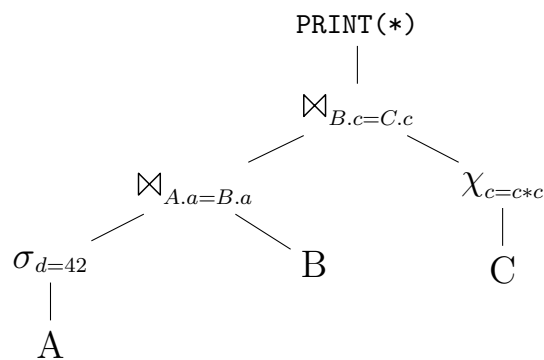
Sheet Nr. 05

Exercise 1

Generate (pseudo-)code for the following operator tree using the push model.

Use the following schema.

- A(a, d)
- B(a, b, c)
- C(a, c)



Exercise 2

Parallelize the given query plan by introducing the exchange operators XchgHashSplit(n:m) and Xchg(n:m) for two threads as necessary. $\Gamma_{r1:a}$ stands for an aggregation that groups by the attribute r1 and generates a new aggregate attribute a.

