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Q4 - 1) create index idx1 on orders(o_totalprice, o_orderdate, o_custkey);

create index idx2 on customer(c_acctbal, c_custkey);

create index idx3 on lineitem(l_quantity, l_orderkey, l_partkey);

create index idx4 on part(p_name, p_partkey);

Q4 - 2) for idx1, since attributes o_totalprice, o_orderdate and o_custkey are not found in any of the indexes, the query processor will perform a full-table scan on the table ORDERS. Therefore, idx1 is created to improve the retrival process.

→ for idx2, since both attributes c_acctbal and c_custkey are not found in any of the indexes, the query processor will perform a full-table scan on the table CUSTOMER. Therefore, idx2 is created to improve the retrival process.

→ for idx3 and idx4, since attributes l_quantity, l_orderkey, l_partkey, p_name, p_partkey are not found in any of the indexes, the query processor will perform a hash join followed by a full-table scan on the tables LINEITEM and PART. Therefore, idx3 and idx4 are created to improve the retrival process.

→ as for the partsupp query, the query processor will rely on its primary key of the table to retrive the data. Therefore, no index is required.