1. *The relation below records info of a car producer company and the sale operations*.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Customer Name** | **Model** | **Shipping Address** | **Producer** | **Phone** | **Price(x100$)** |
| Alan Smith | Golf | 35 Palm St, Miami | Volkswagen AG | (090) 555 6688 | 250 |
| Roger Banks | Fiesta | 47 Camp. Road, Boston | Ford MC | (090) 600 9090 | 300 |
| Evan Wilson | Golf, Focus | 28 Rock Av, Denver | Volkswagen AG, Ford MC | *Both* | 450 |
| Alan Smith | Fiesta | 47 Camp. Road, Boston | Ford MC | (090) 600 9090 | 300 |

Considering that relation, perform:

1. 1NF decomposition:
2. 2NF (but not 3NF) decomposition:
3. 3NF decomposition:
4. Suppose that we decompose the schema *r (A, B, C, D, E)* into *r1 (D, A, E) and r2 (D, B, C)*
5. Show that this decomposition is a lossless decomposition if the following set *F* of functional dependencies holds:

F: D → AE

EB → C

A → B

C → D

1. Give a lossless-join decomposition into BCNF of schema R.