Name: T.S.

Course: Database 1

Professor:Gabor Jr

Date: September 27, 2021

HW: Chapter 4

Topics:Update Operation, Update Anomalies, and Normalization

1. **Depict Full key functional dependencies, partial dependencies (if any), and transitive functional dependencies (if any) in the shipment table.**

Full key functional dependencies

{ shipmentID, ProductID } -> Quantity

partial dependencies

shipmentID -> { ShipmentDate, TruckID, TruckType }

ProductID -> ProductType

Transitive dependency:

TrackID -> TruckType

1. **Show result of Normalizing the shipment table to 2NF**

Shipment Table

ShipmentID -> { ShipmentDate , TrackID, TruckType }

|  |  |  |  |
| --- | --- | --- | --- |
| **ShipmentID** | **ShipmentDate** | **TruckID** | **TruckType** |
| 111 | 1-Jan | T-111 | Semi-Trailer |
| 222 | 2-jan | T-222 | Van truck |
| 333 | 3-jan | T-333 | Semi-Trailer |
| 444 | 3-jan | T-222 | Van truck |
| 555 | 3-jan | T-111 | Semi-Trailer |

ShipmentProduct

{ ShipmentID , ProductID } -> Quantity

|  |  |  |
| --- | --- | --- |
| **ShipmentID** | **ProductID** | **Quantity** |
| 111 | A | 180 |
| 111 | B | 120 |
| 222 | C | 10,000 |
| 333 | D | 5000 |
| 333 | A | 200 |
| 444 | C | 25,000 |
| 555 | B | 180 |

Product

ProductID -> ProductType

|  |  |
| --- | --- |
| **ProductID** | **ProductType** |
| A | Tire |
| B | Battery |
| C | Spark plug |
| D | wipers |

1. **Show result of Normalizing the shipment table to 3NF**

Shipment Table

ShipmentID -> { ShipmentDate , TrackID }

|  |  |  |
| --- | --- | --- |
| **ShipmentID** | **ShipmentDate** | **TruckID** |
| 111 | 1-Jan | T-111 |
| 222 | 2-jan | T-222 |
| 333 | 3-jan | T-333 |
| 444 | 3-jan | T-222 |
| 555 | 3-jan | T-111 |

ShipmentProduct

{ ShipmentID , ProductID } -> Quantity

|  |  |  |
| --- | --- | --- |
| **ShipmentID** | **ProductID** | **Quantity** |
| 111 | A | 180 |
| 111 | B | 120 |
| 222 | C | 10,000 |
| 333 | D | 5000 |
| 333 | A | 200 |
| 444 | C | 25,000 |
| 555 | B | 180 |

Product

ProductID -> ProductType

|  |  |
| --- | --- |
| **ProductID** | **ProductType** |
| A | Tire |
| B | Battery |
| C | Spark plug |
| D | wipers |

Truck

TruckID -> TruckType

|  |  |
| --- | --- |
| **TruckID** | **TruckType** |
| T-111 | Semi-Trailer |
| T-222 | Van-Trailer |
| T-333 | Semi-Trailer |