Normalisation to 3NF

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(i)

UNF:

DRIVER(driver_number, licence_givname, licence_famname, licence_dateofbirth, taxfile_number, (truck vin, truck regonumber, truck make, truck model, truck year))

1NF:

DRIVER(<u>driver_number</u>, licence_number, licence_givname, licence_famname, licence_dateofbirth, taxfile_number)

TRUCK(driver number, truck vin, truck regonumber, truck make, truck model, truck year)

Partial Dependency:

No partial dependencies present

2NF:

DRIVER(<u>driver_number</u>, licence_number, licence_givname, licence_famname, licence_dateofbirth, taxfile_number)

TRUCK(driver number, truck vin, truck regonumber, truck make, truck model, truck year)

Transitive Dependency:

licence number -> licence givname, licence famname, licence dateofbirth, taxfile number

3NF:

DRIVER(driver number, licence number)

TRUCK(driver_number, truck_vin, truck_regonumber, truck_make, truck_model, truck_year)

INFORMATION(<u>licence_number</u>, licence_givname, licence_famname, licence_dateofbirth, taxfile_number)

Full Dependency:

driver_number -> licence_number

truck vin -> driver number, truck regonumber, truck make, truck model, truck year

licence number -> licence givname, licence famname, licence dateofbirth, taxfile number

(ii)

UNF:

CONTRACT(contract_number, waste_type_ID, waste_type_description, collection_frequency, (collection_date, driver number, driver contact number, collection truck vin, (bin rfid, collection kgs, overweight)))

1NF:

CONTRACT(<u>contract_number</u>, waste_type_ID, waste_type_description, collection_frequency)

COLLECTOR(contract number, collection date, driver number, driver contact number, collection truck vin)

WASTE COST(contract number, collection date, bin rfid, collection kgs, overweight)

Partial Dependency:

No partial dependencies present

2NF:

CONTRACT(<u>contract_number</u>, waste_type_ID, waste_type_description, collection_frequency)

COLLECTOR(contract number, collection date, driver number, driver contact number, collection truck vin)

WASTE_COST(contract_number, collection_date, bin_rfid, collection_kgs, overweight)

Transitive Dependency:

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waste_type_ID -> waste_type_description
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driver number -> driver contact number

3NF:

CONTRACT(contract number, waste type ID, collection frequency)

COLLECTOR(contract number, collection date, driver number, collection truck vin)

WASTE_COST(contract_number, collection_date, bin_rfid, collection_kgs, overweight)

WASTE_TYPE(waste_type_ID, waste_type_description)

DRIVER(driver number, driver contact number)

Full Dependency:

```
contract_number -> waste_type_ID, collection_frequency
collection_date -> contract_number, driver_number, collection_truck_vin
collection_date, bin_rfid -> contract_number, collection_kgs, overweight
waste_type_ID -> waste_type_description
driver number -> driver contact_number
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Collected 3NF Relations:

- 1. DRIVER(driver number, licence number)
- 2. TRUCK(driver number, truck vin, truck regonumber, truck make, truck model, truck year)
- 3. INFORMATION(<u>licence_number</u>, licence_givname, licence_famname, licence_dateofbirth, taxfile number)
- 4. CONTRACT(<u>contract_number</u>, waste_type_ID, collection_frequency)
- 5. COLLECTOR(contract number, collection date, driver_number, collection_truck_vin)
- 6. WASTE_COST(contract_number, collection_date, bin_rfid, collection_kgs, overweight)
- 7. WASTE_TYPE(<u>waste_type_ID</u>, waste_type_description)
- 8. DRIVER(driver number, driver contact number)

Attribute Synthesis:

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1. & (8)

DRIVER(driver_number, licence_number, driver_contact_number)

2.

TRUCK(driver_number, truck_vin, truck_regonumber, truck_make, truck_model, truck_year)

3.

INFORMATION(licence_number, licence_givname, licence_famname, licence_dateofbirth, taxfile_number)

4.

CONTRACT(contract_number, waste_type_ID, collection_frequency)

5.

COLLECTOR(contract_number, collection_date, driver_number, collection_truck_vin)

6.

WASTE_COST(contract_number, collection_date, bin_rfid, collection_kgs, overweight)

7.

WASTE_TYPE(waste_type_ID, waste_type_description)
```