Assignment 1B – MonH Forms Normalisation

Form (i): Data used by clerks in establishing costings for quotes

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PURPOSE (purpose_no, purpose_desc, (combo_code, truck_vin, truck_rego_no, trailer_code, trailer_manufacturer, trailer_model, trailer_class, trailer_load_cap, trailer_dimensions))

1NF

PURPOSE (<u>purpose_no</u>, purpose_desc)

COMBO_PURPOSE (<u>purpose_no</u>, <u>combo_code</u>, truck_vin, truck_rego_no, trailer_code, trailer_manufacturer, trailer_model, trailer_class, trailer_load_cap, trailer_dimensions)

Note: there are three candidate keys for the COMBO_PURPOSE relation: (purpose_no, combo_code), (purpose_no, truck_vin, trailer_code) and (purpose_no, truck_rego_no, trailer_code). All the partial dependencies below are based on all these candidate keys.

Partial dependencies

- combo_code → truck_vin, truck_rego_no, trailer_code, trailer_manufacturer, trailer_model, trailer_class, trailer_load_cap, trailer_dimensions
- truck_vin → truck_rego_no
- trailer_code → trailer_manufacturer, trailer_model, trailer_class, trailer_load_cap, trailer_dimensions
- truck_rego_no → truck_vin

2NF

PURPOSE (<u>purpose_no</u>, purpose_desc)

COMBO_PURPOSE (<u>purpose_no</u>, <u>combo_code</u>)

COMBO (<u>combo_code</u>, truck_vin, trailer_code)

TRUCK (<u>truck_vin</u>, truck_rego_no)

TRAILER (<u>trailer_code</u>, trailer_manufacturer, trailer_model, trailer_class, trailer_load_cap, trailer_dimensions)

Transitive dependencies:

- trailer_manufacturer, trailer_model → trailer_class

3NF

PURPOSE (<u>purpose_no</u>, purpose_desc)

COMBO_PURPOSE (<u>purpose_no</u>, <u>combo_code</u>)

COMBO (combo_code, truck_vin, trailer_code)

TRUCK (truck_vin, truck_rego_no)

TRAILER (trailer_code, trailer_manufacturer, trailer_model, trailer_load_cap, trailer_dimensions)

TRAILERCLASS (trailer_manufacturer, trailer_model, trailer_class)

Full dependencies:

- purpose_no → purpose_desc
- combo_code → truck_vin, trailer_code
- truck_vin → truck_rego_no
- trailer_code → trailer_manufacturer, trailer_model, trailer_load_cap, trailer_dimensions
- trailer_manufacturer, trailer_model → trailer_class

Form (ii): Company Job Sheet

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JOB (job_no, quote_no, quote_prep_date, purpose_no, purpose_desc, quote_days_required, quote_cost, combo_code, driver_emp_no, driver_name, mechanic_emp_no, mechanic_name, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid)

1NF

JOB (job_no, quote_no, quote_prep_date, purpose_no, purpose_desc, quote_days_required, quote_cost, combo_code, driver_emp_no, driver_name, mechanic_emp_no, mechanic_name, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid)

Partial dependencies:

- *No partial dependencies present*

2NF

JOB (job_no, quote_no, quote_prep_date, purpose_no, purpose_desc, quote_days_required, quote_cost, combo_code, driver_emp_no, driver_name, mechanic_emp_no, mechanic_name, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid)

Transitive dependencies:

- quote_no → quote_prep_date, purpose_no, purpose_desc, quote_days_required, quote_cost
- purpose_no → purpose_desc
- driver_emp_no → driver_name
- mechanic_emp_no → mechanic_name

3NF

JOB (job_no, quote_no, combo_code, driver_emp_no, mechanic_emp_no, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid)

QUOTE (quote_no, quote_prep_date, purpose_no, quote_days_required, quote_cost)

PURPOSE (purpose_no, purpose_desc)

DRIVER (driver_emp_no, driver_name)

MECHANIC (mechanic_emp_no, mechanic_name)

Full dependencies:

- job_no → quote_no, combo_code, driver_emp_no, mechanic_emp_no, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid
- quote_no → quote_prep_date, purpose_no, quote_days_required, quote_cost
- purpose_no → purpose_desc
- driver_emp_no → driver_name
- mechanic_emp_no → mechanic_name

Attribute Synthesis:

Collected 3NF Relations

1. PURPOSE (purpose_no, purpose_desc)
2. COMBO_PURPOSE (purpose_no, combo_code)
3. COMBO (combo_code, truck_vin, trailer_code)
4. TRUCK (truck_vin, truck_rego_no)
5. TRAILER (trailer_code, trailer_manufacturer, trailer_model, trailer_load_cap, trailer_dimensions)
6. TRAILERCLASS (trailer_manufacturer, trailer_model, trailer_class)
7. JOB (job_no, quote_no, combo_code, driver_emp_no, mechanic_emp_no, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid)
8. QUOTE (quote_no, quote_prep_date, purpose_no, quote_days_required, quote_cost)
9. PURPOSE (purpose_no, purpose_desc)
10. DRIVER (driver_emp_no, driver_name)
11. MECHANIC (mechanic_emp_no, mechanic_name)

Relations to Combine

- Relation 1 and Relation 9 (i.e., PURPOSE from Form (i) and PURPOSE from Form (ii)).
- Relation 10 and Relation 11 (i.e., DRIVER from Form (ii) and MECHANIC from Form (ii)), since they both represent company employees.

Final 3NF

PURPOSE (purpose_no, purpose_desc)

COMBO_PURPOSE (purpose_no, combo_code)

COMBO (combo_code, truck_vin, trailer_code)

TRUCK (truck_vin, truck_rego_no)

TRAILER (trailer_code, trailer_manufacturer, trailer_model, trailer_load_cap, trailer_dimensions)

TRAILERCLASS (trailer_manufacturer, trailer_model, trailer_class)

JOB (job_no, quote_no, combo_code, driver_emp_no, mechanic_emp_no, job_pickup_date_time, job_intended_dropoff_date_time, job_actual_dropoff_date_time, job_cost, job_date_paid)

QUOTE (quote_no, quote_prep_date, purpose_no, quote_days_required, quote_cost)

EMPLOYEE (emp_no, emp_name)