FIT3171: Databases (S1/2022)

Assignment 1B: Database Design – World Cruises (WC)

Normalisation

PORT TOURS

Port Tours Available

Port Code	AUHOB
Port Name	Hobart
Country Code	AU
Country Name	Australia

Port Temperature

Month	Average High	Average Low
Jan	22	13
Feb	22	13
Mar	20	12
Apr	18	10
May	15	8
Jun	12	6
July	12	6
Aug	14	6
Sep	16	7
Oct	17	8
Nov	19	10
Dec	21	11

Tours Available

Tour Number	Tour Name	Tour Description	Hours Required	Tour Cost Per Person	Wheel Chair Access	Tour Availability	Start Time
1	Hobart Shopping	Shop at the Cat & Fiddle Arcade for a full range of Tasmanian treats (bus transfer only)	2.5	15	Yes	Weekdays	11:00
2	Port Arthur	Visit the world heritage listed 19th century penal setlement and open-air museum via local ferry. Includes lunch and entry	8	270	No	Daily	09:00
3	MONA	Visit the Museum of Old and New Art (MONA) - includes ferry ride to the museum and entry	4	70	Yes	Daily	13:00
4	Salamanca Market	Shop in the bohemian market stalls of the Salamanca market selling the best local produce and goods (bus transfer only)	3	15	Yes	Saturday	11:00

UNF

PORT(port_code, port_name, country_code, country_name, (pt_month, pt_avg_high, pt_avg_low), (tour_no, tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time))

1NF

PORT(<u>port_code</u>, port_name, country_code, country_name)
PORT_TEMP(<u>port_code</u>, <u>pt_month</u>, pt_avg_high, pt_avg_low)
TOUR(<u>port_code</u> , <u>tour_no</u>, tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time)

Partial dependencies:
No partial dependency

2NF

PORT(<u>port_code</u>, port_name, country_code, country_name)
PORT_TEMP(<u>port_code</u>, <u>pt_month</u>, pt_avg_high, pt_avg_low)
TOUR(<u>port_code</u> , <u>tour_no</u>, tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time)

Transitive dependencies:
country_code → country_name

3NF

PORT(<u>port_code</u>, port_name, country_code)
COUNTRY(<u>country_code</u>, country_name)
PORT_TEMP(<u>port_code</u>, <u>pt_month</u>, pt_avg_high, pt_avg_low)
TOUR(<u>port_code</u>, <u>tour_no</u>, tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time)

Full dependencies:
port_code → port_name, country_code
country_code → country_name
port_code, pt_month → pt_avg_high, pt_avg_low
port_code, tour_no → tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time

TOUR PARTICIPATION REPORT

Port - Tour Participant Report

Port Code	AUHOB			Generated:	24th March 2022
Tour Number	3				
Tour Name	MONA				
Tour Date	25th March 2022				
Tour Start Time	13:00				

Passenger ID	Passenger Name	Principal Spoken Language	Cruise ID	Cruise Name	Payment Received
10210	Gilberto Bwy	English	1024	Sydney to Hobart	Yes
10211	Fransyne Bwy	English	1024	Sydney to Hobart	Yes
10029	Friedrick Geist	German	1095	New Zealand Sea Escape	No
10789	Brier Kilgour	English	1095	New Zealand Sea Escape	No
10301	Shandra Lindblom	French	1024	Sydney to Hobart	Yes
10302	Pierre Lindblom	French	1024	Sydney to Hobart	Yes
10303	Michael Lindblom	French	1024	Sydney to Hobart	Yes
13456	Myriam Stirley	English	1095	New Zealand Sea Escape	Yes

.... Only partial data shown ......

UNF

TOUR_REPORT(port_code, tour_no, tour_name, tour_date, tour_start_time, (passenger_id, passenger_name, passenger_lang, cruise_id, cruise_name, pay_received))

1NF

TOUR_REPORT(port_code, tour_no, tour_name, tour_date, tour_start_time)
TOUR_REPORT_ENTRY(port_code, tour_no, tour_date, passenger_id, passenger_name, passenger_lang, cruise_id, cruise_name, pay_received)

Partial dependencies:
port_code, tour_no → tour_name, tour_start_time
passenger_id → passenger_name, passenger_lang

2NF

TOUR_REPORT(port_code, tour_no, tour_date)
TOUR_REPORT_ENTRY(port_code, tour_no, tour_date, passenger_id, cruise_id, cruise_name, pay_received)
TOUR(port_code, tour_no, tour_name, tour_start_time)
PASSENGER(passenger_id, passenger_name, passenger_lang)

Transitive dependencies:
cruise_id → cruise_name

3NF

TOUR_REPORT(<u>port_code</u>, <u>tour_no</u>, <u>tour_date</u>)
TOUR_REPORT_ENTRY(<u>port_code</u>, <u>tour_no</u>, <u>tour_date</u>, <u>passenger_id</u>, cruise_id, pay_received)
TOUR(<u>port_code</u>, <u>tour_no</u>, tour_name, tour_start_time)
PASSENGER(<u>passenger_id</u>, passenger_name, passenger_lang)
CRUISE(<u>cruise_id</u>, cruise_name)

Full dependencies:
port_code, tour_no, tour_date, passenger_id → cruise_id, pay_received
port_code, tour_no → tour_name, tour_start_time
passenger_id → passenger_name, passenger_lang
cruise_id → cruise_name

COLLECTED 3NF RELATIONS

1. PORT(port_code, port_name, country_code)
2. COUNTRY(country_code, country_name)
3. PORT_TEMP(port_code, pt_month, pt_avg_high, pt_avg_low)
4. TOUR(port_code, tour_no, tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time)
5. TOUR_REPORT(port_code, tour_no, tour_date)
6. TOUR_REPORT_ENTRY(port_code, tour_no, tour_date, passenger_id, cruise_id, pay_received)
7. TOUR(port_code, tour_no, tour_name, tour_start_time)
8. PASSENGER(passenger_id, passenger_name, passenger_lang)
9. CRUISE(cruise_id, cruise_name)

ATTRIBUTE SYNTHESIS

1: PORT(port_code, port_name, country_code)

2: COUNTRY(country_code, country_name)

3: PORT_TEMP(port_code, pt_month, pt_avg_high, pt_avg_low)

4&7: TOUR(port_code, tour_no, tour_name, tour_desc, tour_hrs_req, tour_cost, tour_wc_access, tour_availability, tour_start_time)

5: TOUR_REPORT(port_code, tour_no, tour_date)

6: TOUR_REPORT_ENTRY(port_code, tour_no, tour_date, passenger_id, cruise_id, pay_received)

8: PASSENGER(passenger_id, passenger_name, passenger_lang)

9: CRUISE(cruise_id, cruise_name)