

Memo: # 3 (Bike and Electric Auto Rental)**DBDS** DataBase Design Specialists, Inc.

"We are always 5NF."

To: Hampshire, Jason NN:15, DA
From: Design Team Leader
Subject: Personnel, data access, and additional data
Date: November 1, 2021

Personnel:

It has been decided that the database must contain information about the personnel in the BEAR project. The personnel include maintenance staff, and management personnel. The maintenance staff service and repair the bikes and autos. Before a maintenance staff member can work on a vehicle, they have to pass a certification test on that type of vehicle. Each person has been given a person ID; a beginning date and ending date of their contact with the project has been included if known. The Person ID for Bob Bureaucrat is P0000 and the DS, AS and SS manager's IDs are P0101, P0102, and P0103.

It has also been requested that the date of Bob Bureaucrat's next project review be recorded.

Data Access:

There are several users of the information that is stored in the database. In order to provide ways to increase control over this information, it should be possible to provide mechanisms to limit an authorized user's access to only the data that they should rightfully assess. Site managers will need to see the data concerning the rentals from their site. Maintenance personnel will need to be able to enter and/or change data for the vehicles they work on. (Provide as much of this as possible using the normal integrity constraints automatically enforced by the query plan, do not add an authentication system – SQL Server security can deal with that part later.) What this means is pay close attention to integrity constraints (a form of security).

The project director likes to know what is happening about the project; therefore, he wants to keep track of the last time each manager accessed the database.

The original data and new information about the data received from Bob is on the next page.

Queries:

The following list of questions is to be answered, using the data that has been compiled, after the design is complete and the data is loaded into the database. This is only preliminary. Other information may be needed as the project progresses. These questions may be helpful in your design for the Logical Data Model.

- 1) What electric vehicle has the largest mileage?
- 2) For each bicycle, list all of its rentals in chronological (date) order.
- 3) What is the location of the Downtown Site?
- 4) List the top 2 bicycles based on the number of hours rented.
- 5) List the electric automobile rentals made in October 2020 and in December 2020 at the Airport Site.
- 6) What vehicles are currently available for rent?
- 7) List the renters of bicycles and the types of bicycles they rented?
- 8) Who (Name and ID) manages the Downtown Site?
- 9) Who (Name and ID) has access to Suburban Site vehicle data?
- 10) How many times has each vehicle actually been rented?
- 11) List the vehicles maintained by P2108.
- 12) List the vehicle, type, and date rented for all vehicles rented by Anne Green.

Type Description

R	Road
T	Tandem

Status Description

A	Available
M	Maintenance
R	Rented

Bob also decided that he wanted to see descriptions instead of codes in the printed reports. For example, the tables above.

When implementing the queries for these questions, think about what the user knows, and needs / wants to see.

Original data values with some additions:

#	RenterID	DOB	VNumber	License	StartTime	EndTime	PurchaseDate	Status	#Rents	SiteID	Address	Type	Size	Type	HourRate	MaxCharge
1	1	1995-01-02	B0001	IN24340020	2020-12-10 10:30	2020-12-10 12:30	Aug 2020	R	3	SS	233 Main St.	B	26	R	8.00	56.00
2	1	1995-01-02	B0011	IN24340020	2020-12-16 09:30	2020-12-16 12:30	Oct 2020	A	2	DS	233 Main St.	B	26	R	8.00	56.00
3	3	2000-10-04	B0001	IN67800000	2020-12-11 10:00	2020-12-11 16:00	Aug 2020	R	3	SS	444 W State.	B	26	R	8.00	56.00
4	4	1997-06-06	B0001	KY44230100	2020-12-16 10:30	2020-12-16 18:30	Aug 2020	R	3	SS	PO Box 2388.	B	26	R	8.00	56.00
5	8	1995-04-12	B0003	IN24500001	2020-12-16 09:30	2020-12-16 12:30	Aug 2020	A	1	SS	42 Blvd Pl	B	24	R	6.00	43.00
6	8	1995-04-12	T0002	IN24500001	2020-12-19 10:30	2020-12-19 12:30	Aug 2020	A	4	SS	42 Blvd Pl	B	26	T	10.00	70.00
7	9	1997-06-06	B0011	TX99923411	2020-12-10 10:30	2020-12-10 12:30	Oct 2020	A	2	DS	888 Tudor Dr	B	26	R	8.00	56.00
7a	1	1995-01-02	B0011	IN24340020	2020-12-16 13:30	2020-12-16 16:30	Oct 2020	A	3	DS	233 Main St.	B	26	R	8.00	56.00
7b			B0010					M	0	DS			26	R	8.00	56.00

#	RenterID	DOB	VNumber	License	StartTime	EndTime	PurchaseDate	Status	#Rents	SiteID	Address	Type	VIN	Miles	BaseRate	MinuteRate
8	1	1995-01-02	E0012	IN24340020	2020-11-26 09:30	2020-11-26 18:30	Sep 2020	R	3	AS	233 Main St.	E	EV10000234	2505	9.00	0.40
9	2	1990-11-03	E0012	IN24388033	2020-11-27 10:30	2020-11-27 18:30	Sep 2020	R	3	AS	123 1st St.	E	EV10000234	2505	9.00	0.40
10	2	1990-11-03	E0014	IN24388033	2020-11-26 10:30	2020-11-26 14:30	Sep 2020	R	3	AS	123 1st St.	E	EV10000235	3505	9.00	0.40
11	4	1997-06-06	E0444	KY44230100	2020-11-29 09:30	2020-11-30 09:30	Nov 2020	A	3	SS	PO Box 2388.	E	EV10000500	1200	10.00	0.40
12	8	1995-04-12	E0012	IN24500001	2020-10-14 09:30	2020-10-15 13:30	Sep 2020	R	3	AS	42 Blvd Pl	E	EV10000234	2505	9.00	0.40
13	8	1995-04-12	E0523	IN24500001	2020-12-26 09:30	2021-01-02 18:30	Dec 2020	A	0	SS	42 Blvd Pl	E	EV10000600	500	11.00	0.50
14	9	1997-06-06	E0524	TX99923411	2020-12-29 06:00	2020-12-31 13:00	Dec 2020	M	0	SS	888 Tudor Dr	E	EV10000601	10	11.00	0.50
15	2	1990-11-03	E0012	IN24388033	2020-12-27 10:30	2016-12-27 18:30	Sep 2020	R	4	AS	123 1st St.	E	EV10000234	2505	9.00	0.40

(The # column is not part of the data, only for reference)

Data for other entities involved:

Data involving PERSONNEL

PersonNumber	Name	StartDate	EndDate
P2108	Joe Brown	2016-11-03	
P2109	Jane Smith	2016-11-03	
P2202	Frank Martin	2016-11-05	
P2213	Anne Dough	2016-11-10	2016-11-20
P2303	Mike Green	2016-11-10	
P2309	Alice Grey	2017-01-10	
P2400	Joe Brown	2017-01-10	

Data about CERTIFICATIONS

PersonNumber	CertType	Description	DatePassed
P2108	B	Bicycle	11/06/2016
P2108	E	Electric	11/10/2016
P2108	K	Kiosk	11/04/2016
P2109	B	Bicycle	11/06/2016
P2202	B	Bicycle	11/06/2016
P2303	B	Bicycle	11/25/2016
P2303	E	Electric	11/20/2016

Data about maintenance TASKS

PersonNumber	VNumber	DateStarted	DateCompleted	Comment
P2108	E0012	2017-01-10	2017-01-10	Broken wiper
P2109	B0003	2017-01-11	2017-01-11	Flat tire
P2108	B0001	2017-11-10	2017-11-10	Broken Chain
P2109	B0003	2017-11-11	2017-11-11	Flat tire
P2108	B0010	2017-01-20	2017-01-20	New wheel
P2303	E0524	2017-12-20	2017-12-21	Initial checks

(B0010 is in the vehicle table but is new and at DS and has not been rented it was added to the universal relation above)

New data has been added: rows 7a, 7b and 15 have been added to the original list of General data values. Also, what should be stored for missing attribute values?

Deliverables:

Please update your previous analysis to include this new information. Adjust your ERWin LDM and PDM accordingly. But do not construct the RDD on the server yet.

Submit your revised ERWin file to the Canvas assignment. Due: November 13, 2021