FIT3003 S2 2022 Take Home Test

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1 Case study

Pet9 is a pet services salon that offers professional, cage-free services to domestic pets, particularly dogs and cats. The staff at Pet9 are well-trained in different specialised services, including washing, pet grooming, tidy-up, and massages. Pet9 is well known for using environmentally friendly products in their services. Each visit is charged based on the service, pet type and pet size. Customers can choose either a junior, senior, or professional staff member to provide the services. An invoice is issued for each visit.

This document shows the procedure to process the business reports. We first designed a star schema illustrated in section 2, and then validate it shown in section 3. Then we implemented it using SQL developers depicted in section 4, and finally produce the report listed in section section 5. As such, we hope to fufill the requirement for getting the analytic insights.

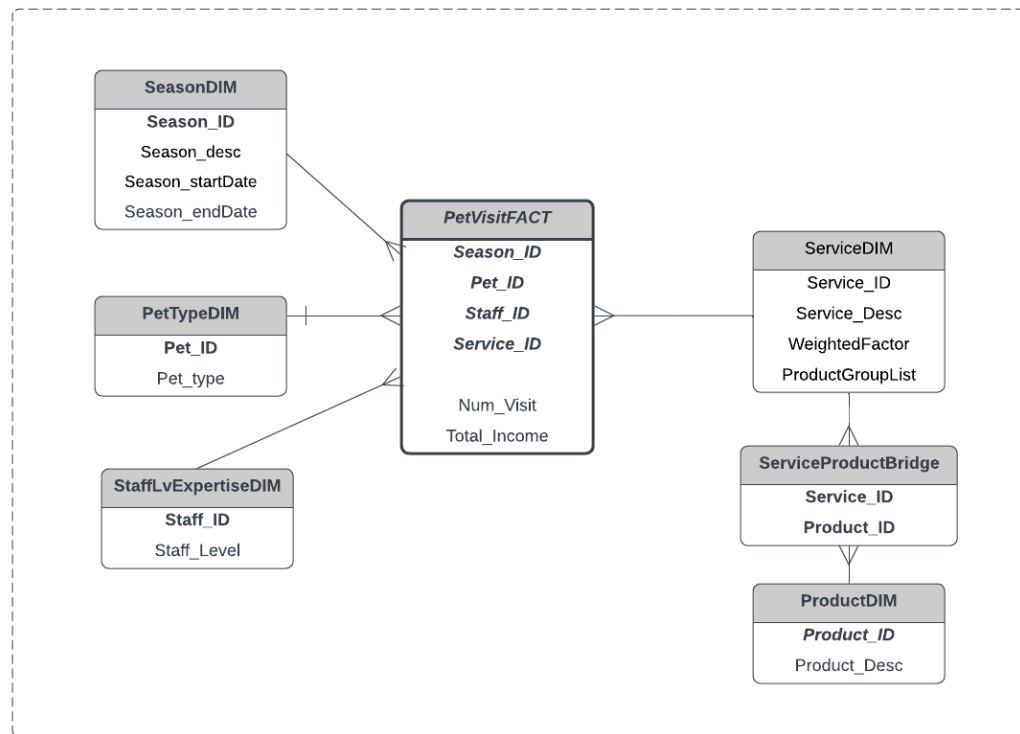---

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2 Task 1: Star Schema

Figure 1: Star Schema for Pet9.

3 Task 2: Two-Column Table Methodology illustration

Product ID	Product Description	Number of visit	Total Income
W0023	Revitalising Bubble Wash	212	21323
W0001	Nail Oil	13232	3123123
W0002	Shiny Toothpaste	123	1231231
W0003	Sweet Marjoram Oil	41231	1324234

Figure 2: Two-column tables with the entity of product.

Note that it is not reasonable to have a number of visit for the entity of product, so we do not include it in the real report.

Pet ID	Pet type	Number of visit	Total Income
P1	Dog	212	21323
P5	Cat	122	12312
P12	Cat	122	12312

Figure 3: Two-column tables with the entity of pet.

Season	Season Descrption	Start Month	End Month	Number of visit	Total Income
S1	Spring	Sep	Nov	212	21323
S2	Summer	Dec	Feb	13232	3123123
S3	Autumn	Mar	May	123	1231231
S4	Winter	Jun	Aug	41231	1324234

Figure 4: Two-column tables with the entity of season.

Service ID	Service Description	Number of visit	Total Income
Serv1	Relaxing Spa	212	21323
Serv2	Soothing Spa	13232	3123123
Serv3	Clean-up Spa	123	1231231
Serv4	Ultimate Spa	41231	1324234

Figure 5: Two-column tables with the entity of service.

Staff ID	Level of expertise	Number of visit	Total Income
S213	Senior	212	21323
S543	Junior	13232	3123123
S123	Professional	123	1231231
S432	Professional	41231	1324234

Figure 6: Two-column tables with the entity of staff.

4 Task 3: Tables of dimensions and fact

This section illustrates all the dimensions implemented using Oracle SQL developer. A screen of content would come along with the variables. For the code, please refer to the first sql file named "dataWarehouse.sql".

	SEASON_ID	SEASON_DESC	SEASON_STARTDATE	SEASON_ENDDATE
1	S1	Spring	Sep	Nov
2	S2	Summer	Dec	Feb
3	S3	Autumn	Mar	May
4	S4	Winter	Jun	Aug

Figure 7: Two-column tables with the entity of product.

	SERVICE_ID	SERVICE_DESC	WEIGHTEDFACTOR	PRODUCTGROUPLIST
1	S0001	Basic Bubble Wash	.50	W0004_W0009
2	S0002	Deluxe Bubble Wash	.33	M0004_W0004_W0010
3	S0003	Premium Bubble Wash	.20	C0010_C0011_M0004_W0003_W0008
4	S0004	Basic Tidy-Up	.20	C0009_C0011_W0001_W0007_W0009
5	S0005	Relaxing Spa	.17	C0002_C0004_M0002_W0002_W0007_W0010
6	S0006	Soothing Spa	.20	C0003_C0009_M0001_W0001_W0007

Figure 8: Two-column tables with the entity of product.

	SERVICE_ID	PRODUCT_ID
1	S0001	W0004
2	S0001	W0009
3	S0002	M0004
4	S0002	W0004
5	S0002	W0010
6	S0003	C0010

Figure 9: ServiceProductBridge — The bridge table between table Service and table Product

	PET_TYPE	PET_ID
1	Cat	C0001
2	Cat	C0002
3	Dog	D0001
4	Dog	D0002
5	Dog	D0003
6	Dog	D0004

Figure 10: PetTypeDIM — The dimension of Pet type

	PRODUCT_ID	PRODUCT_DESC
1	W0001	Soothing Bubble Wash
2	W0002	Lavender Bubble Wash
3	W0003	Volume Bubble Wash
4	W0004	Odour-Away Bubble Wash
5	W0005	Disinfectant Bubble Wash
6	W0006	Revitalising Bubble Wash

Figure 11: ProductDIM — The dimension of Product

	STAFF_LEVEL	STAFF_ID
1	Junior	10001
2	Senior	20001
3	Junior	10004
4	Junior	10005
5	Profesional	30002
6	Senior	20004

Figure 12: StaffLvExpertiseDIM — The dimension of Staff level of expertise

5 Task 4: Queries for business analysis

The following in this section are the reports as requested to the manager. For further code, please refer to the second sql file named "Queries.sql", or to this Figure 5.

	SEASON_DESC	PET_TYPE	TOTAL_VISIT
1	Autumn	Cat	16
2	Spring	Cat	12
3	Summer	Cat	18
4	Winter	Cat	11
5	Autumn	Dog	27
6	Spring	Dog	16
7	Summer	Dog	31
8	Winter	Dog	19

Figure 13: Query 1 — The number of visits by season and by pet types.

	STAFF_LEVEL	TOTAL_VISIT
1	Senior	48
2	Profesional	52
3	Junior	50

Figure 14: Query 2 — The number of visits handled by different levels of staff expertise.

	PRODUCT_DESC	TOTAL_VISIT
1	Conditioner Intensive Care	41
2	Rose Oil	19
3	Allergy Spray	30
4	Revitalising Bubble Wash	27
5	Chamomile Oil	14
6	Conditioner Soft	30
7	Joint Massage Oil	10
8	Peppermint Paw Cream	24
9	Soothing Bubble Wash	24
10	Dry Nose Oil	22
11	Volume Bubble Wash	12
12	Hot Spot and Wound Spray	9
13	Ear Cleaner Spray	43
14	Lavender Bubble Wash	11
15	Shiny Toothpaste	53
16	Smell Good Cologne Spray	22
17	Sunscreen Balm	9
18	Odour-Away Bubble Wash	25
19	Eye Wash and Cleaner Spray	44
20	Conditioner Frizz Free	42
21	Lavender Oil	11

Figure 15: Query 3 — The number of visits by different products.

	SERVICE_ID	SERVICE_DESC	PET_ID	TOTAL_INCOME
1	S0008	Ultimate Spa	C0003	1260
2	S0011	Flea Treatment	C0005	400
3	S0010	Nail Trimming	C0005	120
4	S0010	Nail Trimming	D0006	60
5	S0012	Teeth Cleaning	D0010	80
6	S0001	Basic Bubble Wash	D0009	120
7	S0012	Teeth Cleaning	D0016	80
8	S0001	Basic Bubble Wash	D0001	120
9	S0002	Deluxe Bubble Wash	D0002	210
10	S0009	Haircut	D0013	120
11	S0011	Flea Treatment	D0009	400
12	S0006	Soothing Spa	D0017	450
13	S0001	Basic Bubble Wash	D0017	120
14	S0011	Flea Treatment	D0015	400
15	S0007	Clean-up Spa	C0015	800
16	S0002	Deluxe Bubble Wash	C0016	210
17	S0004	Basic Tidy-Up	D0013	400
18	S0008	Ultimate Spa	D0010	1260
19	S0006	Soothing Spa	D0016	450
20	S0006	Soothing Spa	C0004	900
21	S0002	Deluxe Bubble Wash	D0001	420

Figure 16: Query 4 — The total income by services, for different pet types.

	PRODUCT_DESC	TOTAL_INCOME
1	Conditioner Intensive Care	4260
2	Rose Oil	1900
3	Allergy Spray	2230
4	Revitalising Bubble Wash	2380
5	Chamomile Oil	1260
6	Conditioner Soft	2360
7	Joint Massage Oil	1400
8	Peppermint Paw Cream	2660
9	Soothing Bubble Wash	2060
10	Dry Nose Oil	1880
11	Volume Bubble Wash	960
12	Hot Spot and Wound Spray	900
13	Ear Cleaner Spray	4360
14	Lavender Bubble Wash	880
15	Shiny Toothpaste	4540
16	Smell Good Cologne Spray	2360
17	Sunscreen Balm	900
18	Odour-Away Bubble Wash	1640
19	Eye Wash and Cleaner Spray	3840
20	Conditioner Frizz Free	2840

Figure 17: Query 5 — The total income by different products.

The following are the code of the queries:

```
-- Q1: The number of visits by season and by pet types

SELECT s.season_desc,
       pd.pet_type,
       count(fact.total_visit) as TOTAL_VISIT
FROM PetVisitFACT fact,
     seasondim s,
     pettypedim pd
WHERE (s.season_id = fact.season_id)
      AND (pd.pet_id = fact.pet_id)
GROUP BY season_desc,
         pd.pet_type
ORDER BY pd.pet_type;


-- Q2: The number of visits handled by different levels of staff
    expertise
SELECT s.staff_level,
       count(total_visit) as TOTAL_VISIT
FROM PetVisitFACT f,
     staffdim s
WHERE s.staff_id = f.staff_id
GROUP BY s.staff_level;


-- Q3: The number of visits by different products
SELECT pd.product_desc,
       count(fact.total_visit) as TOTAL_VISIT
FROM ServiceDIM sd,
     serviceproductbridge spb,
     ProductDim pd,
     PetVisitFACT fact
WHERE (spb.product_id = pd.product_id)
      AND (sd.service_id = spb.service_id)
      AND (fact.service_id = sd.service_id)
GROUP BY pd.product_desc;


-- Q4: The total income by services, for different pet types
SELECT sd.service_id,
       sd.service_desc,
       fact.pet_id,
       sum(fact.TOTAL_INCOME) as TOTAL_INCOME
FROM ServiceDIM sd,
     serviceproductbridge spb,
     ProductDim pd,
     PetVisitFACT fact,
     PetTypeDim ptd
WHERE (spb.product_id = pd.product_id)
      AND (sd.service_id = spb.service_id)
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```
        AND (fact.service_id = sd.service_id)
        AND (fact.pet_id = ptd.pet_id)
GROUP BY sd.service_id,
         sd.service_desc,
         fact.pet_id;


-- Q5: The total income by different products.
SELECT pd.product_desc,
       sum(fact.TOTAL_INCOME) as TOTAL_INCOME
FROM ServiceDIM sd,
     serviceproductbridge spb,
     ProductDim pd,
     PetVisitFACT fact
WHERE (spb.product_id = pd.product_id)
      AND (sd.service_id = spb.service_id)
      AND (fact.service_id = sd.service_id)
GROUP BY pd.product_desc;
```