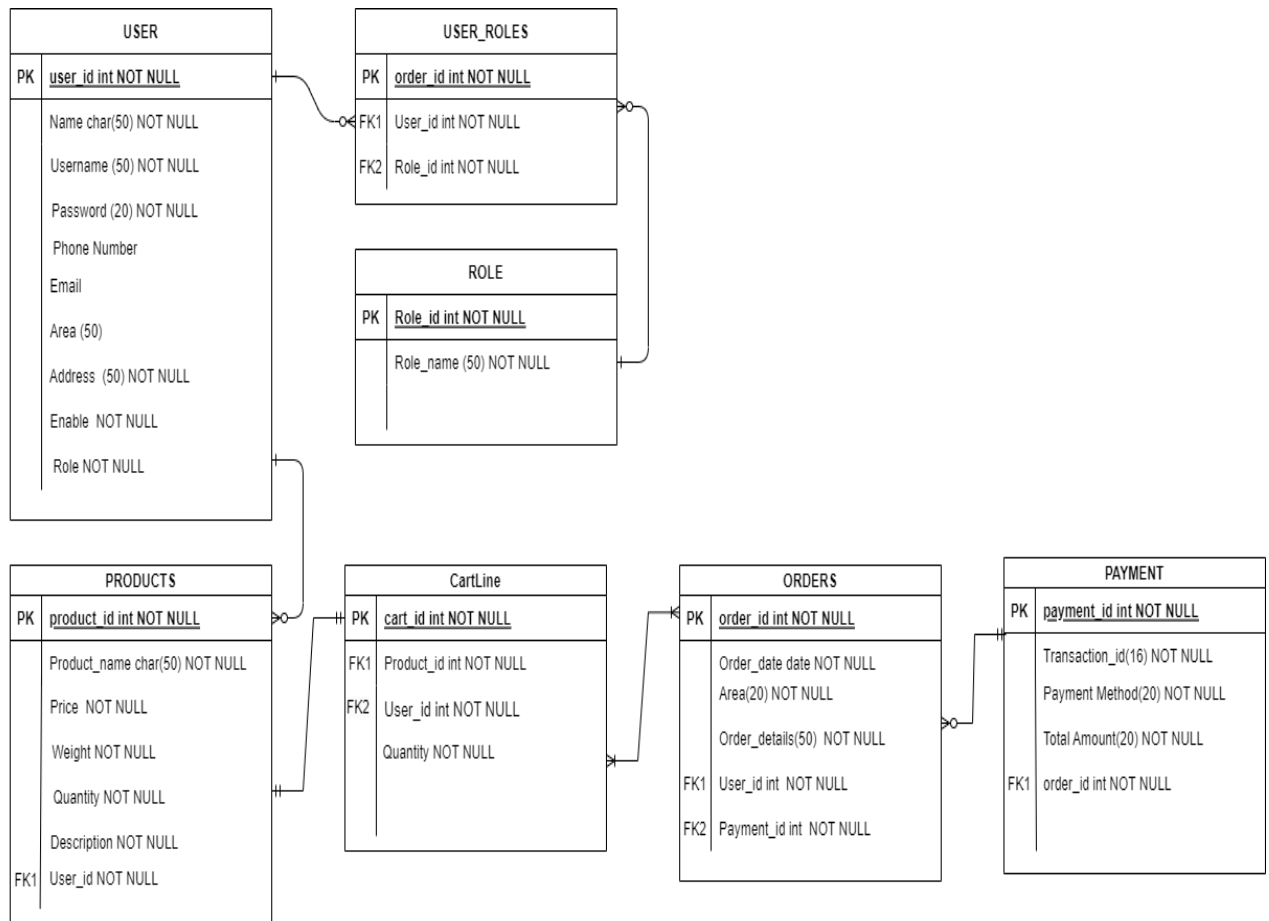


# NORMALISATION AND DB SCRIPTS



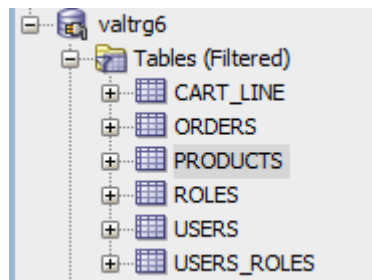
## DATABASE DESIGN

### NORMALISATION:

A large database defined as a single relation may result in data duplication. This repetition of data may result in:

- Making relations very large.
- It isn't easy to maintain and update data as it would involve searching many records in relation.
- Wastage and poor utilization of disk space and resources.
- The likelihood of errors and inconsistencies increases.

So to handle these problems, we should analyze and decompose the relations with redundant data into smaller, simpler, and well-structured relations that are satisfy desirable properties. Normalization is a process of decomposing the relations into relations with fewer attributes.



## First Normal Form (1NF)

- A relation will be 1NF if it contains an atomic value.
- It states that an attribute of a table cannot hold multiple values. It must hold only single-valued attribute.
- First normal form disallows the multi-valued attribute, composite attribute, and their combinations.

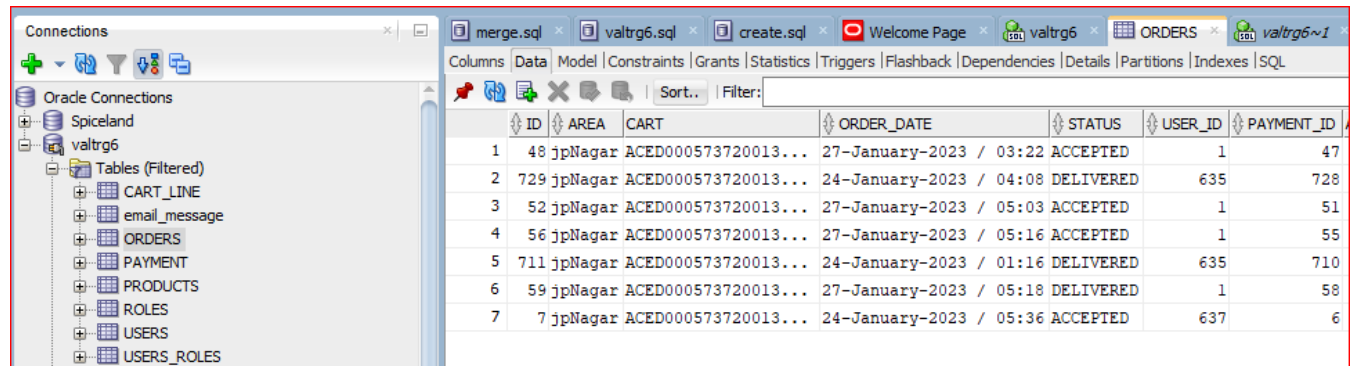
USAGE OF 1 NF:-

Customer purchasing same product adding to cart has been one set follow towards 1NF being atomic.[Quantity update on purchasing same product]

	ID	ADMIN_IDS	PRICE	PRODUCT_NAME	QUANTITY	USERID	PRODID
1	412	73	450	Garam Masala	1	83	304
2	413	73	100	GinglyPowder	1	83	322
3	414	73	25	ChilliPowder	1	83	402
4	410	73	25	ChilliPowder	1	74	402
5	416	285	25	CorianderPowder	2	74	318

## Second Normal Form (2NF)

- In the 2NF, relational must be in 1NF.
- In the second normal form, all non-key attributes are fully functional dependent on the primary key.



ID	AREA	CART	ORDER_DATE	STATUS	USER_ID	PAYMENT_ID
1	48 jpNagar	ACED000573720013...	27-January-2023 / 03:22	ACCEPTED	1	47
2	729 jpNagar	ACED000573720013...	24-January-2023 / 04:08	DELIVERED	635	728
3	52 jpNagar	ACED000573720013...	27-January-2023 / 05:03	ACCEPTED	1	51
4	56 jpNagar	ACED000573720013...	27-January-2023 / 05:16	ACCEPTED	1	55
5	711 jpNagar	ACED000573720013...	24-January-2023 / 01:16	DELIVERED	635	710
6	59 jpNagar	ACED000573720013...	27-January-2023 / 05:18	DELIVERED	1	58
7	7 jpNagar	ACED000573720013...	24-January-2023 / 05:36	ACCEPTED	637	6

USAGE OF 2 NF:-

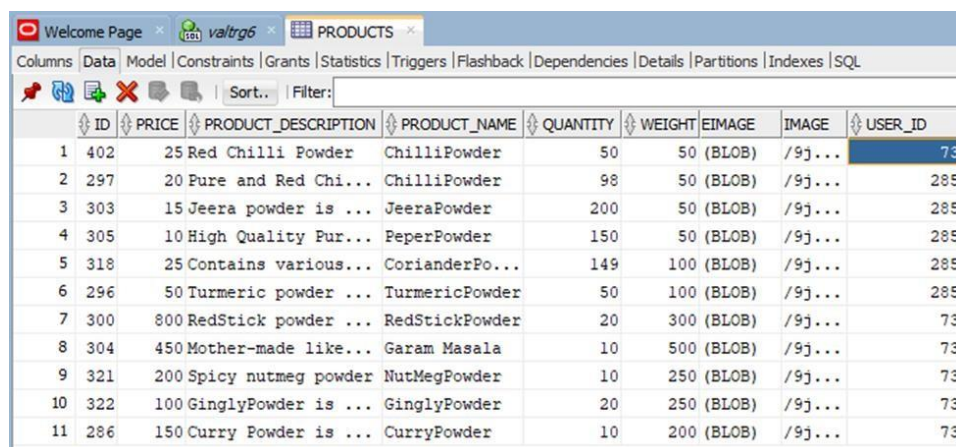
In the above stated usage of normalization form, here 410 and 416 are cart\_id's, 73 & 285 are id's with role ADMIN dependent on ORDER ROW with id 420.

## Third Normal Form (3NF)

- A relation will be in 3NF if it is in 2NF and not contain any transitive partial dependency.
- 3NF is used to reduce the data duplication. It is also used to achieve the data integrity.

USAGE OF 3 NF:-

User\_id acts as referential integrity in products table.



ID	PRICE	PRODUCT_DESCRIPTION	PRODUCT_NAME	QUANTITY	WEIGHT	EIMAGE	IMAGE	USER_ID
1	402	25 Red Chilli Powder	ChilliPowder	50	50 (BLOB)	/9j...		73
2	297	20 Pure and Red Chi...	ChilliPowder	98	50 (BLOB)	/9j...		285
3	303	15 Jeera powder is ...	JeeraPowder	200	50 (BLOB)	/9j...		285
4	305	10 High Quality Pur...	PeperPowder	150	50 (BLOB)	/9j...		285
5	318	25 Contains various...	CorianderPo...	149	100 (BLOB)	/9j...		285
6	296	50 Turmeric powder ...	TurmericPowder	50	100 (BLOB)	/9j...		285
7	300	800 RedStick powder ...	RedStickPowder	20	300 (BLOB)	/9j...		73
8	304	450 Mother-made like...	Garam Masala	10	500 (BLOB)	/9j...		73
9	321	200 Spicy nutmeg powder	NutMegPowder	10	250 (BLOB)	/9j...		73
10	322	100 GinglyPowder is ...	GinglyPowder	20	250 (BLOB)	/9j...		73
11	286	150 Curry Powder is ...	CurryPowder	10	200 (BLOB)	/9j...		73

# DB\_SCRIPTS

-----  
-- DDL for Table ROLES  
-----

```
CREATE TABLE "VALTRG6"."ROLES"
```

```
(
```

```
    "ROLE_ID" NUMBER (10,0),
```

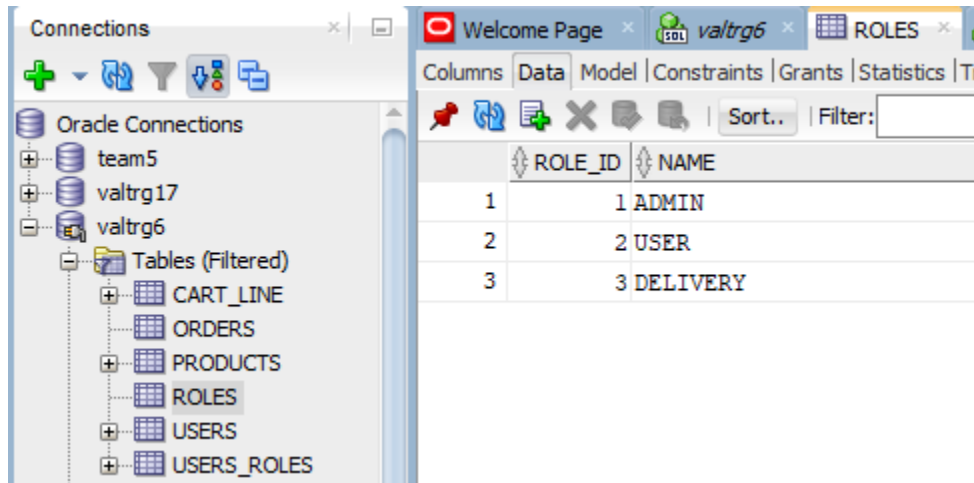
```
    "NAME" VARCHAR2(255 CHAR)
```

```
)
```

-----  
-- Constraints for Table ROLES  
-----

```
ALTER TABLE "VALTRG6"."ROLES" MODIFY ("ROLE_ID" NOT NULL ENABLE);
```

```
ALTER TABLE "VALTRG6"."ROLES" ADD PRIMARY KEY ("ROLE_ID")
```



-----

-- DDL for Table USERS

-----

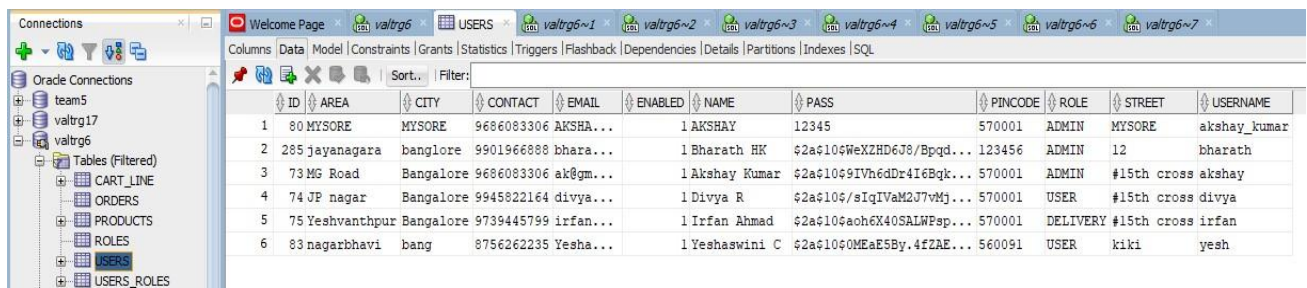
```
CREATE TABLE "VALTRG6"."USERS"
(
    "ID" NUMBER(10,0),
    "AREA" VARCHAR2(255 CHAR),
    "CITY" VARCHAR2(255 CHAR),
    "CONTACT" VARCHAR2(255 CHAR),
    "EMAIL" VARCHAR2(255 CHAR),
    "ENABLED" NUMBER(1,0),
    "NAME" VARCHAR2(255 CHAR),
    "PASS" VARCHAR2(255 CHAR),
    "PINCODE" VARCHAR2(255 CHAR),
    "ROLE" VARCHAR2(255 CHAR),
    "STREET" VARCHAR2(255 CHAR),
    "USERNAME" VARCHAR2(255 CHAR)
)
```

-----

-- Constraints for Table USERS

-----

```
ALTER TABLE "VALTRG6"."USERS" MODIFY ("ID" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."USERS" MODIFY ("ENABLED" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."USERS" ADD PRIMARY KEY ("ID")
```



	ID	AREA	CITY	CONTACT	EMAIL	ENABLED	NAME	PASS	PINCODE	ROLE	STREET	USERNAME
1	80	MYSORE	MYSORE	9686083306	AKSHA...	1	AKSHAY	12345	570001	ADMIN	MYSORE	akshay_kumar
2	285	jayanagara	banglore	9901966888	bhara...	1	Bharath HK	\$2a\$10\$WeXZHD6J8/Bpqd...	123456	ADMIN	12	bharath
3	73	MG Road	Bangalore	9686083306	ak@gm...	1	Akshay Kumar	\$2a\$10\$9IVh6dDr4f6Bqk...	570001	ADMIN	#15th cross	akshay
4	74	JP nagar	Bangalore	9945822164	divya...	1	Divya R	\$2a\$10\$/sIqIVaM2J7vMj...	570001	USER	#15th cross	divya
5	75	Yeshvanthpur	Bangalore	9739445799	irfan...	1	Irfan Ahmad	\$2a\$10\$aoh6X40SALWFsp...	570001	DELIVERY	#15th cross	irfan
6	83	nagarbhavi	bang	8756262235	Yesha...	1	Yeshaswini C	\$2a\$10\$0MEaESBy.4f2AE...	560091	USER	kiki	yesh

```

CREATE TABLE `USERS_ROLES` (
  `USER_ID` INT(11) NOT NULL,
  `ROLE_ID` INT(11) NOT NULL,
  KEY `USER_FK_IDX` (`USER_ID`),
  KEY `ROLE_FK_IDX` (`ROLE_ID`),
  CONSTRAINT `ROLE_FK` FOREIGN KEY (`ROLE_ID`) REFERENCES `ROLES` (`ROLE_ID`),
  CONSTRAINT `USER_FK` FOREIGN KEY (`USER_ID`) REFERENCES `USERS` (`USER_ID`)
);

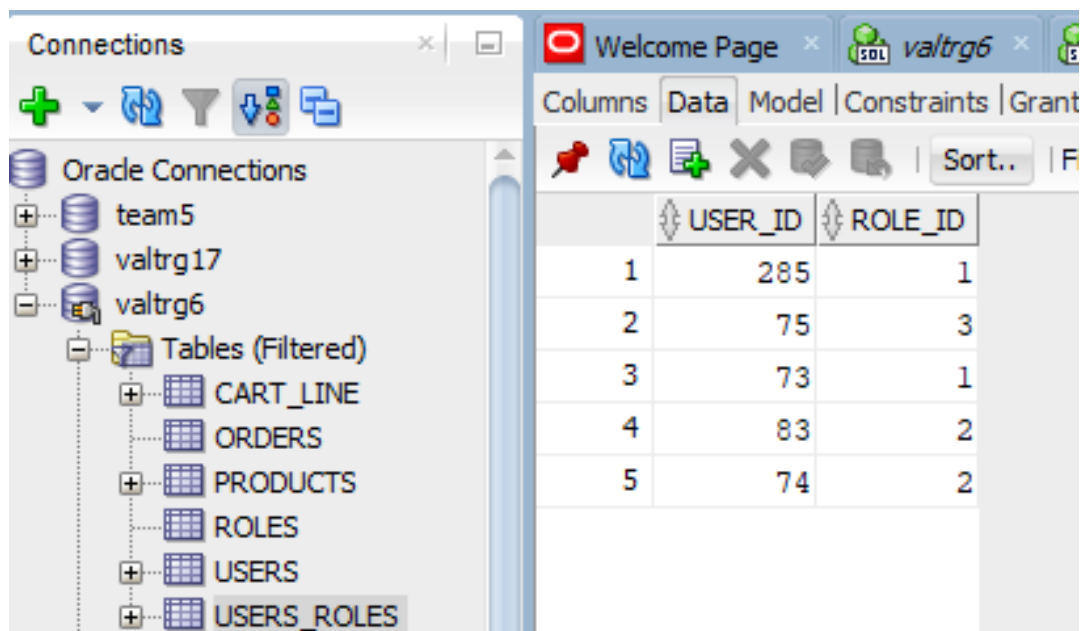
```

Inserting Meta-data:-

```
INSERT INTO `ROLES` (`NAME`) VALUES ('USER');
```

```
INSERT INTO `ROLES` (`NAME`) VALUES ('ADMIN');
```

```
INSERT INTO `ROLES` (`NAME`) VALUES ('DELIVERY');
```



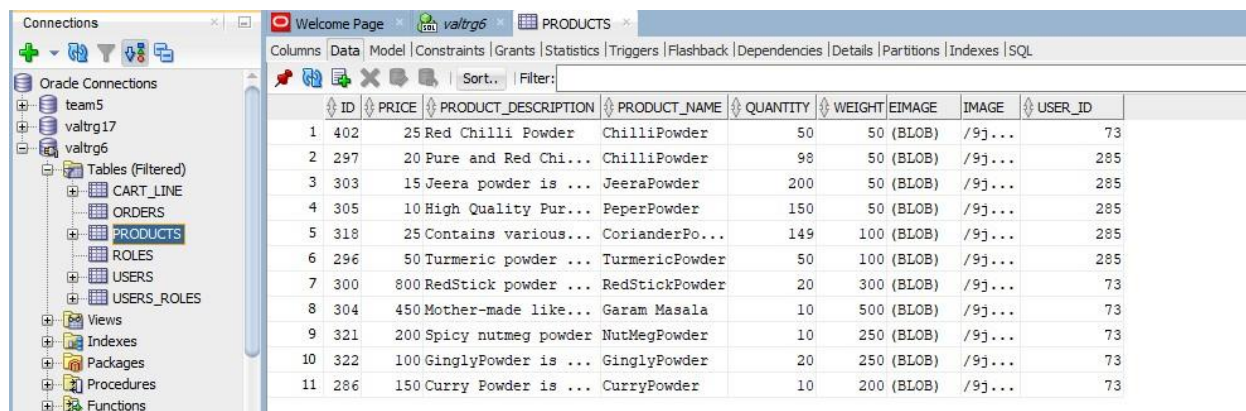
-----  
-- DDL for Table PRODUCTS  
-----

```
CREATE TABLE "VALTRG6"."PRODUCTS"  
(  
    "ID" NUMBER(10,0),  
    "PRICE" NUMBER(20,0),  
    "PRODUCT_DESCRIPTION" VARCHAR2(50 BYTE),  
    "PRODUCT_NAME" VARCHAR2(20 BYTE),  
    "QUANTITY" NUMBER(20,0),  
    "WEIGHT" NUMBER(20,0),  
    "EIMAGE" BLOB,  
    "IMAGE" CLOB,  
    "USER_ID" NUMBER(10,0)  
)
```

-----

-- Constraints for Table PRODUCTS  
-----

```
ALTER TABLE "VALTRG6"."PRODUCTS" MODIFY ("ID" NOT NULL ENABLE);  
ALTER TABLE "VALTRG6"."PRODUCTS" ADD CONSTRAINT "PRODUCTS_PK" PRIMARY KEY ("ID")
```



The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane lists 'team5', 'valtrg17', and 'valtrg6'. Under 'valtrg6', the 'Tables (Filtered)' section shows 'PRODUCTS' selected. The main pane displays the 'PRODUCTS' table data with columns: ID, PRICE, PRODUCT\_DESCRIPTION, PRODUCT\_NAME, QUANTITY, WEIGHT, EIMAGE, IMAGE, and USER\_ID. The data is as follows:

ID	PRICE	PRODUCT_DESCRIPTION	PRODUCT_NAME	QUANTITY	WEIGHT	EIMAGE	IMAGE	USER_ID
1	402	25 Red Chilli Powder	ChilliPowder	50	50 (BLOB)	/9j...		73
2	297	20 Pure and Red Chi...	ChilliPowder	98	50 (BLOB)	/9j...		285
3	303	15 Jeera powder is ...	JeeraPowder	200	50 (BLOB)	/9j...		285
4	305	10 High Quality Pur...	PeperPowder	150	50 (BLOB)	/9j...		285
5	318	25 Contains various...	CorianderPo...	149	100 (BLOB)	/9j...		285
6	296	50 Turmeric powder ...	TurmericPowder	50	100 (BLOB)	/9j...		285
7	300	800 RedStick powder ...	RedStickPowder	20	300 (BLOB)	/9j...		73
8	304	450 Mother-made like...	Garam Masala	10	500 (BLOB)	/9j...		73
9	321	200 Spicy nutmeg powder	NutMegPowder	10	250 (BLOB)	/9j...		73
10	322	100 GinglyPowder is ...	GinglyPowder	20	250 (BLOB)	/9j...		73
11	286	150 Curry Powder is ...	CurryPowder	10	200 (BLOB)	/9j...		73

```
-- DDL for Table ORDERS
```

```
CREATE TABLE "VALTRG6"."ORDERS"
```

```
(
    "ID" NUMBER(10,0),
    "ADMIN_IDS" RAW(255),
    "AREA" VARCHAR2(255 CHAR),
    "CART_IDS" RAW(255),
    "ORDER_DATE" VARCHAR2(255 CHAR),
    "USER_ID" NUMBER(10,0)
)
```

## -- Constraints for Table ORDERS

```
ALTER TABLE "VALTRG6"."ORDERS" MODIFY ("ID" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."ORDERS" MODIFY ("USER_ID" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."ORDERS" ADD PRIMARY KEY ("ID")
```

The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane lists 'team5', 'valtrg17', and 'valtrg6'. The 'valtrg6' connection is selected, and the 'Tables (Filtered)' view shows a tree structure with 'CART\_LINE', 'ORDERS' (highlighted), 'PRODUCTS', 'ROLES', 'USERS', and 'USERS\_ROLES'. The main window displays the 'ORDERS' table data. The table has columns: ID, ADMIN\_IDS, AREA, CART\_IDS, ORDER\_DATE, and USER\_ID. The data is as follows:

	ID	ADMIN_IDS	AREA	CART_IDS	ORDER_DATE	USER_ID
1	421	ACED000573720013...	JP nagar	ACED...	03-January-2023 / 05:10	74
2	420	ACED000573720013...	JP nagar	ACED...	03-January-2023 / 04:14	74



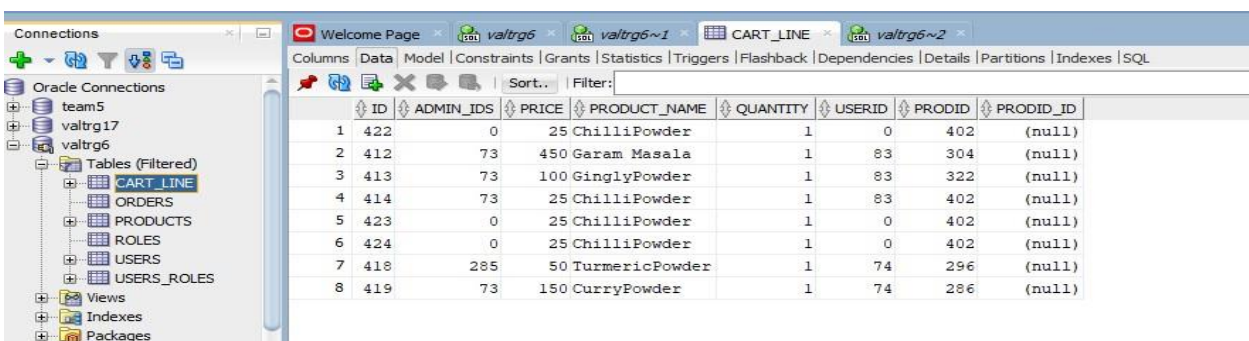
-----  
-- DDL for Table CART\_LINE  
-----

```
CREATE TABLE "VALTRG6"."CART_LINE"
(
    "ID" NUMBER(10,0),
    "ADMIN_IDS" NUMBER(10,0),
    "PRICE" FLOAT(126),
    "PRODUCT_NAME" VARCHAR2(255 CHAR),
    "QUANTITY" NUMBER(10,0),
    "USERID" NUMBER(10,0),
    "PROID" NUMBER(10,0),
    "PROID_ID" NUMBER(10,0)
)
```

-----

-- Constraints for Table CART\_LINE  
-----

```
ALTER TABLE "VALTRG6"."CART_LINE" MODIFY ("ID" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."CART_LINE" MODIFY ("ADMIN_IDS" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."CART_LINE" MODIFY ("PRICE" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."CART_LINE" MODIFY ("QUANTITY" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."CART_LINE" MODIFY ("USERID" NOT NULL ENABLE);
ALTER TABLE "VALTRG6"."CART_LINE" ADD PRIMARY KEY ("ID")
```



The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane lists several databases, with 'valtrg6' selected. Under 'valtrg6', the 'Tables (Filtered)' section shows 'CART\_LINE' selected. The main window displays the 'CART\_LINE' table data in a grid. The table has 8 columns: ID, ADMIN\_IDS, PRICE, PRODUCT\_NAME, QUANTITY, USERID, PROID, and PROID\_ID. The data is as follows:

	ID	ADMIN_IDS	PRICE	PRODUCT_NAME	QUANTITY	USERID	PROID	PROID_ID
1	422	0	25	ChilliPowder	1	0	402	(null)
2	412	73	450	Garam Masala	1	83	304	(null)
3	413	73	100	GinglyPowder	1	83	322	(null)
4	414	73	25	ChilliPowder	1	83	402	(null)
5	423	0	25	ChilliPowder	1	0	402	(null)
6	424	0	25	ChilliPowder	1	0	402	(null)
7	418	285	50	TurmericPowder	1	74	296	(null)
8	419	73	150	CurryPowder	1	74	286	(null)

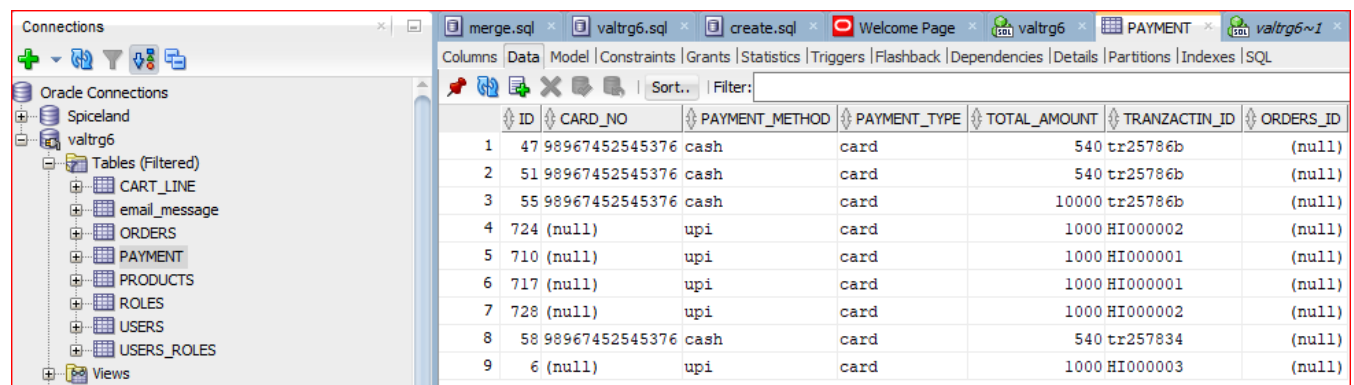
-----  
-- DDL for Table PAYMENT  
-----

```
CREATE TABLE "VALTRG6"."PAYMENT"  
(  
  "ID" NUMBER(10,0),  
  "CARD_NO" VARCHAR2(255 CHAR),  
  "PAYMENT_METHOD" VARCHAR2(255 CHAR),  
  "PAYMENT_TYPE" VARCHAR2(255 CHAR),  
  "TOTAL_AMOUNT" FLOAT(126),  
  "TRANZACTIN_ID" VARCHAR2(255 CHAR),  
  "ORDERS_ID" NUMBER(10,0)  
)
```

-----

-- Constraints for Table PAYMENT  
-----

```
ALTER TABLE "VALTRG6"."PAYMENT" MODIFY ("ID" NOT NULL ENABLE);  
ALTER TABLE "VALTRG6"."PAYMENT" MODIFY ("TOTAL_AMOUNT" NOT NULL ENABLE);  
ALTER TABLE "VALTRG6"."PAYMENT" ADD PRIMARY KEY ("ID")  
USING INDEX PCTFREE 10 INITRANS 2 MAXTRANS 255 COMPUTE STATISTICS  
STORAGE(INITIAL 1048576 NEXT 1048576 MINEXTENTS 1 MAXEXTENTS 2147483645  
PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1  
BUFFER_POOL DEFAULT FLASH_CACHE DEFAULT CELL_FLASH_CACHE DEFAULT)  
TABLESPACE "TS_VALTRG6" ENABLE;
```



The screenshot shows the Oracle SQL Developer interface. On the left, the 'Connections' pane shows a tree view with 'Orade Connections', 'Spiceland', and 'valtrg6'. Under 'valtrg6', there is a 'Tables (Filtered)' section containing 'CART\_LINE', 'email\_message', 'ORDERS', 'PAYMENT', 'PRODUCTS', 'ROLES', 'USERS', and 'USERS\_ROLES'. The 'PAYMENT' table is selected. The main pane shows the 'Data' tab for the 'PAYMENT' table. The table has 9 columns: ID, CARD\_NO, PAYMENT\_METHOD, PAYMENT\_TYPE, TOTAL\_AMOUNT, TRANZACTIN\_ID, and ORDERS\_ID. The data is displayed in a grid with 9 rows. The first row has ID 1, CARD\_NO 47 98967452545376, PAYMENT\_METHOD cash, PAYMENT\_TYPE card, TOTAL\_AMOUNT 540, TRANZACTIN\_ID tr25786b, and ORDERS\_ID (null). The second row has ID 2, CARD\_NO 51 98967452545376, PAYMENT\_METHOD cash, PAYMENT\_TYPE card, TOTAL\_AMOUNT 540, TRANZACTIN\_ID tr25786b, and ORDERS\_ID (null). The third row has ID 3, CARD\_NO 55 98967452545376, PAYMENT\_METHOD cash, PAYMENT\_TYPE card, TOTAL\_AMOUNT 10000, TRANZACTIN\_ID tr25786b, and ORDERS\_ID (null). The fourth row has ID 4, CARD\_NO 724 (null), PAYMENT\_METHOD upi, PAYMENT\_TYPE card, TOTAL\_AMOUNT 1000, TRANZACTIN\_ID HI000002, and ORDERS\_ID (null). The fifth row has ID 5, CARD\_NO 710 (null), PAYMENT\_METHOD upi, PAYMENT\_TYPE card, TOTAL\_AMOUNT 1000, TRANZACTIN\_ID HI000001, and ORDERS\_ID (null). The sixth row has ID 6, CARD\_NO 717 (null), PAYMENT\_METHOD upi, PAYMENT\_TYPE card, TOTAL\_AMOUNT 1000, TRANZACTIN\_ID HI000001, and ORDERS\_ID (null). The seventh row has ID 7, CARD\_NO 728 (null), PAYMENT\_METHOD upi, PAYMENT\_TYPE card, TOTAL\_AMOUNT 1000, TRANZACTIN\_ID HI000002, and ORDERS\_ID (null). The eighth row has ID 8, CARD\_NO 58 98967452545376, PAYMENT\_METHOD cash, PAYMENT\_TYPE card, TOTAL\_AMOUNT 540, TRANZACTIN\_ID tr257834, and ORDERS\_ID (null). The ninth row has ID 9, CARD\_NO 6 (null), PAYMENT\_METHOD upi, PAYMENT\_TYPE card, TOTAL\_AMOUNT 1000, TRANZACTIN\_ID HI000003, and ORDERS\_ID (null).

ID	CARD_NO	PAYMENT_METHOD	PAYMENT_TYPE	TOTAL_AMOUNT	TRANZACTIN_ID	ORDERS_ID
1	47 98967452545376	cash	card	540	tr25786b	(null)
2	51 98967452545376	cash	card	540	tr25786b	(null)
3	55 98967452545376	cash	card	10000	tr25786b	(null)
4	724 (null)	upi	card	1000	HI000002	(null)
5	710 (null)	upi	card	1000	HI000001	(null)
6	717 (null)	upi	card	1000	HI000001	(null)
7	728 (null)	upi	card	1000	HI000002	(null)
8	58 98967452545376	cash	card	540	tr257834	(null)
9	6 (null)	upi	card	1000	HI000003	(null)

