Database Management & Database Design

Project Report

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1. Topic:

Database for an Online shopping website(Amazon.com).

2. Problem Statement:

I have chosen this topic because amazon is growing day by day. it is most common now a day for shopping. Amazon is a global leader in this department because they are including more services that customer can imagine at one place. Grocery, books, clothes, electronics, video, music, web services etc. Anything that requires in day to day life, customer can access at one place.

It will store customer details, supplier details, product details, service details, payment details, amazon warehouse details, department details, inventory details, User details etc.

The database will include

- Triggers
- Stored Procedures
- Access Control
- Views etc.

3. Following is the list of tables that the database includes:

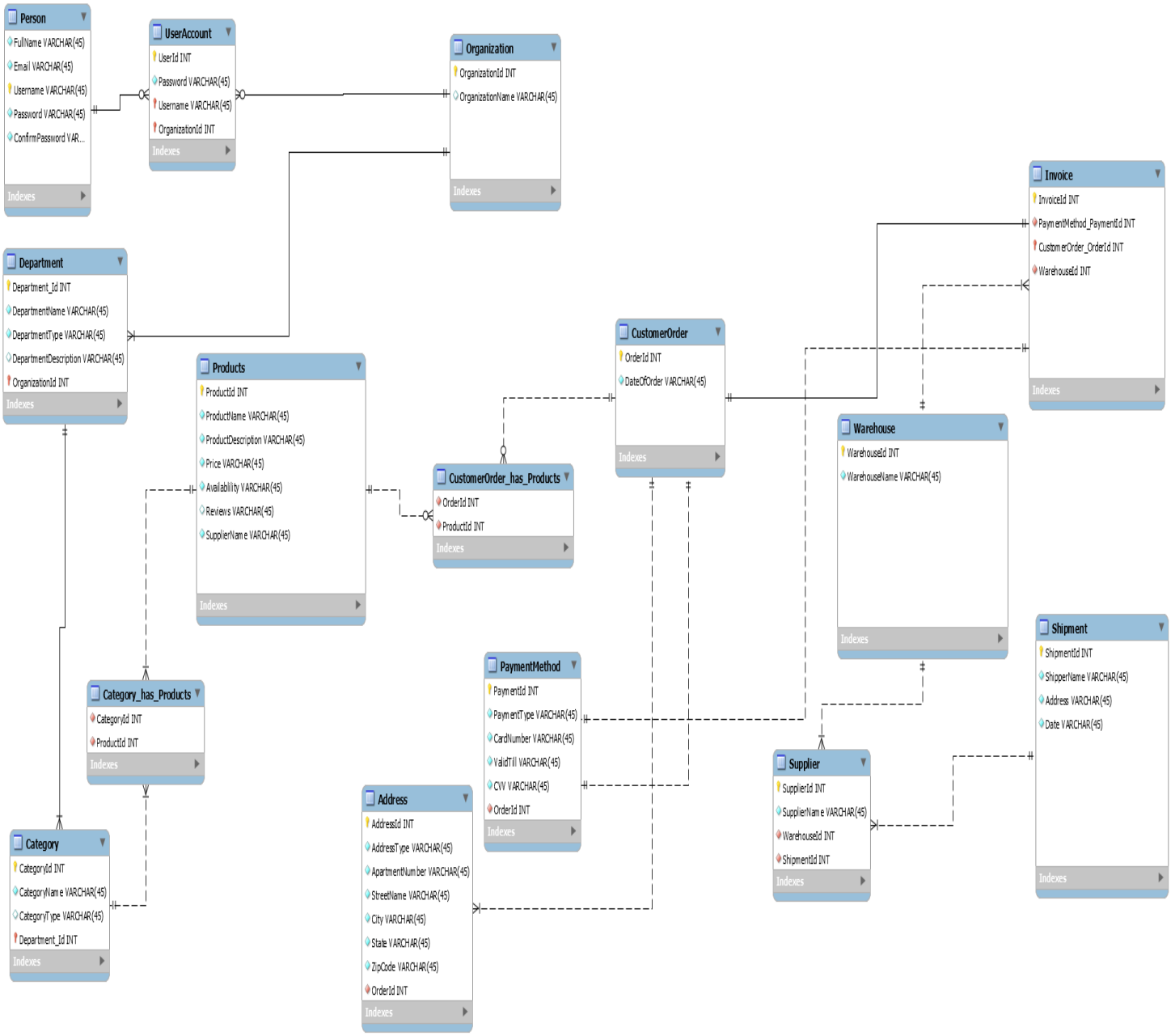
1. Organization -Organization Details (Organization id, Organization name)
2. Person- Person Details (Person name, username, password,emailid)
3. User Account – User Details (Userid, username, password, organizationid)
4. Department-DepartmentDetails(DepartmentId, departmentname,departmenttype,departmentdescription)
5. Category- Categoryid,categoryname,categorytype
6. Products-
   (productdetails,
   Productid,Productname,producttype,availability,price,Review,Suppliername)

7. Customer Order- Order Details (Order id, Date)
8. Payment- Payment Details (payment id, payment type, card number, cvv,valid to)
9. Address- Address Details (Addressid,Addresstype,street,apartment number,city,zip)
10. Invoice- Invoice (Department id, type, product id)
11. Warehouse- Warehouse details (Warehouseid ,Warehouse name)
12. Supplier- Supplier Details (supplierid,suppliername,warehouseid)
13. Shipment – Shipper details (Shipmentid, shippername,supplierid,warehouseid)

4. Relationships

1. Person can have one or many user accounts.
2. Organization can have one or many user accounts.
3. Organization can have one or many departments.
4. Department have one or many categories.
5. Categories has one or many products.
6. Customer order have one or many products.
7. Customer order have one or many address.
8. Customer Order have one and only one payment method.
9. Invoice has one and only one customer order details.
10. Warehouse has one or more invoices.
11. Supplier has one or more invoices.
12. Shipper has one or more invoices from supplier.

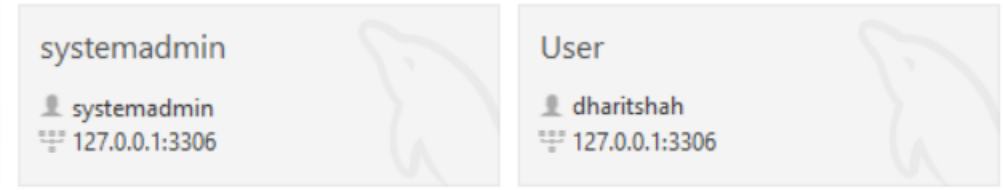
5. ER


Person
FullName VARCHAR(45)
Email VARCHAR(45)
Username VARCHAR(45)
Password VARCHAR(45)
ConfirmPassword VAR...
Indexes
UserAccount
UserId INT
Password VARCHAR(45)
Username VARCHAR(45)
OrganizationId INT
Indexes
Organization
OrganizationId INT
OrganizationName VARCHAR(45)
Indexes
Invoice
InvoiceId INT
PaymentMethod_PaymentId INT
CustomerOrder_OrderId INT
WarehouseId INT
Indexes
Department
Department_Id INT
DepartmentName VARCHAR(45)
DepartmentType VARCHAR(45)
DepartmentDescription VARCHAR(45)
OrganizationId INT
Indexes
CustomerOrder
OrderId INT
DateOfOrder VARCHAR(45)
Indexes
Products
ProductId INT
ProductName VARCHAR(45)
ProductDescription VARCHAR(45)
Price VARCHAR(45)
Availability VARCHAR(45)
Reviews VARCHAR(45)
SupplierName VARCHAR(45)
Indexes
CustomerOrder_has_Products
OrderId INT
ProductId INT
Indexes
Warehouse
WarehouseId INT
WarehouseName VARCHAR(45)
Indexes
Shipment
ShipmentId INT
ShipperName VARCHAR(45)
Address VARCHAR(45)
Date VARCHAR(45)
Indexes
Category_has_Products
CategoryId INT
ProductId INT
Indexes
PaymentMethod
PaymentId INT
PaymentType VARCHAR(45)
CardNumber VARCHAR(45)
ValidTill VARCHAR(45)
CVV VARCHAR(45)
OrderId INT
Indexes
Supplier
SupplierId INT
SupplierName VARCHAR(45)
WarehouseId INT
ShipmentId INT
Indexes
Address
AddressId INT
AddressType VARCHAR(45)
ApartmentNumber VARCHAR(45)
StreetName VARCHAR(45)
City VARCHAR(45)
State VARCHAR(45)
ZipCode VARCHAR(45)
OrderId INT
Indexes
Category
CategoryId INT
CategoryName VARCHAR(45)
CategoryType VARCHAR(45)
Department_Id INT
Indexes

6. **Privileges**

SystemAdmin Has All Privileges.

Read the Blog > Discuss o



User Account has limited access.

User can select department,category,products,customerorder,paymentmethod,address.

User can update, delete on customerorder ,paymentmethod,address.

User can have create ,update , delete on useraccount.

User cannot access supplier ,warehouse and shipment Details.

```
-- privileges--
create user systemadmin identified by 'sysadmin';
revoke all privileges,grant option from systemadmin;
grant all on mydb.*to systemadmin;
create user dharitshah identified by 'shah';
revoke all privileges,grant option from dharitshah;
grant select on mydb.department to dharitshah;
grant select on mydb.category to dharitshah;
grant select on mydb.products to dharitshah;
grant select on mydb.customerorder to dharitshah;
grant select on mydb.paymentmethod to dharitshah;
grant select on mydb.address to dharitshah;
grant update ,delete on mydb.customerorder to dharitshah;
grant update ,delete on mydb.paymentmethod to dharitshah;
grant update ,delete on mydb.address to dharitshah;
grant create,update,delete on mydb.useraccount to dharitshah;
```

JOIN

Join to see details of order id and where and whom to ship.

```
3   select distinct u.UserName,c.orderid,d.department_id,cm.categoryname,p.productname,p.price,
4   a.addresstype,a.apartmentnumber,a.streetname,a.city,a.zipcode,pm.paymenttype,w.WarehouseName,s.SupplierName,sp.ShipperName
5   from customerorder c inner join customerorder_has_products cp
6   on c.orderid=cp.orderid
7   inner join products p
8   on cp.productid=p.productid
9   inner join category cm
10  on p.productid=cm.categoryid
11  inner join department d
12  on cm.Department_Id=d.Department_Id
13  inner join organization op
14  on d.OrganizationId=op.OrganizationId
15  inner join useraccount u
16  on op.OrganizationId=u.OrganizationId
17  inner join address a
18  on c.OrderId=a.OrderId
19  inner join paymentmethod pm
20  on c.OrderId=pm.OrderId
21  inner join invoice i
22  on c.OrderId=i.CustomerOrder_OrderId
23  inner join warehouse w
24  on i.WarehouseId=w.WarehouseId
25  inner join supplier s
26  on w.WarehouseId=s.WarehouseId
27  inner join shipment sp
28  on s.ShipmentId=sp.ShipmentId;
29
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

UserName	orderid	department_id	categoryname	productname	price	addresstype	apartmentnumber	streetname	city	zipcode	paymenttype	WarehouseName	SupplierName	ShipperName
dharit	1	1	books	half girlfriend	10	home	3	saint oermain	boston	2115	credit card	Amazon warehouse	dharits3	dhl
rai	1	1	books	half girlfriend	10	home	3	saint oermain	boston	2115	credit card	Amazon warehouse	dharits3	dhl
Yusuf	1	1	books	half girlfriend	10	home	3	saint oermain	boston	2115	credit card	Amazon warehouse	dharits3	dhl

VIEWS

1) UserAccount Can view all the products he has bought in customer_order_new

```
132 • create view customer_order_new
133   as
134   select distinct u.UserName,c.orderid,d.department_id,cm.categoryname,p.productname,p.price
135   from customerorder c inner join customerorder_has_products cp
136   on c.orderid=cp.orderid
137   inner join products p
138   on cp.productid=p.productid
139   inner join category cm
140   on p.productid=cm.categoryid
141   inner join department d
142   on cm.Department_Id=d.Department_Id
143   inner join organization op
144   on d.OrganizationId=op.OrganizationId
145   inner join useraccount u
146   on op.OrganizationId=u.OrganizationId
147   ;
148
149 • select * from customer_order_new;
150
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

UserName	orderid	department_id	categoryname	productname	price
dharit	1	1	books	half girlfriend	10
dharit	2	1	books	half girlfriend	10
dharit	3	1	books	full girlfriend	20
dharit	4	2	Electronics	computer	40
rai	1	1	books	half girlfriend	10
rai	2	1	books	half girlfriend	10
rai	3	1	books	full girlfriend	20
rai	4	2	Electronics	computer	40

2. Invoice_new Invoice Details Of Customer

```
153  create view invoice_new
154  as
155  select distinct u.UserName,c.orderid,d.department_id,cm.categoryname,p.productname,p.price,
156  a.addresstype,a.apartmentnumber,a.streetname,a.city,a.zipcode,pm.paymenttype
157  from customerorder c inner join customerorder_has_products cp
158  on c.orderid=cp.orderid
159  inner join products p
160  on cp.productid=p.productid
161  inner join category cm
162  on p.productid=cm.categoryid
163  inner join department d
164  on cm.Department_Id=d.Department_Id
165  inner join organization op
166  on d.OrganizationId=op.OrganizationId
167  inner join useraccount u
168  on op.OrganizationId=u.OrganizationId
169  inner join address a
170  on c.OrderId=a.OrderId
171  inner join paymentmethod pm
172  on c.OrderId=pm.OrderId;
173
174      *      invoice_new;
175
176
```

ult Grid | Filter Rows: | Export: | Wrap Cell Content:

UserName	orderid	department_id	categoryname	productname	price	addresstype	apartmentnumber	streetname	city	zipcode	paymenttype
dharit	1	1	books	half girlfriend	10	home	3	saint germain	boston	2115	credit card
dharit	2	1	books	half girlfriend	10	work	6	saint germain	boston	2115	debit card
rai	1	1	books	half girlfriend	10	home	3	saint germain	boston	2115	credit card
rai	2	1	books	half girlfriend	10	work	6	saint germain	boston	2115	debit card

ice_new 16 ×

3. Shipment Details for Shipper's View

```
create view shipment_details_final
as
select distinct u.UserName,c.orderid,d.department_id,cm.categoryname,p.productname,p.price,
a.addresstype,a.apartmentnumber,a.streetname,a.city,a.zipcode,pm.paymenttype,w.WarehouseName,s.SupplierName,sp.ShipperName
from customerorder c inner join customerorder_has_products cp
on c.orderid=cp.orderid
inner join products p
on cp.productid=p.productid
inner join category cm
on p.productid=cm.categoryid
inner join department d
on cm.Department_Id=d.Department_Id
inner join organization op
on d.OrganizationId=op.OrganizationId
inner join useraccount u
on op.OrganizationId=u.OrganizationId
inner join address a
on c.OrderId=a.OrderId
inner join paymentmethod pm
on c.OrderId=pm.OrderId
inner join invoice i
on c.OrderId=i.CustomerOrder_OrderId
inner join warehouse w
on i.WarehouseId=w.WarehouseId
inner join supplier s
on w.WarehouseId=s.WarehouseId
inner join shipment sp
on s.ShipmentId=sp.ShipmentId;


select * from shipment_details_final;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

UserName	orderid	department_id	categoryname	productname	price	addresstype	apartmentnumber	streetname	city	zipcode	paymenttype	WarehouseName	SupplierName	ShipperName
dharit	1	1	books	half girlfriend	10	home	3	saint oermain	boston	2115	credit card	Amazon warehouse	dharits3	dhl
rai	1	1	books	half girlfriend	10	home	3	saint oermain	boston	2115	credit card	Amazon warehouse	dharits3	dhl

Triggers

Use to insert data from table 1 to table 2.

add_a_category

```
251  select * from category;
252
253  delimiter //
254  create trigger add_a_category
255  after insert on department
256  for each row
257  begin
258  insert into category
259  select 7,'Baby Care',
260  (select CategoryType from category where CategoryId=1),
261  4;
262  end//
263  //
264  insert into department
265  select 4,'Baby Care','Personal Care','New Arrival',1;
266
267  select * from category;
268
269
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap C

CategoryId	CategoryName	CategoryType	Department_Id
1	books	new arrival	1
2	books	half price	1
3	Electronics	new arrival	2
4	Electronics	half price	2
5	clothing	new arrival	3
6	clothing	halfprice	3
7	Baby Care	new arrival	4
NULL	NULL	NULL	NULL

add_product

```
271  delimiter //
272
273  create trigger add_product
274  after insert on category
275  for each row
276  begin
277  insert into products
278  select 7,'babycare','halfprice',10,20,'not good','cc';
279  end; //
280
281  insert into category
282  select 8,'babycare','halfprice',4;
283
284  select * from products;
285
286
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

ProductId	ProductName	ProductDescription	Price	Availablility	Reviews	SupplierName
1	half girlfriend	new	10	20	na	cb
2	full girlfriend	old	20	30	nm	rr
3	computer	new	40	50	vb	rr
4	laptop	old	30	30	vb	rr
5	clothing	Newarrival	30	10	not good	bb
6	clothing	halfprice	20	10	Bestseller	cc
7	babycare	halfprice	10	20	not good	cc
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Add_User

`

```
286
287  delimiter //
288
289  create trigger add_user
290  after insert on person
291  for each row
292  begin
293  insert into useraccount
294  select 4,'password','Yusuf',1;
295  end; //
296
297  insert into person
298  select 'Dharit shah','dharits3@gmail.com','Yusuf','password','password';
299
300  select * from useraccount;
301
302
303
304  delimiter //
305  create trigger productup
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

UserId	Password	Username	OrganizationId
1	dharit	dharit	1
2	rai	rai	1
4	password	Yusuf	1
NULL	NULL	NULL	NULL

useraccount 39

Stored procedures

Store procedure for discount on particular category type

```
delimiter &&
create procedure discount3(in name_1 varchar(45))
begin

select p.productname,(p.Price-(0.5*p.Price)) as 'Discounted Price' from products p inner join category_has_products cm
on p.ProductId=cm.CategoryId inner join category c
on c.CategoryId=cm.CategoryId where c.CategoryType=name_1;
end;
&&
      p.productname,p.Price      products p           category_has_products cm
  p.ProductId=cm.CategoryId           category c
  c.CategoryId=cm.CategoryId      c.CategoryType= 'half price';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

productname	Price
full girlfriend	20
laptop	30

Result

```
call mydb.discount3('half price');
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

productname	Discounted Price
full girlfriend	10
laptop	15

Store procedure for availability of product after order

```
392  delimiter //
393
394  create procedure availability_1(in avail int(10))
395  begin
396
397  select o.orderid,p.productname,(p.Availablility-1) as 'new available' from customerorder o inner join customerorder_has_products cm
398  on o.orderid=cm.orderid  inner join products p
399  on cm.ProductId=p.ProductId where o.OrderId = avail;
400
401  end;
402  //
403
404
405  select o.orderid,p.productname,p.Availablility from customerorder o inner join customerorder_has_products cm
406  on o.orderid=cm.orderid  inner join products p
407  on cm.ProductId=p.ProductId where o.OrderId = 1;
408
409
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

orderid	productname	Availablility
1	half girlfriend	20

Result

```
1  call mydb.availability_1(1);
2
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

orderid	productname	new available
1	half girlfriend	19

```
delimiter //
create procedure shipment_details(in val int)
begin
select distinct u.UserName,c.orderid,d.department_id,cm.categoryname,p.productname,p.price,
a.addresstype,a.apartmentnumber,a.streetname,a.city,a.zipcode,pm.paymenttype,w.WarehouseName,s.SupplierName,sp.ShipperName
from customerorder c inner join customerorder_has_products cp
on c.orderid=cp.orderid
inner join products p
on cp.productid=p.productid
inner join category cm
on p.productid=cm.categoryid
inner join department d
on cm.Department_Id=d.Department_Id
inner join organization op
on d.OrganizationId=op.OrganizationId
inner join useraccount u
on op.OrganizationId=u.OrganizationId
inner join address a
on c.OrderId=a.OrderId
inner join paymentmethod pm
on c.OrderId=pm.OrderId
inner join invoice i
on c.OrderId=i.CustomerOrder_OrderId
inner join warehouse w
on i.WarehouseId=w.WarehouseId
inner join supplier s
on w.WarehouseId=s.WarehouseId
inner join shipment sp
on s.ShipmentId=sp.ShipmentId
where s.ShipmentId=1;

end;
```

```
1  call mydb.shipment_details(1);
2
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

UserName	orderid	department_id	categoryname	productname	price	addresstype	apartmentnumber	streetname	city	zipcode	paymenttype	WarehouseName	SupplierName	ShipperName
dharit	1	1	books	half girlfriend	10	home	3	saint germain	boston	2115	credit card	Amazon warehouse	dharits3	dhl
rai	1	1	books	half girlfriend	10	home	3	saint germain	boston	2115	credit card	Amazon warehouse	dharits3	dhl
Yusuf	1	1	books	half girlfriend	10	home	3	saint germain	boston	2115	credit card	Amazon warehouse	dharits3	dhl

Store procedure when shipper enter order id he can see all the details of related orders.

Data Analysis

Most Popular Product According to Customer Orders.

```
227
228  -- analysis--
229
230  -- Most Popular Products--
231  select  p.productid ,p.productname as 'Most Popular' ,cmd.categoryname
232  from customerorder c inner join customerorder_has_products cp
233  on c.orderid=cp.orderid
234  inner join products p
235  on cp.productid=p.productid
236  inner join category_has_products chp
237  on p.ProductId=chp.ProductId
238  inner join category cmd
239  on chp.CategoryId=cmd.CategoryId
240  having count(p.ProductName)>1;
241  //
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

productid	Most Popular	categoryname
1	half girlfriend	books

Highest Revenue generated by department.

```
242
243  -- Highest revenue generated by department--
244
245  select d.department_id,d.departmentname,cm.categoryname,p.productname,sum(p.price) as 'Highest Seller department'
246  from customerorder c
247  inner join customerorder_has_products cp
248  on c.orderid=cp.orderid
249  inner join products p
250  on cp.productid=p.productid
251  inner join category cm
252  on p.productid=cm.categoryid
253  inner join department d
254  on cm.Department_Id=d.Department_Id
255  having count(d.department_id)>=1
256
257
258
259
260  -- triggers --
261
262
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

department_id	departmentname	categoryname	productname	Highest Seller department
1	Books	books	half girlfriend	80