



## Database Analysis & Design

### INF10002

## High Distinction Task S1 2022

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### Part 1 – Business Narrative

Business type: Handling tasks in a Pharmacy

Business narrative:

SwinHealth is a newly established pharmaceutical company that is going to open multiple pharmacies across Victoria. Each store obtains an ID and the suburb where the store is located. Each store has many staffs. Each staff member has an ID, full name, address, contact number and email and applies to a position in the store. A position may require only one staff (manager), but some may need multiple staff (pharmacists/team members). Each position entails different jobs and different base rates from others (the base rates are also determined by a staff's employment type). One store sells many types of products. One product can also appear in many stores with diverse quantities in stock. Each product belongs to only one supplier and a specific category. The store contains categories of products for customers' quick browsing. Each category will be supplied with various products. SwinHealth has also made contracts with pharmaceutical suppliers for their products. A supplier may offer one or many products to the stores. SwinHealth is now aiming to cement a critical procedure before the grand opening of the pharmacies, in which the transactions from customers must be recorded. Each store must be able to generate receipts for customers and for daily reports. A receipt must include the team member who was working at the time, the date and time of the transaction and the list of products purchased and their quantity, thus calculating the total price.

Business rules:

- Each store must keep track of the number of a type of product in stock. The number of a particular product in stock may differ among different stores.
- Each staff belongs to only one store and applies to only one position with a specific employment type (Full-time, part-time, or casual).
- One staff may handle multiple transactions with customers. One transaction record must only be handled by one staff; the ID of the staff must be included in the transaction.

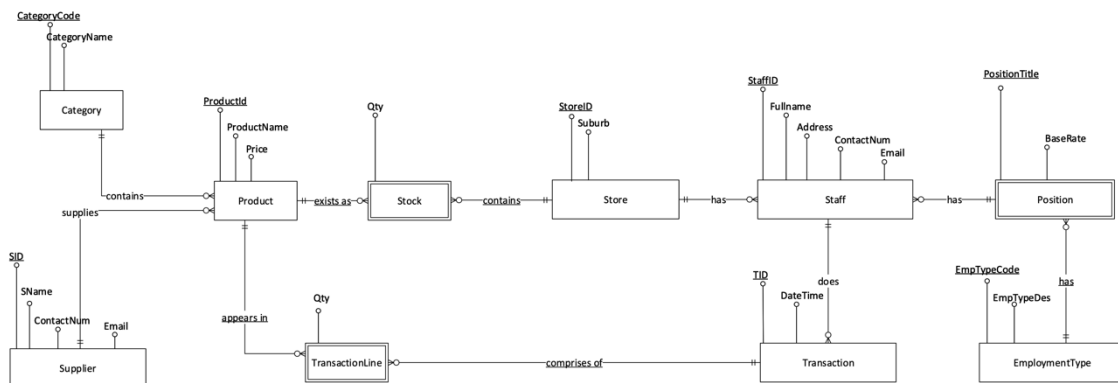
- One transaction is comprised of multiple transaction lines. One transaction line is made up of one type of product and the purchased quantity. Understandably, more than one customer may want to buy the same product.

*The business rules currently do not entail updating stock after transactions because this requirement is outside the scope of the unit.*

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## Part 2 – ERDs and Relational Schema

### ERD



### Relational Schema

CATEGORY (CategoryCode, CategoryName)

SUPPLIER (SID, SName, ContactNum, Email)

PRODUCT (ProductID, ProductName, Price, CategoryCode, SID)

FK (CategoryCode) REFERENCES CATEGORY

FK (SID) REFERENCES SUPPLIER

STORE (StoreID, Suburb)

STOCK (ProductID, StoreID, Qty)

FK (ProductID) REFERENCES PRODUCT

FK (StoreID) REFERENCES STORE

EMPLOYMENTTYPE (EmpTypeCode, EmpTypeDes)

Week Entity:

POSITION (EmpTypeCode, PositionTitle, BaseRate)

FK (EmpTypeCode) REFERENCES EMPLOYMENTTYPE

STAFF (StaffID, Fullname, Address, ContactNum, Email, StoreID, EmpTypeCode, PositionTitle)

FK (StoreID) REFERENCES STORE

FK (EmpTypeCode, PositionTitle) REFERENCES POSITION

TRANSACTION (TID, DateTime, StaffID)

FK (StaffID) REFERENCES STAFF

TRANSACTIONLINE (TID, ProductID, Qty)

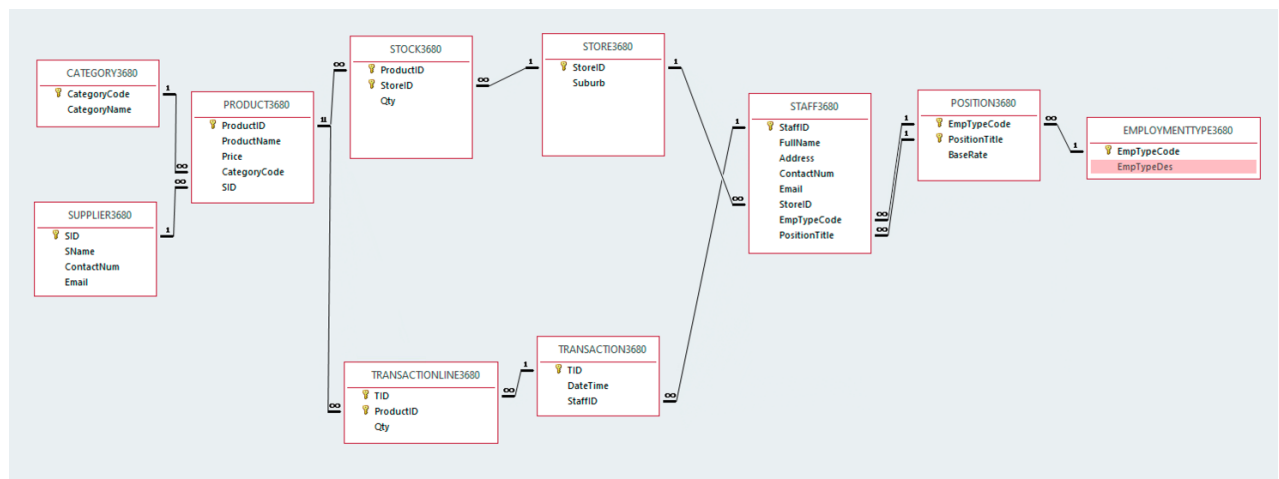
FK (TID) REFERENCES TRANSACTION

FK (ProductID) REFERENCES PRODUCT

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### Part 3 – DB Solution

Relational diagram (MS Assess)



#### Part 4 – Test Data (Diagram and/or Statements)

CATEGORY3680		
	Field Name	Data Type
	CategoryCode	Short Text
	CategoryName	Short Text

Relationships		
	CategoryCode	CategoryName
+	BBC	Baby Care
+	COS	Cosmetics
+	DTC	Dental Care
+	FRG	Fragrance
+	MED	Medicines
+	SKC	Skin Care
+	VTM	Vitamins
+	WLS	Weight Loss

SUPPLIER3680		
	Field Name	Data Type
	SID	Short Text
	SName	Short Text
	ContactNum	Short Text
	Email	Short Text

Relationships		SUPPLIER3680		
	SID	SName	ContactNum	Email
+	101	Curash	0402670622	curashaus@gmail.com
+	102	The A2 Milk Company	0402176456	a2aus@gmail.com
+	103	Babylove	0402756658	babyloveaus@gmail.com
+	104	L'Oreal Paris	0380239492	lorealparis@gmail.com
+	105	Maybelline	0182732741	maybellinee@gmail.com
+	106	Antipodes	0182841926	antipodes@gmail.com
+	107	Calvin Klein	0482361228	calvinklein@gmail.com
+	108	Panadol	0238128102	panadol@gmail.com
+	109	Nurofen	0482831280	nurofen@gmail.com
+	110	Colgate	0129793717	colgate@gmail.com

PRODUCT3680	
Field Name	Data Type
ProductID	AutoNumber
ProductName	Short Text
Price	Currency
CategoryCode	Short Text
SID	Short Text

Relationships		PRODUCT3680			
	ProductID	ProductName	Price	CategoryCode	SID
+	1	Curash Babycare Fragrance Free Wipes 6 x 80	\$17.99	BBC	101
+	2	Curash Babycare Simply Water Wipes 6 x 80	\$19.99	BBC	101
+	3	Curash Babycare Fragrance Free Wipes 3 x 80	\$9.99	BBC	101
+	4	A2 Platinum Premium Toddler Milk Drink Stage 3 From 1 Year 900g	\$37.49	BBC	102
+	5	A2 Platinum Premium Infant Formula Stage 1 From Birth 900g	\$39.99	BBC	102
+	6	A2 Platinum Premium Follow On Formula Stage 2 From 6 Months 900g	\$39.99	BBC	102
+	7	Babylove Sleepy Nights 4-7 Years Overnight Pants 15 Pack	\$17.49	BBC	103
+	8	Babylove Sleepy Nights 2-4 Years Overnight Pants 12 Pack	\$9.99	BBC	103
+	9	BabyLove Sleepy Nights 4-7 Years Old 9 Pants	\$11.49	BBC	103
+	10	L'Oreal True Match Serum Foundation Light 2-3	\$22.49	COS	104

STORE3680	
Field Name	Data Type
StoreID	Short Text
Suburb	Short Text

Relationships			STORE3680	
	StoreID	Suburb		
+	CBD01	CBD		
+	CBD02	CBD		
+	CBD03	CBD		
+	HAW01	HAWTHORN		
+	HAW02	HAWTHORN		
+	KEW01	KEW		
+	RMD01	RICHMOND		
+	RMD02	RICHMOND		

STOCK3680		
	Field Name	Data Type
🔑	ProductID	Number
🔑	StoreID	Short Text
	Qty	Number

Relationships			STOCK3680	
	ProductID	StoreID	Qty	
	1	CBD01	20	
	1	CBD02	50	
	1	CBD03	14	
	1	HAW01	43	
	1	HAW02	0	
	1	KEW01	38	
	1	RMD01	74	
	1	RMD02	60	
	2	CBD01	51	
	2	CBD02	15	

EMPLOYMENTTYPE3680		
	Field Name	Data Type
🔑	EmpTypeCode	Short Text
	EmpTypeDes	Short Text

Relationships		EMPLOYMENTTYPE3680
EmpTypeCode	EmpTypeDes	
+ C	Casual	
+ FT	Full-time	
+ PT	Part-time	

POSITION3680	
Field Name	Data Type
EmpTypeCode	Short Text
PositionTitle	Short Text
BaseRate	Currency

Relationships		POSITION3680
EmpTypeCode	PositionTitle	BaseRate
+ C	Pharmacy Assistant	\$34.00
+ C	Store Person	\$30.00
+ FT	Pharmacist	\$35.00
+ FT	Pharmacy Assistant	\$30.00
+ FT	Retail Manager	\$40.00
+ FT	Store Person	\$28.00
+ PT	Pharmacy Assistant	\$28.00
+ PT	Store Person	\$24.00

STAFF3680	
Field Name	Data Type
StaffID	Number
FullName	Short Text
Address	Short Text
ContactNum	Short Text
Email	Short Text
StoreID	Short Text
EmpTypeCode	Short Text
PositionTitle	Short Text

Relationships		STAFF3680						
StaffID	FullName	Address	ContactNun	Email	StoreID	EmpTypeCode	PositionTitle	
1000	Sianna Clayton	CBD	0467859943	siannactl@gmail.com	KEW01	C	Pharmacy Assistant	
1001	Laurens Skelly	Hawthorn	0402491823	lskelly@swin.edu.au	CBD01	FT	Retail Manager	
1002	Timothy Baird	Kew	0402183912	tbaird@swin.edu.au	HAW01	FT	Retail Manager	
1003	Joe Biden	Malvern	0128320310	jbiden@gmail.com	CBD02	FT	Retail Manager	
1004	Ivanka Trump	CBD	0182123123	ivankatrp@gmail.com	CBD03	FT	Retail Manager	
1005	Angela Merkel	Richmond	0128031211	angelamerkl@gmail.com	RMD01	FT	Retail Manager	
1006	Robert Tipping	CBD	0429931328	rtipping@swin.edu.au	RMD02	FT	Retail Manager	
1007	Safaa Greig	Kew	0478732813	safaagrg@gmail.com	HAW02	FT	Retail Manager	
10000	Elaine Hines	Hawthorn	0488192123	elainehines@gmail.com	KEW01	FT	Pharmacist	
10001	Brax Sanford	Richmond	0348013122	braxsd@gmail.com	CBD01	FT	Pharmacist	
10002	Joel Carney	Preston	0239348129	joelcny@gmail.com	HAW01	FT	Pharmacy Assistant	
10003	Fathima Knight	Clayton	0192823921	fathimaknt@gmail.com	CBD02	C	Pharmacy Assistant	
10004	Amara Warren	Box Hill	0123484122	amarawrn@gmail.com	CBD03	C	Store Person	
10005	Hanan Mendoza	Chadstone	0391384219	hananmendoza@gmail.com	RMD01	FT	Pharmacist	
10006	Jarvis Love	Richmond	0231323134	jarvisl@gmail.com	RMD02	PT	Store Person	
10007	Jaxson Daniels	Camberwell	0493274192	jaxsondael@gmail.com	HAW02	FT	Store Person	
20001	Beatrix Drummond	St Kilda	0128123132	beatrizdd@gmail.com	CBD01	C	Store Person	
20002	Melisa Doyle	Bundoora	0182912931	melisadle@gmail.com	HAW01	PT	Store Person	
20003	Keanan Flores	Ringwood	0238192192	keananflrs@gmail.com	CBD02	PT	Pharmacy Assistant	
20004	Jadine Macleod	Reservoir	0484728291	jadinemad@gmail.com	CBD03	FT	Pharmacist	
20005	Stuart Galloway	Camberwell	0283421942	stuartglw@gmail.com	RMD01	C	Store Person	
20006	Bethanie Fernandez	Kew	0238243433	bethaniefernd@gmail.com	RMD02	C	Store Person	
20007	Lyndsey Wagstaff	Camberwell	0483729191	lyndseywadtf@gmail.com	HAW02	FT	Pharmacy Assistant	
103533680	Gia Bao Bui	Kew	0402595747	103533680@student.swin.edu.au	KEW01	FT	Retail Manager	

TRANSACTION3680	
Field Name	Data Type
TID	Number
DateTime	Date/Time
StaffID	Number

Relationships

TRANSACTION3680

	TID	DateTime	StaffID
+	68361930	01/01/2022 9:30:23 AM	1006
+	51996313	01/01/2022 10:55:55 AM	1007
+	43309621	01/01/2022 11:27:53 AM	1002
+	50480362	04/01/2022 2:30:12 PM	1001
+	85691032	05/01/2022 2:21:07 PM	20001
+	90245866	06/01/2022 11:08:53 AM	1002
+	25075500	06/01/2022 11:44:01 AM	20001
+	87744938	06/01/2022 11:45:10 AM	20002
+	98761650	06/01/2022 4:39:39 PM	1007
+	23089101	08/01/2022 3:32:15 PM	1000

TRANSACTIONLINE3680	
Field Name	Data Type
TID	Number
ProductID	Number
Qty	Number



Relationships		TRANSACTIONLINE3680	
TID	ProductID	Qty	
1066725	15	5	
1066725	17	4	
1264599	33	1	
1264599	38	1	
1507920	24	5	
1507920	33	6	
1761263	23	1	
1761263	25	4	
1918819	3	4	
1918819	36	2	

#### Part 5 – Queries, Visualisations, (i.e., Queries or SQL scripts)

**Query 1: Calculate the total price of each transaction line.**

Query design grid:

TotalPriceOfEachTransactionLine					
<div> <div> <div>PRODUCT3680</div> <div> <div>*</div> <div>ProductID</div> <div>ProductName</div> <div>Price</div> <div>CategoryCode</div> <div>SID</div> </div> </div> <div>1</div> <div> <div>TRANSACTIONLINE36...</div> <div> <div>*</div> <div>TID</div> <div>ProductID</div> <div>Qty</div> </div> </div> <div>8</div> </div>					
Field:	TID	ProductID	Qty	Price	TotalPriceByTransactionLine: [Price]*[Qty]
Table:	TRANSACTIONLINE36...	PRODUCT3680	TRANSACTIONLINE36...	PRODUCT3680	
Total:	Group By	Group By	Group By	Group By	Group By
Sort:					
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:					
or:					

Result set:

TotalPriceOfEachTransactionLine					
TID	ProductName	Qty	Price	TotalPriceByTransactionLine	
1066725	Antipodes Remarkably Red Lipstick 4g Online Only	4	\$24.99	\$99.96	
1066725	Maybelline Lash Sensational Lengthening Mascara - Blackest Black	5	\$20.99	\$104.95	
1264599	CeraVe Foaming Cleanser 473ml	1	\$16.69	\$16.69	
1264599	La Roche-Posay Cicaplast Baume B5 40ml	1	\$16.99	\$16.99	
1507920	La Roche-Posay Cicaplast Baume B5 40ml	6	\$16.99	\$101.94	
1507920	Listerine Freshburst Antibacterial Mouthwash Value Pack 1.5L	5	\$12.99	\$64.95	
1761263	Calvin Klein Eternity Intense For Women Eau De Parfum 100ml	4	\$39.99	\$159.96	
1761263	Listerine Total Care Antibacterial Mouthwash Value Pack 1.5L	1	\$14.99	\$14.99	
1918819	Cetaphil Moisturising Cream 550g	2	\$21.49	\$42.98	
1918819	Curash Babycare Fragrance Free Wipes 3 x 80	4	\$9.99	\$39.96	
2000977	A2 Platinum Premium Infant Formula Stage 1 From Birth 900g	2	\$39.99	\$79.98	

Query 2: Calculate the total price of each transaction.

Query design grid:

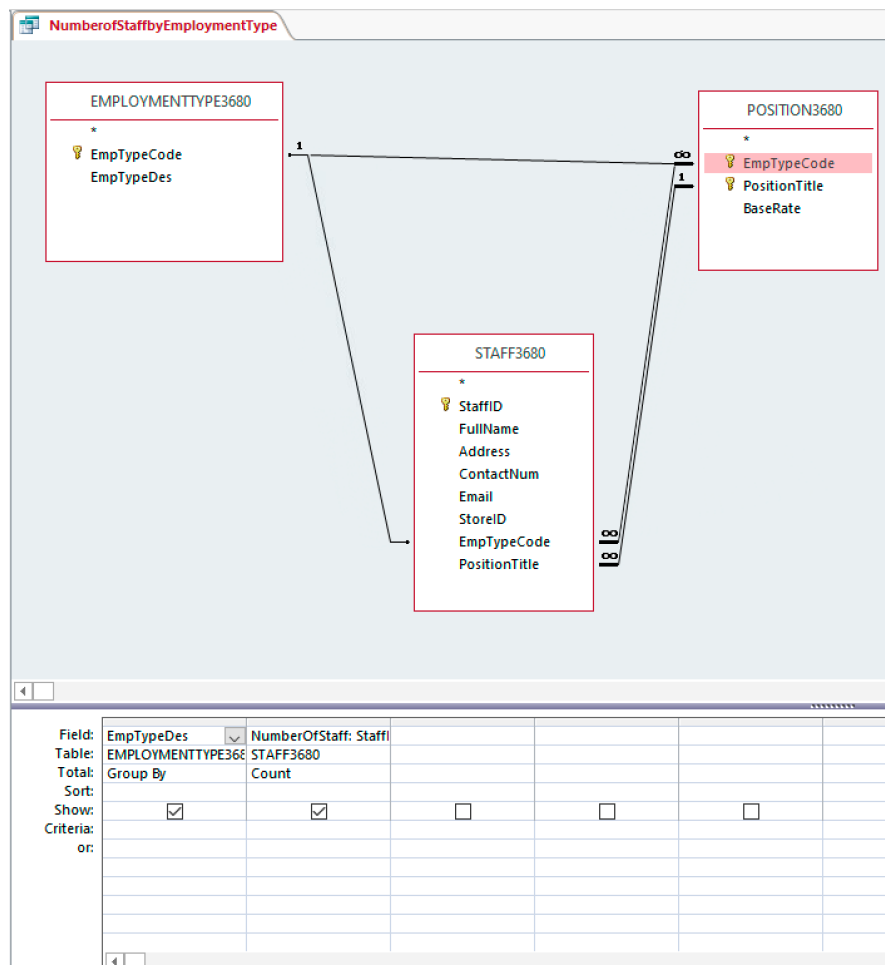
TotalPriceOfEachTransactionLine		TotalOfTransaction	
TRANSACTION3680			
* TID DateTime StaffID			
		TotalPriceOfEachTran...	
		* TID ProductName Qty Price TotalPriceByTransact	
Field:	TID	TotalPriceOfTransaction:	TotalPriceByTransactionLine
Table:	TRANSACTION3680	TotalPriceOfEachTransactionLine	
Total:	Group By	Sum	
Sort:			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Criteria:			
or:			

Result set:

TotalPriceOfEachTransactionLine		TotalOfTransaction	
TID		TotalPriceOfTransaction	
1066725		\$204.91	
1264599		\$33.68	
1507920		\$166.89	
1761263		\$174.95	
1918819		\$82.94	
2000977		\$181.92	
2965310		\$151.95	
2974383		\$244.91	
3449218		\$83.92	
3458695		\$257.92	
3878960		\$79.98	

**Query 3: Calculate the number of staffs by employment type.**

Query design grid:

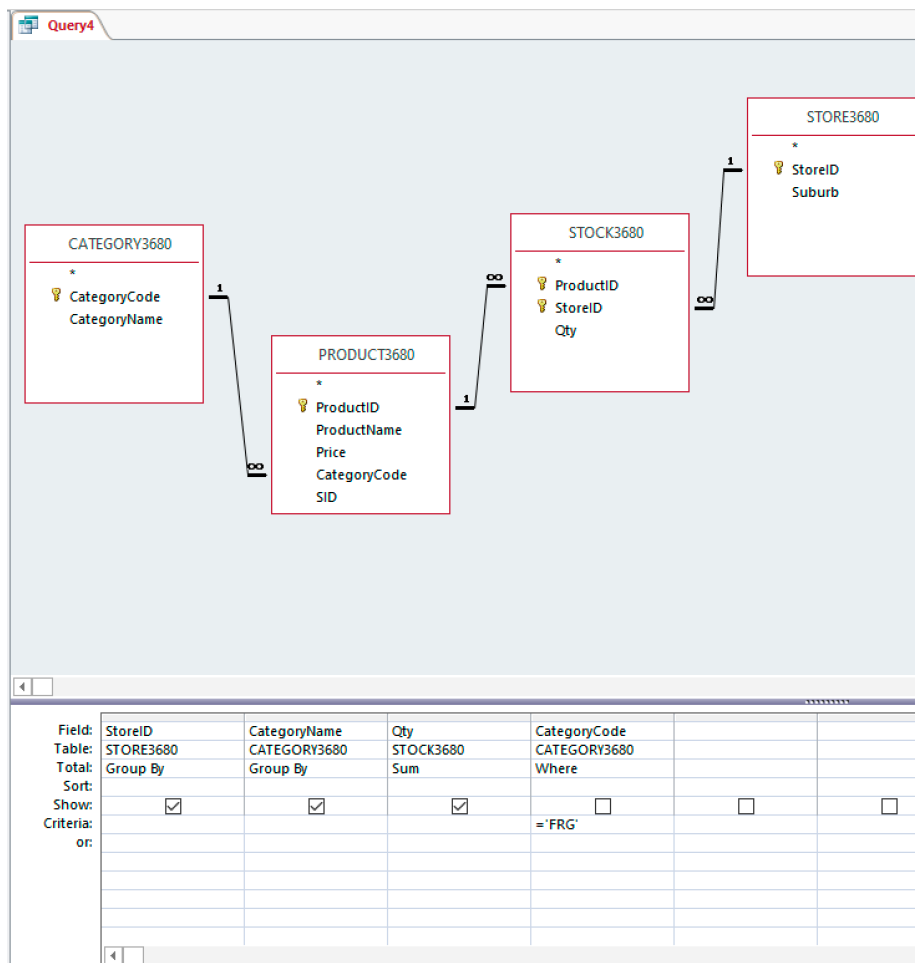


Result set:

NumberOfStaffbyEmploymentType	
EmpTypeDes	NumberOfStaff
Casual	6
Full-time	15
Part-time	3
<b>Total</b>	<b>24</b>

**Query 4: Calculate the number of fragrance stocks by store.**

Query design grid:



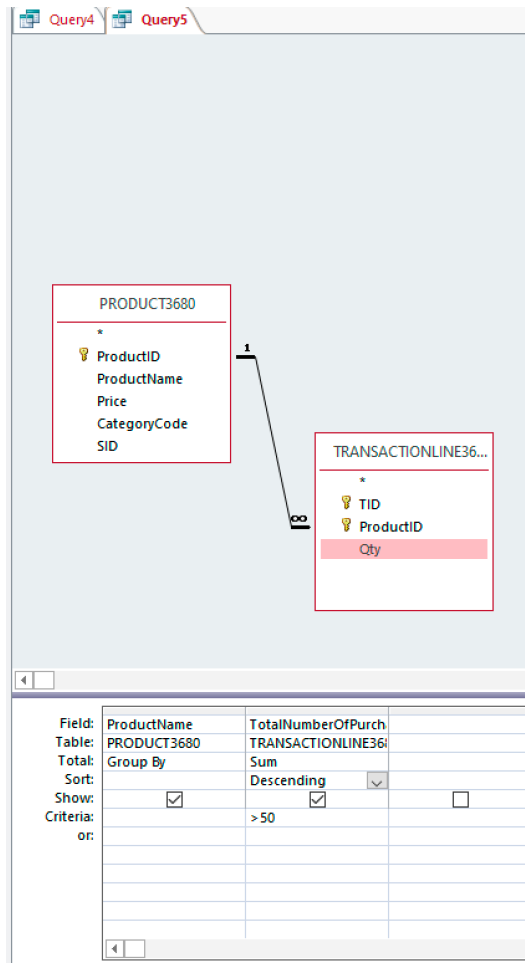
Result set:

Query4

StoreID	CategoryName	SumOfQty
CBD01	Fragrance	111
CBD02	Fragrance	157
CBD03	Fragrance	95
HAW01	Fragrance	139
HAW02	Fragrance	165
KEW01	Fragrance	87
RMD01	Fragrance	132
RMD02	Fragrance	113

**Query 5: Products that have been bought over 50 items across all stores.**

Query design grid:

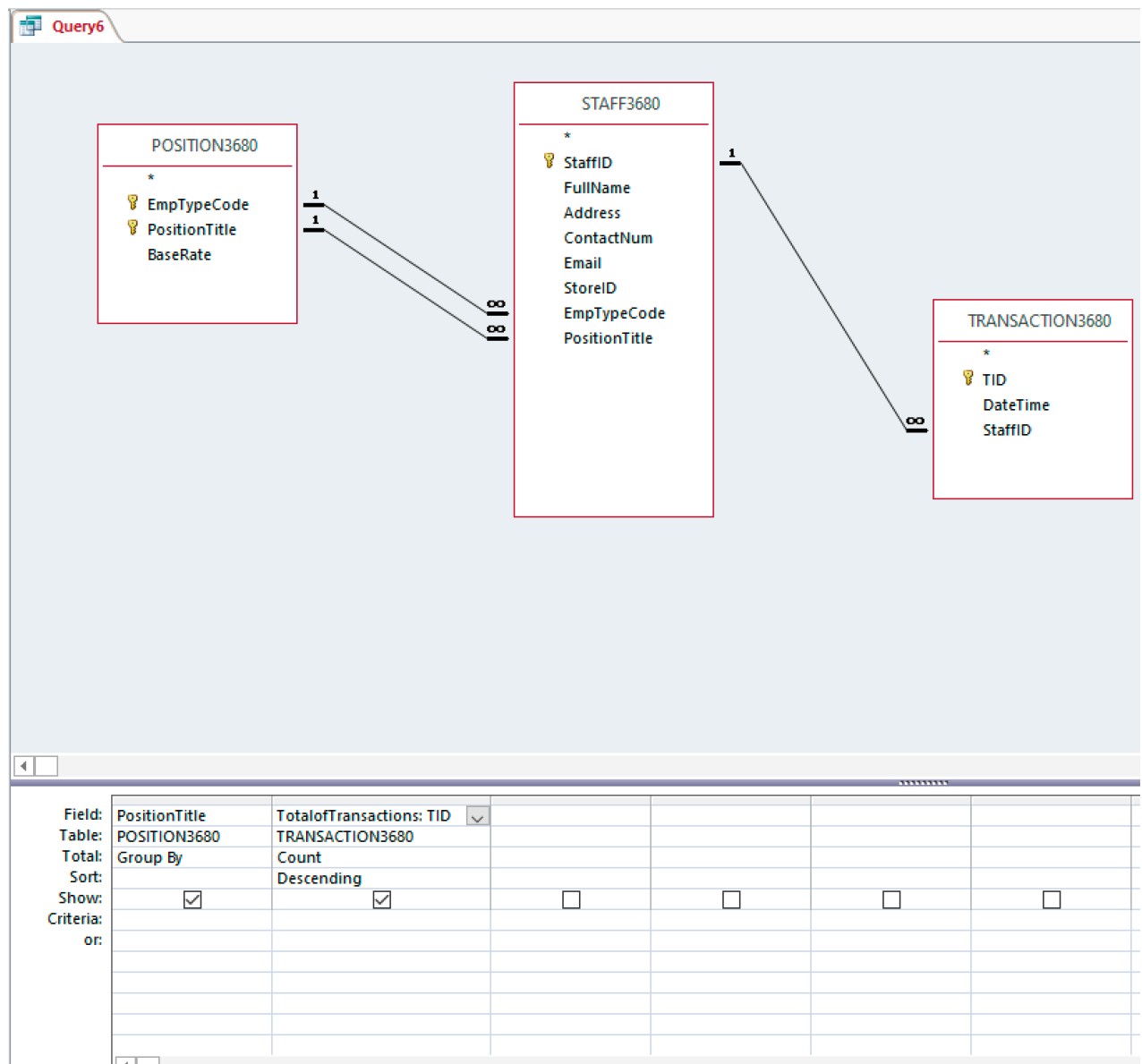


Result set:

ProductName	TotalNumberOfPurchasedItems
Panadol Liquid Capsules 20 Capsules	84
Optislim Life LCD 10 Day Variety Pack 20 x 50g Sachets	66
Panadol Liquid Capsules 80 Capsules	64
Listerine Freshburst Antibacterial Mouthwash Value Pack 1.5L	58
Calvin Klein CK One 200ml Eau de Toilette Spray	55
Curash Babycare Fragrance Free Wipes 3 x 80	53
Swisse Ultiboost Vitamin D 400 Capsules	51
Calvin Klein Eternity Intense For Women Eau De Parfum 100ml	51

**Query 6: The number of transactions made by positions.**

Query design grid:



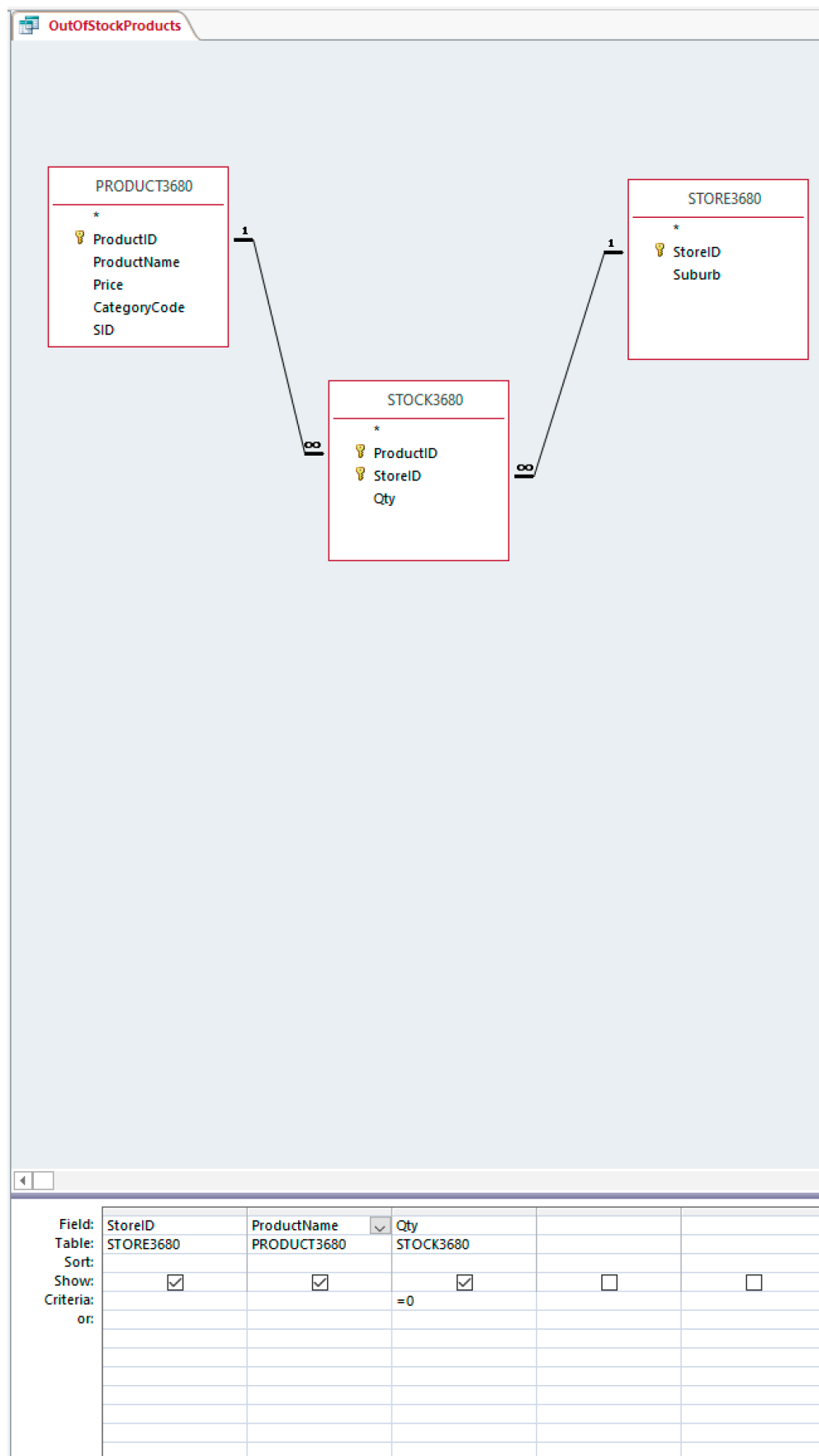
Result set:

Query6

PositionTitle	TotalofTransactions
Retail Manager	131
Store Person	112
Pharmacy Assistant	81
Pharmacist	64

Query 7: Products that is out of stock.

Query design grid:



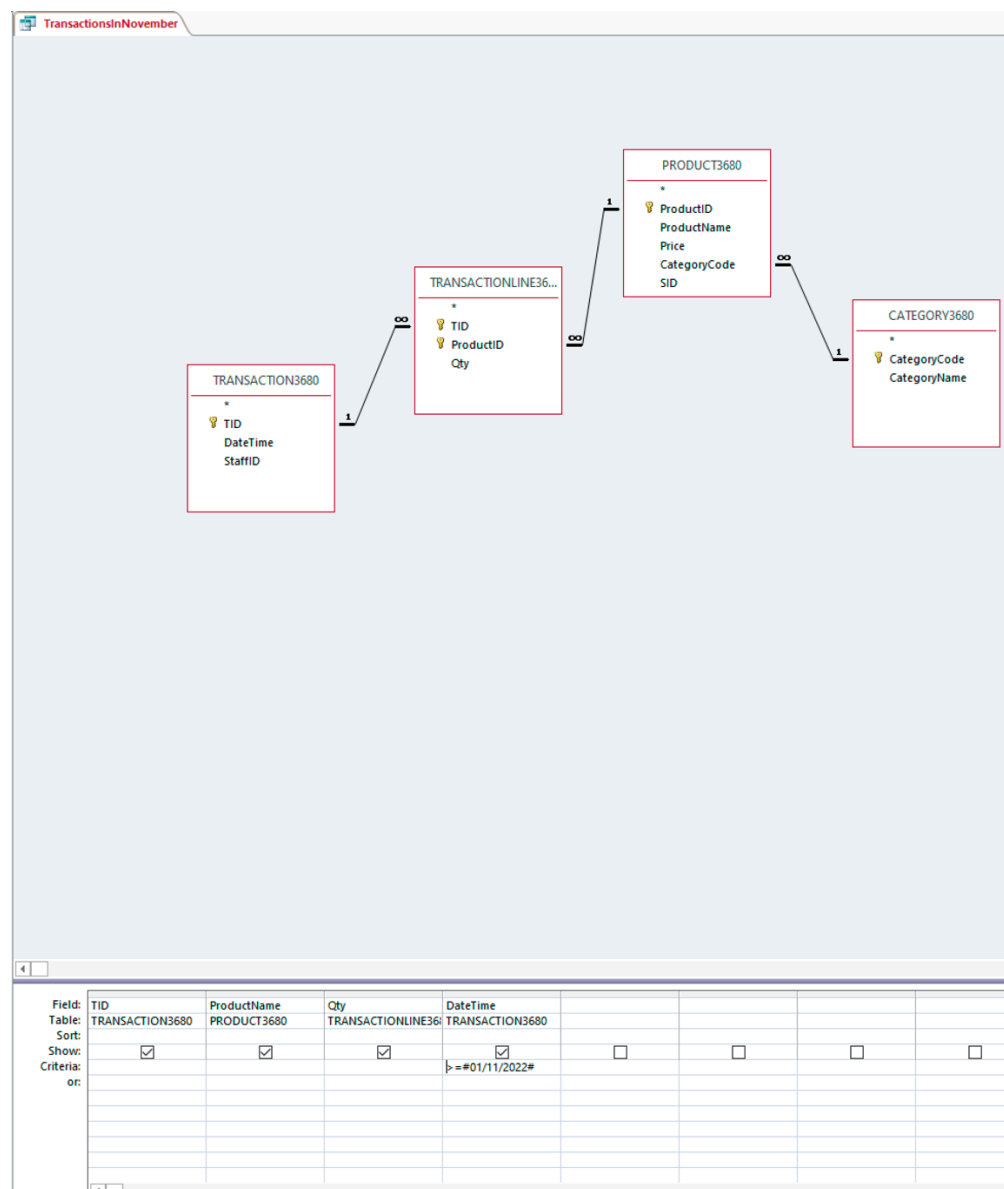


Result set:

OutOfStockProducts		
StoreID	ProductName	Qty
CBD01	Colgate Triple Action Cavity Protection Fluoride Original Mint Toothpaste 110g	0
CBD03	Nurofen Cold and Flu Multi-Symptom Relief Tablets 200mg Ibuprofen 24 pack	0
HAW01	Babylove Sleepy Nights 4-7 Years Overnight Pants 15 Pack	0
HAW02	Curash Babycare Fragrance Free Wipes 6 x 80	0

## Query 8: Transactions made in November

Query design grid:



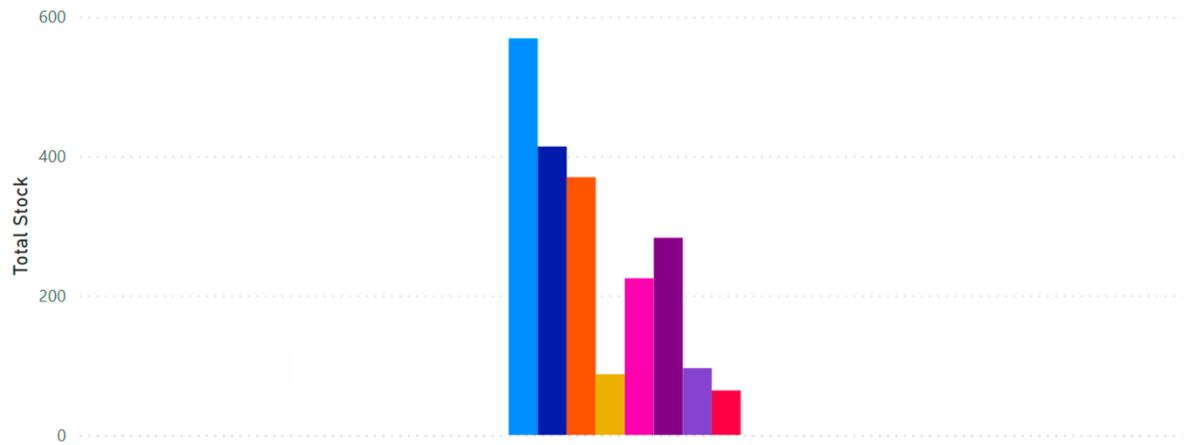
Result set:



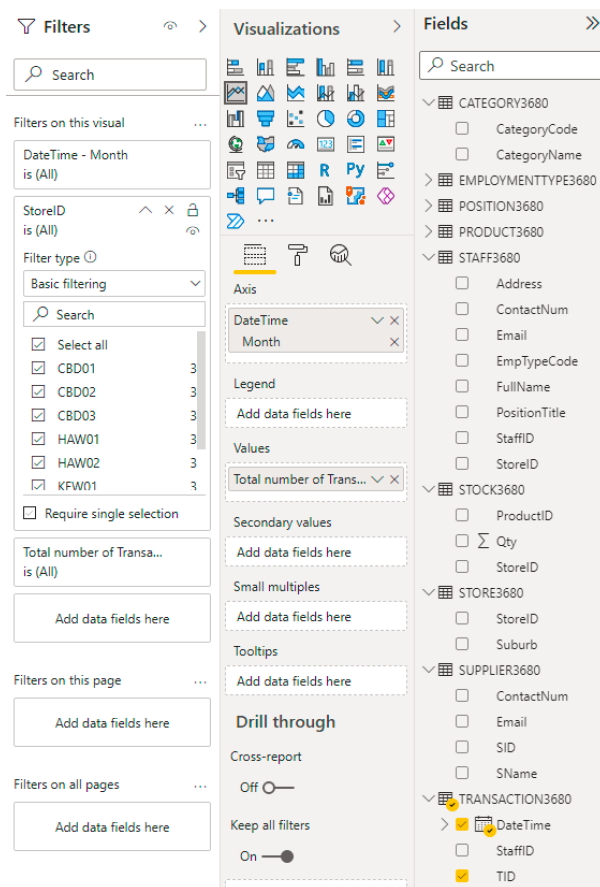
[103533680] The numbers of stocks by Category in Store KEW01

### Total Stock by Category

Category ● Baby Care ● Cosmetics ● Dental Care ● Fragrance ● Medicines ● Skin Care ● Vitamins ● Weight Loss

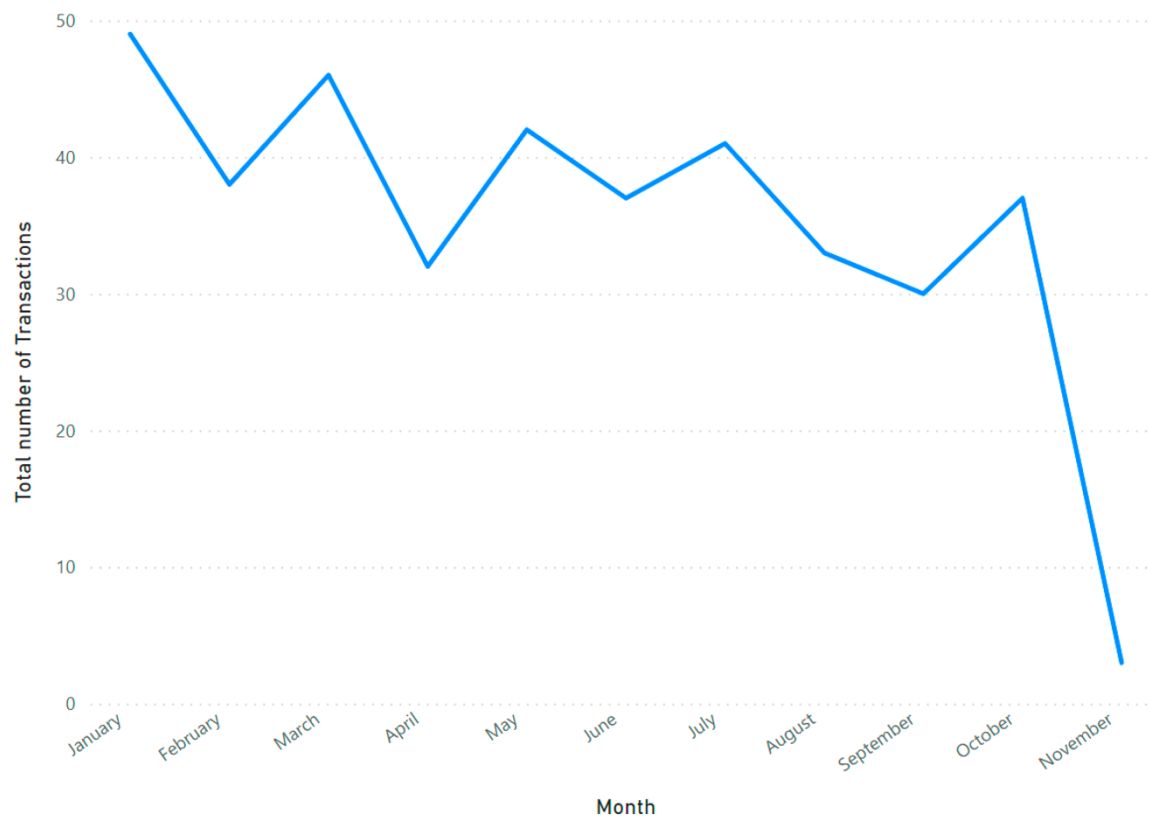


## Visualization 2: Total number of transactions by month across all stores.



[103533680] Total number of transactions made by month in all stores

Total number of Transactions by Month



Visualization 3: Total income of SwinHealth by month up to November

Filters

Search

Filters on this visual

DateTime - Month is (All)

StoreID is (All)

Filter type

Basic filtering

Search

☐ Select all
 

☐ CBD01 3
 ☐ CBD02 3
 ☐ CBD03 3
 ☐ HAW01 3
 ☐ HAW02 3
 ☐ KFW01 3

☐ Require single selection

Total Income is (All)

Add data fields here

Filters on this page

Add data fields here

Filters on all pages

Add data fields here

Visualizations

Axis

DateTime

Month

Legend

Add data fields here

Values

Total Income

Small multiples

Add data fields here

Tooltips

Add data fields here

Drill through

Cross-report

Off

Keep all filters

On

Add drill-through fields here

Fields

Search

CATEGORY3680

EMPLOYMENTTYPE3680

OutOfStockProducts

POSITION3680

PRODUCT3680

STAFF3680

STOCK3680

STORE3680

SUPPLIER3680

TotalOfTransaction
 

☐ TID
 ☒  $\Sigma$  TotalPriceOfTran...

TotalPriceOfEachTransa...

TRANSACTION3680
 

☒ DateTime
 ☐ StaffID
 ☐ TID

TRANSACTIONLINE3680

[103533680] Total Income of Swin Health by month up to 04/11/2022

### Total Income by Month

