

Application of database for trading business

By Tanapol Buangam 6110545511

This project is created for trading businesses that act as a provider, provide required products to business partners who do not need to deal with suppliers personally, and make work more difficult.

The processes of trading company are;

1. After we received the product information from the partners, then we can bring the part number to compare with history. If we used to offer the quotation before, we can re-offer as well.
2. If not, our business will choose the suppliers where they give the lowest price, or the best promotions. After that, we can make the quotation back to those partners.
3. When the partners accept, we will make the purchase order to the suppliers and ship the products.

Trerasit Engineering Control Co.,LTD is one of the trading businesses. We face a lot of problems in collecting purchasing data, purchasing orders, and suppliers. This is the main reason why I am interested in building an application that serves these problems.

Business Requirements

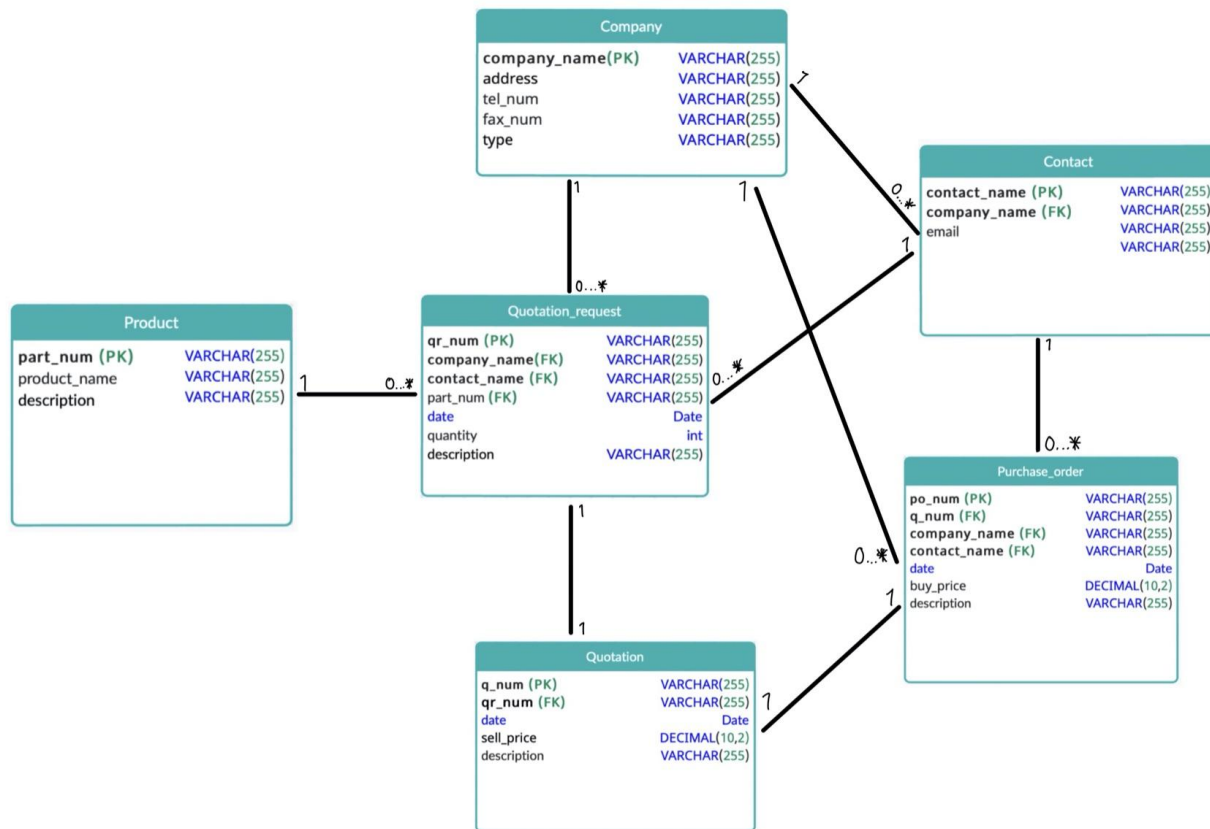
- To improve the business plan in the future from the data for example;
 - Total received profit from each contacts
 - Total number of order from each business partners
 - Total received profit in month and year
- To convenient the business to store the data
 - Can know about suppliers and prices
 - Can find product informations from the part number
 - Can know the purchasing history from the part number
 - Can know further contacts between partners and suppliers

The design process

This project uses SQL-Server to design SQL, the design process consists of the following steps:

- **Determine the purpose of your database**
This helps prepare you for the remaining steps.
- **Find and organize the information required**
Gather all of the types of information you might want to record in the database, such as product name and quotation number.
- **Divide the information into tables**
Divide your information items into major entities or subjects, such as Products or Quotation. Each subject then becomes a table.
- **Turn information items into columns**
Decide what information you want to store in each table. Each item becomes a field, and is displayed as a column in the table. For example, an Products table might include fields such as Part number and Detail.
- **Specify primary keys**
Choose each table's primary key. The primary key is a column that is used to uniquely identify each row. An example might be Part number or Quotation number.
- **Set up the table relationships**
Look at each table and decide how the data in one table is related to the data in other tables. Add fields to tables or create new tables to clarify the relationships, as necessary.
- **Refine your design**
Analyze your design for errors. Create the tables and add a few records of sample data. See if you can get the results you want from your tables. Make adjustments to the design, as needed.
- **Apply the normalization rules**
Apply the data normalization rules to see if your tables are structured correctly. Make adjustments to the tables, as needed.

UML



Company: can have many Contact, Purchase_order and Quotation_request

Column

- company_name is primary key to store the name of company
- address to store the company address
- tel_num to store the telephone number of company
- fax_num to store the fax number of company
- type to store the company type

| | company_name | address | tel_num | fax_num | type |
|---|------------------------------|------------------------------|--------------|-------------|----------|
| 1 | Abex Hydraulics & Enginee... | 100 Moo 4, Soi Wat Sautho... | +6623979200 | +6623979191 | Supplier |
| 2 | ACS Technology (Thailand)... | 660/14 Sukhumvit Road, T... | +66863256242 | +6638119797 | Customer |

Contact: can have many Purchase_order and Quotation_request, but can have only one Company

Column

- contact_name is primary key to store name of this contact
- company_name is foreign key from Company to store company that this contact belong
- email to store the email of this contact

| | company_name ▼ | contact_name ▼ | email ▼ |
|---|------------------------------|----------------|----------------------|
| 1 | ACS Technology (Thailand)... | Amporn | acs_amporn@yahoo.com |
| 2 | Abex Hydraulics & Enginee... | Apinya | info@abexhyd.com |

Product: can have many Quotation_request

Column

- part_num is primary key to store the product part number
- product_name to store name of the product
- description to store the detail of this product

| | part_num ▼ | product_name ▼ | description ▼ |
|---|------------|----------------------|----------------|
| 1 | 67120063 | Industrial fuses 63A | BRAND: SOCOMEC |
| 2 | A4900 | Vibration analyzer | WITH SOFTWARE |

Quotation_request: can have only one Company, Product, Contact and Quotation

Column

- qr_num is primary key to store the quotation request number
- company_name is foreign key from Company to store company that this quotation request from
- contact_name is foreign key from Contact to store that who is the owner of this quotation request
- part_num is foreign key from Product to store the product part number of this quotation request
- date to store the date of this quotation request
- Quantity to store the quantity of this product

| | qr_num ▼ | date ▼ | company_name ▼ | contact_name ▼ | part_num ▼ | quantity ▼ | description ▼ |
|---|----------|------------|------------------------------|----------------|--------------|------------|---------------|
| 1 | QR00001 | 2564-01-02 | Michelin Siam Co., Ltd (N... | Kanya | PN410338823 | 1 | non |
| 2 | QR00002 | 2564-01-02 | Michelin Siam Co., Ltd (P... | Wannaya | PN4510338069 | 1 | non |

Quotation: can have only one Quotation_request and Purchase_order

Column

- q_num is primary key to store the quotation number
- qr_num is foreign key from Quotation_request to store quotation request number that this quotation belong
- date to store the date of this quotation
- sell_price to store the sell price
- description to store the description of this quotation

| | q_num ▼ | date ▼ | qr_num ▼ | sell_price ▼ | description ▼ |
|---|----------|------------|----------|--------------|---------------|
| 1 | 640104-1 | 2564-01-04 | QR00001 | 32635.00 | Included VAT |
| 2 | 640104-4 | 2564-01-04 | QR00002 | 3905.50 | Included VAT |

Purchase_order: can have only one Quotation, Contact and Company

Column

- po_num is primary key to store the purchase order number
- q_num is foreign key from Quotation to store quotation number that this purchase order belong
- company_name is foreign key from Company to store company that we purchase
- contact_name is foreign key from Contact to store that who to contact
- date to store the date of this purchase order
- buy_price to store the buy price
- description to store the description of this purchase order

| | po_num ▼ | date ▼ | q_num ▼ | company_name ▼ | contact_name ▼ | buy_price ▼ | description ▼ |
|---|-----------|------------|----------|------------------------------|----------------|-------------|---------------|
| 1 | P06400001 | 2564-01-04 | 640104-1 | Encoder Products Company | Dawn | 13485.00 | Included VAT |
| 2 | P06400002 | 2564-01-04 | 640104-4 | WAM Bulk Handling Equipme... | Jirawadee | 2354.00 | Included VAT |

Reports that answer business questions

Show total profit in year

```
SELECT DATEPART(YEAR, quotation.Date) AS Closing_Month ,SUM(sell_price-buy_price) as
Profit, sum(sell_price-buy_price)/sum(quotation.sell_price/100) as Profit_margin
FROM quotation,purchase_order
WHERE purchase_order.q_num = quotation.q_num
GROUP BY DATEPART(year ,quotation.Date);
```

| | Closing_Year ▾ | Profit ▾ | Profit_margin ▾ |
|---|----------------|------------|-----------------|
| 1 | 2564 | 1074845.61 | 36.997896 |

Show total profit in month

```
SELECT DATEPART(Month, quotation.Date) AS Closing_Month ,SUM(sell_price-buy_price) as
Profit, sum(sell_price-buy_price)/sum(quotation.sell_price/100) as Profit_margin
FROM quotation,purchase_order
WHERE purchase_order.q_num = quotation.q_num
GROUP BY DATEPART(Month ,quotation.Date);
```

| | Closing_Month ▾ | Profit ▾ | Profit_margin ▾ |
|---|-----------------|-----------|-----------------|
| 1 | 1 | 782278.36 | 41.100200 |
| 2 | 2 | 292567.25 | 29.203898 |

Show number of order and total profit of each contact

```
SELECT Quotation_request.contact_name, count(Quotation_request.qr_num) as count_order,
sum(Quotation.sell_price-purchase_order.buy_price) as Total_profit
FROM Quotation_request, quotation, purchase_order
where Quotation_request.qr_num = quotation.qr_num and purchase_order.q_num =
quotation.q_num
GROUP BY Quotation_request.contact_name
ORDER by Total_profit desc
```

| | contact_name ∨ | count_order ∨ | Total_profit ∨ |
|----|----------------|---------------|----------------|
| 1 | Kuntida | 27 | 588892.15 |
| 2 | Wanna | 1 | 103828.90 |
| 3 | Samai | 1 | 77471.74 |
| 4 | Kattariya | 2 | 69710.50 |
| 5 | Panrattana | 1 | 49392.27 |
| 6 | Surapong | 1 | 32100.00 |
| 7 | Kanya | 2 | 30706.00 |
| 8 | Vekit | 1 | 29493.00 |
| 9 | Wannaya | 2 | 28351.50 |
| 10 | Tana | 2 | 17331.85 |
| 11 | Chatpol | 1 | 15301.00 |
| 12 | Ekkasit | 1 | 14171.51 |
| 13 | Amporn | 1 | 5751.25 |
| 14 | Nara | 1 | 3704.45 |
| 15 | Supphasit | 1 | 2889.00 |
| 16 | K.Pink | 1 | 2268.50 |
| 17 | Supaporn | 1 | 2001.00 |
| 18 | Sanya | 1 | 1655.00 |
| 19 | Rachata | 1 | 614.48 |
| 20 | Sitthichai | 3 | -788.49 |

Show number of order, total income and total profit from each company

```
SELECT Company.company_name, count(quotation.qr_num) as Count_QR,
sum(quotation.sell_price) as Total_income,
sum(quotation.sell_price-purchase_order.buy_price) as Total_profit
FROM quotation,Quotation_request ,Company, purchase_order
WHERE quotation.qr_num = Quotation_request.qr_num and Quotation_request.company_name =
Company.company_name and purchase_order.q_num = quotation.q_num
GROUP BY Company.company_name
ORDER by Count_QR desc
```

| | company_name | Count_QR | Total_income | Total_profit |
|----|------------------------------|----------|--------------|--------------|
| 1 | Michelin Siam Co., Ltd (H... | 27 | 1444949.95 | 588892.15 |
| 2 | Michelin Siam Co., Ltd (N... | 11 | 366089.80 | 97176.87 |
| 3 | Michelin Siam Co., Ltd (L... | 4 | 312397.20 | 150886.69 |
| 4 | Michelin Siam Co., Ltd (P... | 3 | 43495.50 | 31240.50 |
| 5 | Michelin Thailand (Bangko... | 1 | 34775.00 | 15301.00 |
| 6 | N.H.K. Supply LTD.Part. | 1 | 83888.00 | 2268.50 |
| 7 | Retro Power Co.,Ltd | 1 | 2996.00 | 614.48 |
| 8 | SIME DARBY OILS MORAKOT P... | 1 | 29960.00 | 29493.00 |
| 9 | V2S Engineering Co Ltd | 1 | 154080.00 | 103828.90 |
| 10 | ACS Technology (Thailand)... | 1 | 7704.00 | 5751.25 |
| 11 | Aditya Birla Chemicals (T... | 1 | 424817.82 | 49392.27 |

Find the purchasing history from the part number

```
SELECT Purchase_order.company_name as supplier_company, Company.tel_num,
Company.fax_num, Purchase_order.contact_name, Purchase_order.buy_price as
old_buy_price, Quotation.sell_price as old_sell_price ,Purchase_order.date

FROM Purchase_order, Company ,Quotation_request ,Quotation

WHERE Quotation.qr_num = Quotation_request.qr_num and

Quotation.q_num = Purchase_order.q_num and

Purchase_order.company_name = Company.company_name and

Quotation_request.part_num = 'PN410338823'
```

| | supplier_company | tel_num | fax_num | contact_name | old_buy_price | old_sell_price | date |
|---|--------------------------|--------------|--------------|--------------|---------------|----------------|------------|
| 1 | Encoder Products Company | +12082638541 | +12082630541 | Dawn | 13485.00 | 32635.00 | 2564-01-04 |

Find supplier detail and old price by quotation number

```
SELECT Purchase_order.company_name, Company.tel_num, Company.fax_num,
Purchase_order.contact_name, Purchase_order.buy_price

FROM Purchase_order, Company

WHERE Purchase_order.company_name = Company.company_name and

Purchase_order.q_num = '640104-5'
```

| | company_name | tel_num | fax_num | contact_name | buy_price |
|---|------------------|--------------|-------------|--------------|-----------|
| 1 | Tang Kieng Nguan | +66222327424 | +6622253906 | Po | 1350.00 |