SSC PUBLIC INFORMATION

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ABSTRACT

"The stock market is filled with individuals who know the price of everything, but the value of nothing." *Phillip Fisher*

Overview

The stock market is the place where the issuance, exchange and sale of medium and long-term securities take place. Securities issued to raise capital for businesses and governments. Thanks to the stock market, idle capital people and people with development capital needs can easily meet and cooperate directly without having to go through an intermediary being a bank. The stock market plays the role of a system of canals leading capital in the economy. Vietnam's stock market has been growing stronger in size, constantly improving the structure and increasingly receiving the attention of domestic and foreign investors. We have a tinged government with a strong determination to reform institutions and officially consider the private economy, private economic development as an important pillar for socio-economic development. From the above factors, Vietnam's stock market is considered to have extremely strong development potential, especially in the coming years when the Vietnamese stock market is upgraded from the near-border market to the emerging market. Therefore, stock investment is one of the investment channels that are more interested than any other investment channel.

In stock investment, information sources play a very important role and influence investors' decisions. In an era where there is so much information that is easy to find, but what you want to find is very lacking. Therefore, it is extremely necessary to collect information from reliable sources to help investors get a good development direction. Understanding the importance of information management in stock investment, the team chooses the topic*" SSC Public Information Management - Quản lý thông tin công cố công khai trên thị trường chứng khoán*"

1. The general business

The general business of this article is to research and archive publicly disclosed information on the stock market. So, what is the stock information? From an economic perspective, information on the stock market is all information that reflects the financial position of an enterprise in certain stages of development. The financial situation has been reflected through financial reports, the financial records, the financial records, the results of the business transaction results...and so, when looking at these documents, we can see the profitability of the business now and in the future.

From a social perspective, information on the stock market is an integral part of the stock market. Through the information channel, investors get an overall view of the stock market as well as information for listed companies. In order to be listed on the securities floor, public business information has to ensure transparency, accurately, accurately. These information is out of the archives and make sure transparency contributes very important to the decision of the investors. With the goal of being able to synthesize information and provide investment signals through the influence of this information on the stock price in the fastest way, this study will apply the Database to synthesize data automatically , is the platform that helps securities companies as well as investors get investment signals in the fastest way.

2. The detailed business

The information system of the stock market is very diverse, rich and announced by many different entities. However, the study focuses more generally on 5 main business tasks that any company must have in the market: information about financial statements,

delisting information, listing information, dividend information and information about transactions.

The first is to store information about financial statements. Financial statements plays an extremely important role for all businesses. This report is accurate metrics that reflect all business activities of the entire business over a certain period of time. This is also a database to assess the business situation and aim for future investment. According to the Decision No. 15/2006/QD-BTC of March 20, 2006 and Circular No. 244/2009/TT-BTC of December 31, 2009 of the Ministry of Finance, the financial statements of enterprises must include: balance sheet, income statement, statement of cash flows and notes to financial statements. These reports may be audited or have not been audited, be it a combined report or individual report, which may be quarterly or yearly. To reduce the complexity and difficulties in the data collection process and fit the scope of the topic, the study focuses on 2 main types of reports: business results reports and balance tables – reports published quarterly and un audited.

Delisting is a business that is excluded from the stock exchange and is no longer listed or traded. When an enterprise exists on an exchange with consecutive loss-making business results, it will be put on a warning of trading restrictions, especially if the enterprise loses for 3 years, it will be mandatory to delist from the stock exchange. Delisting information has a huge impact on stock prices as well as investor psychology, so it needs to be stored for scrutiny.

Listing of securities means putting qualified public enterprises and companies into trading at the Stock Exchange or the Securities Trading Center. The listed company is a public company whose stock is allowed to sell on the stock market. This is considered the

highest form of development of a company. Because after becoming a listed company, it will be subject to strict management from state agencies. If the enterprise wants to list on the stock exchange, it must first be a public company and meet all conditions for listing depending on the stock exchange. Currently, investors are very interested in choosing reputable enterprises to invest in securities.

Dividends are part of the after-tax profit that a joint-stock company divides to shareholders. Dividends can be paid in cash or in shares. Dividend information is very important to stock investors, is one of the factors that reflect the performance of the business, helps investors to price stocks so that they can shape their strategy. own investment strategy.

Finally, the information about the transaction. Storing transaction information is a complicated business because transaction information has many types: transactions involving insiders, trading treasury stocks, transactions of insiders...Information about trading is also an information that greatly affects the market price of the listed business on the exchange.

3. Table design

To serve five business tasks , the system is devided into four clusters of panels with 15 detail tables, approximately 20000 available data.

Four clusters with 4 main functions include the company – exchange cluster, the second is the People table cluster, the third is the dashboard cluster and finally the Index cluster.

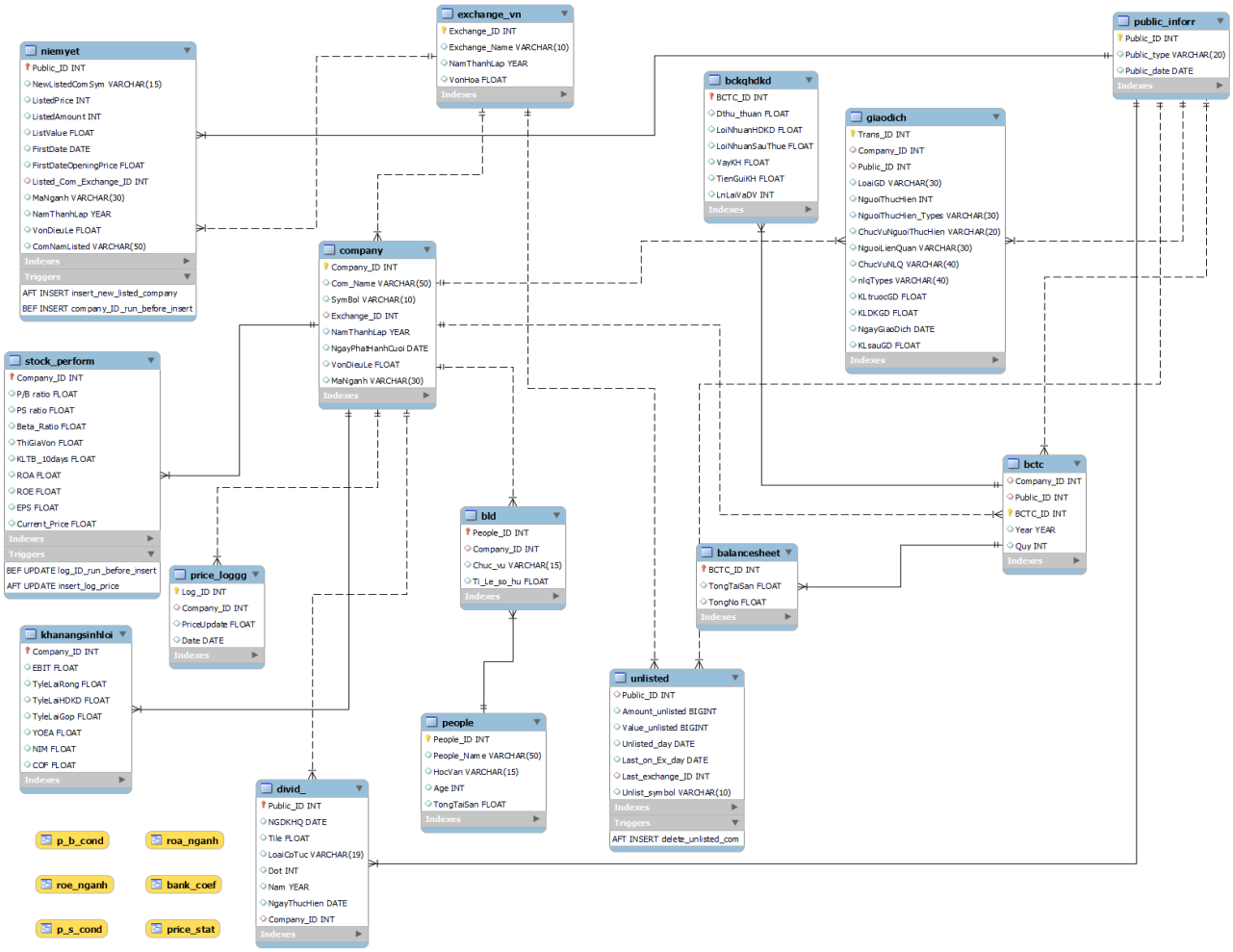

Figure 1. Information boards

a. Company-Exchange table cluster

Going into the first table cluster is the Company - Index table cluster with two detailed tables: the company table and the exchange_vn . table. Companies that want to trade need to go through the stock exchange. A company can only trade on one exchange and each exchange has many different companies ty. Therefore, the exchange_vn and the company table are linked together by a 1-N relationship.

In the company table, there are information fields with the following data types: PK is Company_ID INT; the FKs include: Com_Name VARCHAR, Symbol VARCHAR, Exchange_ID INT, NamThanhLap YEAR, NganhPhatHanhcuoi DATE, VoDieuLe Float and MaNganh VARCHAR.

In the exchange-vn table, there are information fields with the following data types: PK is Exchange_ID INT; The FK includes Exchange_Name VARCHAR, NamThanhLap DATE, VonHoa FLOAT.

b. People table cluster

With the second cluster of People tables, there are 2 detailed tables: People table and bld table (leaders board). Here, a person takes only one position at a company, however he or she can also assume a certain position at one or more other companies. Therefore these two tables are associated with a 1-N relationship.

In the people table, there are information fields with the following data types: PK is People_ID INT; The FK includes People_Name VARCHAR, HocVan VARCHAR, Age INT, TongTaiSan FLOAT.

In the bld table there are stored information fields with the following data types: PK is People_ID INT; The FK includes Company_ID INT, Chuc_vu VARCHAR, Ti_le_so_huu FLOAT.

c. Public Information table cluster

In the third cluster, the public information cluster will have 8 detailed tables: table public_inforr, table divid_, niemyet table, unlisted table, bckqhdkd table, bctc table, balancesheet table and transaction table. There is a lot of information published in the market such as delisting, listing, transaction information, announcement information, financial statements...The public_infor table will link to these tables with relevant information. system 1 - N.

In the public_inforr there are stored information fields with the following data types: PK is Public_ID INT; the FK includes Public_type VARCHAR, Public_date DATE.

In the niemyet table there are stored information fields with the following data types: PK is Public_ID INT; The FK includes NewListedCom Sym VARCHAR, ListedPrice INT, ListedAmount INT, ListedValue FLOAT, FirstDate DATE, FirstDateOpeningPrice FLOAT, Listed_Com_Exchange_ID INT, MaNganh VARCHAR, NamThanhLap YEAR, VonDieuLe FLOAT, ComNamListed VARCHAR.

In the unlisted table there are saved information fields with the following data types: PK is Public_ID INT; The FK includes Amount_unlisted BIGINT, Value_unlisted BIGINT, Unlisted_day DATE, Last_on_Ex_day DATE, Last_exchange_ID INT, Unlist_symbol VARCHAR.

In the divid_ table, there are information fields with the following data types: PK is Public_ID INT; FKs include NGDKHQ DATE, Title FLOAT, LoaiCoTuc VARCHAR, Dot INT, Nam YEAR, RightThucHien DATE, Company_ID INT.

In the transaction table, there are information fields with the following data types: PK is Trans_ID INT; The FK are Company_ID INT, Public_ID INT, LoaiGD VARCHAR, NguoiThucHien INT, NguoiThucHien_Types VARCHAR, ChucVuNguoiThucHien VARCHAR,NguoiLienQuan VARCHAR, ChucVuNLQ VARCHAR, nlqTypes VARCHAR, KL TRUOC GD FLOAT, KL DKGD FLOAT, ImmediatelyGiaoDich DATE, KH after GD FLOAT.

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d. Index table cluster

In the last cluster, the Index cluster has up to 4 detailed tables which are table stock_perform, the second table is khanangsinhloi table and the last table is table price_loggg (save price history when the price is updated). Tables are associated with the company table by 1-N relation

In the stock_perform there are stored information fields with the following data types: PK is Company_ID INT; The FK includes P/B ratio FLOAT, PS ratio FLOAT, Beta_Ratio FLOAT, ThiGiaVon FLOAT, KLTB_10days FLOAT, ROA FLOAT, ROE FLOAT, EPS FLOAT, Current_Price FLOAT.

In the price_loggg table, there are information fields with the following data types: PK is Log_ID INT; the FKs include Company_ID INT, PriceUpdate FLOAT, Date DATE.

4. Query

a. *Query* average age of each position

Meaning: find the average age in each position. For example chief BKS has an average age of 49 years.

```
SELECT Chuc_vu, avg(Age) as Avg_age
FROM people
JOIN bld b ON people.People_ID = b.People_ID
GROUP BY Chuc_vu;
```

b. *Query* people with more than 1000 billion VND

Meaning: know the people with over 1000 billion as well as the position, name, company name, total assets related to that person.

```
SELECT People_Name,Chuc_vu, Com_Name, TONgTaiSan
FROM people
JOIN bld b ON people.People_ID = b.People_ID
JOIN company c ON b.Company_ID = c.Company_ID
```

```
WHERE TONgTaiSan >= 1000
ORDER BY TONgTaiSan DESC;
```

c. *Query Statistics on the number of positions of people over 1000 billion VND above.*

Meaning: know the number of positions of people holding total assets of over 1000 billion VND.

```
SELECT Chuc_vu,COUNT(*) AS NUMBER
FROM people
JOIN bld b ON people.People_ID = b.People_ID
JOIN company c ON b.Company_ID = c.Company_ID
WHERE TONgTaiSan >= 1000
GROUP BY Chuc_vu;
```

d. Query position

Meaning: find out how educated the number of people with the position of general manager or president is.

```
-- lam chu tich
SELECT Chuc_vu, HocVan, COUNT(HocVan) AS hocvan
FROM people
JOIN bld b ON people.People_ID = b.People_ID
WHERE Chuc_vu LIKE '%HDQT'
GROUP BY HocVan
ORDER BY hocvan DESC;

-- lam tong giam doc
SELECT Chuc_vu, HocVan, COUNT(HocVan) AS hocvan
FROM people
JOIN bld b ON people.People_ID = b.People_ID
WHERE Chuc_vu LIKE 'Tổng giám đốc'
GROUP BY HocVan
ORDER BY hocvan DESC;

-- thong ke so luong hoc van
SELECT HocVan, count(HocVan)
FROM people
GROUP BY HocVan;
```

e. *Query* amount of education and total assets.

Meaning: to know at each level of education, the total assets is how much.

```
SELECT HocVan, avg(TONgTaiSan) as tONgtaisan
FROM people
GROUP BY HocVan
ORDER BY tONgtaisan DESC;
```

f. *Query* count the number of industries in the data along with the index *ROA, ROE, EPS*

Meaning: knowing the industry with the highest profit, the industry with the lowest profit.

```
-- thong ke cac ma nganh
SELECT MaNganh, count(MaNganh) as soluONg
FROM company
GROUP BY MaNganh
ORDER BY soluONg DESC;

-- nganh nao co roa cao
SELECT MaNganh, avg(EPS) as avg_eps, avg(ROA) as avg_roa, avg(ROE) as avg_roe
FROM company
JOIN stock_perform sp ON company.Company_ID = sp.Company_ID
GROUP BY MaNganh
ORDER BY avg_roa DESC;

-- cong ty nao thuoc ma hoa chat co avg_roa can ca nganh
SELECT Com_Name, MaNganh, ROA
FROM company
JOIN stock_perform sp ON company.Company_ID = sp.Company_ID
WHERE MaNganh like 'HoaChat';
```

g. *Query* company structure

Meaning: track the name of the company with the best performance index, the person belonging to that company as well as his position, ownership percentage.

```
SELECT People_Name,Chuc_vu, HocVan, Ti_Le_so_hu
FROM people
JOIN bld b ON people.People_ID = b.People_ID
JOIN company c ON b.Company_ID = c.Company_ID
WHERE Com_Name like 'CTCP Cao su Phước Hòa'
ORDER BY Ti_Le_so_hu DESC ;
```

h. *Query company name, management's ownership percentage, index ROA, ROE of the company*

Meaning: find the connection between the ownership rate of the management and the good or bad performance of the company.

```
SELECT People_Name, Com_Name, Ti_Le_so_hu, ROA, ROE
FROM people
JOIN bld b ON people.People_ID = b.People_ID
JOIN company c ON c.Company_ID = b.Company_ID
```

```
JOIN stock_perform sp ON c.Company_ID = sp.Company_ID
ORDER BY Ti_Le_so_hu DESC;
```

i. *Query education, number of educations, total ownership rate, average ownership rate of each education.*

Meaning: know how each education has the ownership rate, know which education has the highest and lowest ownership rate.

```
SELECT HocVan, COUNT(HocVan) as hocvan, SUM(Ti_Le_so_hu) as TiLeSoHuu,
AVG(Ti_Le_so_hu) as TrungBinh
FROM people
JOIN bld b ON people.People_ID = b.People_ID
JOIN company c ON c.Company_ID = b.Company_ID
JOIN stock_perform sp ON c.Company_ID = sp.Company_ID
GROUP BY hocvan
ORDER BY TrungBinh DESC ;
```

j. *Query person with average education, job title, company name, ownership percentage.*

Meaning: find information regarding people with academic position and their ownership rate.

```
SELECT People_Name,HocVan, Chuc_vu, Com_Name, Ti_Le_so_hu
FROM people
JOIN bld b ON people.People_ID = b.People_ID
JOIN company c ON c.Company_ID = b.Company_ID
WHERE HocVan like 'Trung cấp';
```

5. View

View is created according to P/S, P/B, ROA by industry, ROE by industry, banking index and price research.

a. View by P/S (considering the company has P/S >= 3.00)

```
CREATE OR REPLACE VIEW P_S_CONd AS
SELECT sp.Company_ID, c.Com_Name, c.SymBol, sp.`PS ratio`
FROM company c JOIN stock_perform sp ON c.Company_ID = sp.Company_ID
```

```
WHERE `PS ratio` >= 3.00
ORDER BY `PS ratio` DESC;
```

The meaning of the high P/S index: stocks are priced high, the company's prospects in the future are very good, businesses can have high gross profit margins, high competitive advantages.

b. View by P/B (consider companies with P/S >= 3.00)

```
CREATE OR REPLACE VIEW P_B_cONd AS
SELECT sp.Company_ID, c.Com_Name, c.SymBol, sp.`P/B ratio`
FROM company c JOIN stock_perform sp ON c.Company_ID = sp.Company_ID
WHERE `P/B ratio` >= 3.00
ORDER BY `P/B ratio` DESC;
```

Meaning: A business has a high P/B ratio. This indicates that the market is expecting very good business prospects in the future. Therefore, investors are willing to pay more for the book value of the business.

c. View by ROA, ROE (by industry)

```
-- View ROA Theo Ngành
CREATE OR REPLACE VIEW ROA_Nganh AS
SELECT c.MaNganh, AVG(ROA) as ROA_av
FROM company c JOIN stock_perform sp ON c.Company_ID = sp.Company_ID
GROUP BY c.MaNganh;

-- View ROE Theo ngành
CREATE OR REPLACE VIEW ROE_Nganh AS
SELECT c.MaNganh, AVG(ROE) as ROE_av
FROM company c JOIN stock_perform sp ON c.Company_ID = sp.Company_ID
GROUP BY c.MaNganh
ORDER BY ROE_av;
```

Meaning: According to international standards: ROE > 15%, is assessed as a company with sufficient financial capacity. Then ROA > 7.5%. However, this is not true for financial-related fields such as insurance, banking, securities...For the banking industry, ROA > 2%, is quite good because the bank's leverage is quite high. It is not really fair when we compare this index of 2 companies in 2 different industries, so we should calculate the average ROA, ROE by industry for convenience in comparison.

e. Bank index

```
CREATE OR REPLACE VIEW Bank_Coef AS
SELECT Com_Name, VayKH, TienGuiKH, LnLaiVaDV, YOEA, NIM, COF
FROM company
JOIN bctc b ON company.Company_ID = b.Company_ID
JOIN khanangsinhloi k ON company.Company_ID = k.Company_ID
JOIN bckqhdkd b2 ON b.BCTC_ID = b2.BCTC_ID
WHERE MaNganh = 'BANK';
```

COF : the amount that banks or financial institutions have to pay to get capital. The lower the index, the more the bank is positioned in raising capital. YOEA: The return on assets earned is a financial ability-to-payer that compares the income from a unit's interest to its earned asset.

It's a measure of income that the assets are given to the company.

NIM: the difference between interest income and interest expenses payable by banks, which shows how much banks are actually enjoying the interest rate difference between mobilization and credit investment activities. Since credit is the core activity of the bank, NIM is almost an important measure and very often used in this industry.

f. Price statistics

```
CREATE OR REPLACE VIEW price_stat AS
SELECT SymBol, AVG(PriceUpDATE) AS avgPrice, VAR_SAMP(PriceUpDATE) AS
variance,
       COUNT(PriceUpDATE) AS NumdayExchange, MIN(PriceUpDATE) AS minPrice,
       MAX(priceUpDATE) AS maxPrice, (VAR_SAMP(PriceUpDATE) /
AVG(PriceUpDATE)) AS CoefOfVar
FROM company
JOIN price_loggg pl ON company.Company_ID = pl.Company_ID
GROUP BY SymBol;
```

6. Trigger

Trigger has 3 main business tasks is:

Update the listings and update them in the company table. This means that when a company starts to be listed, on the floor, then updates that company to the company table.

Record price history every time prices change

To perform the above 3 tasks, the team creates 5 triggers:

a. Trigger get last company id

```
CREATE TRIGGER company_ID_run_before_insert
    BEFORE INSERT
    ON niemyet
    FOR EACH ROW
    BEGIN
        SET @lastID = (SELECT Company_ID FROM company
       ORDER BY Company_ID DESC LIMIT 1);
        IF @lastID IS NULL OR @lastID = '' THEN
            SET @lastID = 0;
        END IF;
        SET @lastID = @lastID +1;
    END//
```

b. Trigger insert company for company table after insert listing

```
DELIMITER //

CREATE TRIGGER insert_new_listed_company

    AFTER INSERT

    ON niemyet FOR EACH ROW

    BEGIN

        INSERT INTO company(Company_ID,Symbol, Exchange_ID, NgayPhatHanhCuoi,
MaNganh, VonDieuLe, NamThanhLap, Com_Name)

        VALUES (@lastID ,NEW.NewListedComSym, NEW.Listed_Com_Exchange_ID,
NEW.FirstDate, NEW.MaNganh, NEW.VonDieuLe, NEW.NamThanhLap,
NEW.ComNamListed);

    END //
```

c. Trigger delete in company table

```
DELIMITER //
CREATE TRIGGER delete_unlisted_comp
    AFTER INSERT
    ON unlisted FOR EACH ROW
    BEGIN
        IF EXISTS (SELECT * FROM company WHERE SymBol = NEW.Unlist_symbol AND
Exchange_ID = NEW.Last_exchange_ID) THEN
            DELETE FROM company WHERE SymBol = new.Unlist_symbol;
        END IF;
    END //
```

d. Trigger retrieves last logg id

```
DELIMITER //
CREATE TRIGGER log_ID_run_before_insert
    BEFORE UPDATE
    ON stock_perform
    FOR EACH ROW
    BEGIN
        SET @lastID2 = (SELECT Log_ID FROM price_loggg
       ORDER BY Company_ID DESC LIMIT 1);
        IF @lastID2 IS NULL OR @lastID = '' THEN
            SET @lastID2 = 0;
        END IF;
        SET @lastID2 = @lastID2 +1;
    END//
```

e. Trigger insert into price logg

```
DELIMITER //
CREATE TRIGGER insert_log_price
    AFTER UPDATE
    ON stock_perform
    FOR EACH ROW
    BEGIN
        IF (NEW.Current_Price != OLD.Current_Price) THEN
            INSERT INTO price_loggg(PriceUpdate, Date, Log_ID, Company_ID)
            VALUE(NEW.Current_Price, CURDATE(), @lastID2, OLD.Company_ID);
        END IF;
    END//
```

7. Procedure

In this section, the process is what is believed to be necessary to find a stock code that should be invested.

a. *Procedure Dividend*: statistics of companies paying dividends in cash and shares, from which it is easy to compare with each other.

```
DELIMITER //
CREATE PROCEDURE divStat(IN div_types VARCHAR(15))
BEGIN
    SELECT SymBol, AVG(PriceUpdate) AS avgPrice, VAR_SAMP(PriceUpdate) AS
```

```
variance,
            COUNT(PriceUpdate) AS NumdayExchange, MIN(PriceUpdate) AS
minPrice,
            MAX(priceUpdate) AS maxPrice, (VAR_SAMP(PriceUpdate) /
AVG(PriceUpdate)) AS CoefOfVar
    FROM company
    JOIN price_loggg pl ON company.Company_ID = pl.Company_ID
    JOIN divid_ d ON company.Company_ID = d.Company_ID
    WHERE LoaiCoTuc = div_types
    GROUP BY SymBol;
end //
```

b. *Procedure Company*: query out the specific indicators of each company. Once you have the list, continue to delve into the company's specific index. Users just need to enter the company code and the program will give all the company indicators that the user needs.

```
DELIMITER //

CREATE PROCEDURE spec_com(IN Ticker VARCHAR(14))

BEGIN

    SELECT Com_Name, `PS ratio`, `P/B ratio`, ROA, ROE, EPS, Current_Price

    FROM company

    JOIN stock_perform sp ON company.Company_ID = sp.Company_ID

    WHERE SymBol = Ticker;

END; //
```

c. *Procedure Index*: This is to make statistics about stock codes that fit your own pocket. Users just need to enter the amount and the program will give a list of stocks sorted by inded price along with the company's sorting indicators.

```
DELIMITER //

CREATE PROCEDURE whichStock(

IN cih float,

IN ratio VARCHAR(20)

)

BEGIN

    DECLARE cih1 FLOAT;
```

```
    SET cih1 = cih / 100000;
    IF (ratio = 'DinhGia') THEN
        SELECT Com_Name, SymBol, EPS, `P/B ratio`, `PS ratio`, Current_Price
        FROM company
        JOIN stock_perform sp ON company.Company_ID = sp.Company_ID
        WHERE Current_Price <= cih1
        ORDER BY Current_Price;
    ELSE
        SELECT Com_Name, ROE, ROA, Current_Price
        FROM company
        JOIN stock_perform sp ON company.Company_ID = sp.Company_ID
        WHERE Current_Price <= cih1
        ORDER BY Current_Price;
    END IF;
END//
```

d. *Procedure Executive Board*: This is a procedure to help learn about a company's leadership, followed by a statistical procedure on total assets.

```
DELIMITER //
CREATE PROCEDURE findMangementSystem(IN ticker VARCHAR(20))
BEGIN
    SELECT People_Name, Chuc_vu, Ti_Le_so_hu, Com_Name FROM bld
    JOIN company c ON c.Company_ID = bld.Company_ID
    JOIN people p ON p.People_ID = bld.People_ID
    WHERE SymBol = ticker
    ORDER BY Ti_Le_so_hu DESC ;
END //
```