380 Project: Stock Exchange Database

	439101980	عبدالرحمن الشاوي	21959
Project #4	439101298	مهند الرشيد	21959
	438103725	عبدالعزيز الفهيد	21959
	437102596	مشاري السهلي	21959

Before Edits

Introduction

In simple terms, the **Stock Exchange Market** (or Stock Market for short) is a market in which companies sell stocks (i.e. shares) to investors.

Concretely, companies must acquire money to finance their expansion and growth, companies do that by selling what's called a *stock,* which is, stocks are traded to *Investors.*

Companies rely on a *Stock Market* to moderate and manage the transactions and security of their stocks. In Saudi Arabia, the only existing stock market is called *Tadawul* (تداول) and it moderates 202 different stocks identified by their *Stock Symbol* (e.g. *Othaim Markets* Stock symbol is *4001*).

A company may sell a number of stocks publicly through Tadawul, and a *Bank* which processes the money exchange from investors. The person in charge of deciding whether a company sells stocks or not is usually the *CEO* of the company.

So the database we're aiming to build should enable the management of the stock market via secure transactions between companies, investors, and banks.

Objectives

- Manage company stocks by building a database to store stock data (Company associated with Stock, number of stocks, etc.)
- Accelerate the trade of stocks by systematizing the process online via a database (In the past trading was not done over the internet)
- Securely trade stocks between companies and investors

2

Data requirements

- **Stock Market's** name, market cap, currency
- Info about a **Company's** name, commercial registration number (رقم السجل التجاري) is collected as well as info about the **CEO** of the company
- In each transaction, we should store the **Investor** info such as his name and IBAN, along with the **Stock** he bought (identified by its stock symbol) and the **Bank** that made this transaction. This is to ensure secure trade among parties

Functions

- Display a **Stock's** data (e.g. price, no. of available Stock)
- Display a **Company's** data to **investors** (e.g. Company Equity, CEO data, etc.)
- Process buy and sell transactions
- Add new Companies, Stocks, Investors, etc
- Delete Companies, Stocks, Investors, etc
- Keep track of each **Stock's** data and update it periodically

Entities and attributes

- Stock Market is identified by Name. Currency, market cap, and number of stock symbols are also recorded
- Stock is identified by Stock symbol. Number of public stocks, stock price are also recorded
- Investor is identified by IBAN No. Networth, ID, sex, age, name are also recorded.
- Company is identified by Commercial registration number. Company equity, company name, number of directors are also recorded
- Bank is identified by Commercial registration number. name, number of branches are also recorded
- The CEO is identified by name. Sex, age are also recorded

Red	Primary Key
Green	Composite Attribute
Yellow	Partial Key

Relationships

- Stock Market has a relationship **Manage** with Stock **(1-m)**
- Company has a relationship **Run** by with CEO **(1-1)**
- Company has a relationship **Associated** with Stock **(1-1)**
- Stock has a relationship **Owned** with Investor **(n-m)**
- Stock has a relationship **Secures** with Bank **(n-m)**
- Investors has a relationship **Secures** with Bank **(n-m)**

Business rules

Constraints

- The CEO **can't** run more than one Company
- Company **can't** be associated with more than one Stock
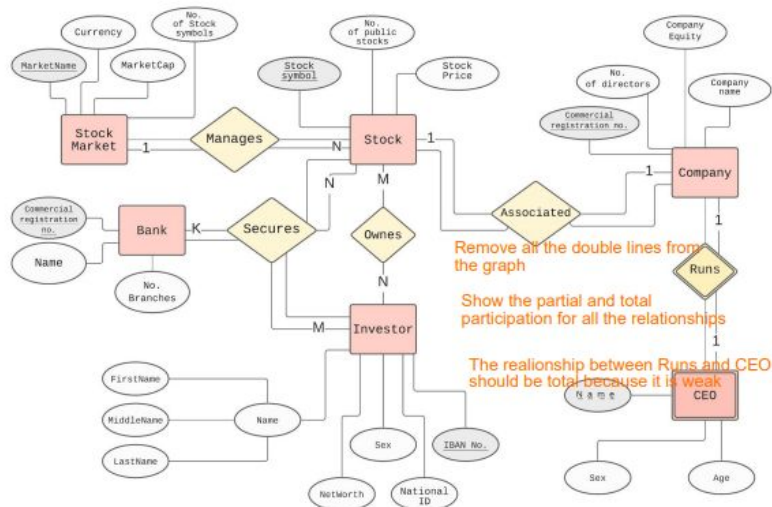- Stock **can only** be managed by one Stock Market

Participation

- Stock Market **totally participate** in manage
- Stock **totally participate** in manage
- Stock **totally participate** in secures
- Stock **totally participate** in associate
- Stock **partially participate** in own
- Company **totally participate** in associate
- Company **totally participate** in run
- CEO **totally participate** in run
- Investors **totally participate** in secures
- Investors **partially participate** in own
- Bank **totally participate** in secures

5

3

Queries

1	SELECT ALL **INVESTORS** WITH NETWORTH > 420 MILLION RIYALS
2	SELECT ALL **STOCKS** WITH NO. PUBLIC STOCKS < 20
3	DISPLAY LAST NAME OF **INVESTOR** WITH IBAN NO. NL12RABO8139718173
4	SELECT ALL **INVESTORS** WHO ARE SECURED BY **BANKS** WITH COMMERCIAL REGISTRATION NO. 1110001116
5	SELECT ALL **INVESTORS** WHO OWN **STOCK** WITH STOCK SYMBOL 4001
6	LIST ALL **COMPANIES** WITH **STOCK** WITH STOCK PRICE > 103.5
7	LIST ALL **STOCKS** ASSOCIATED WITH **COMPANIES** THAT HAS MINIMUM NO. OF DIRECTORS OF 3
8	LIST ALL **BANKS** WHO SECURE **INVESTORS** WITH OWNED **STOCK** WITH STOCK SYMBOL 4161
9	SELECT ALL **CEOS** WHO RUN **COMPANIES** WHICH ARE ASSOCIATED WITH **STOCK** WITH STOCK PRICE < 200
10	SELECT ALL MALE **CEOS** THAT RUN **COMPANIES** ASSOCIATED WITH **STOCKS** OWNED BY **INVESTORS** WHOSE AGE IS OVER 50

Entity Relationship Diagram (ERD)

After Edits

Introduction

In simple terms, the **Stock Exchange Market** (or Stock Market for short) is a market in which companies sell stocks (i.e. shares) to investors.

Concretely, companies must acquire money to finance their expansion and growth, companies do that by selling what's called a *stock,* which is, stocks are traded to *Investors*.

Companies rely on a *Stock Market* to moderate and manage the transactions and security of their stocks. In Saudi Arabia, the only existing stock market is called *Tadawul* (تداول) and it moderates 202 different stocks identified by their *Stock Symbol* (e.g. *Othaim Markets* Stock symbol is *4001*).

A company may sell a number of stocks publicly through Tadawul, and a *Bank* which processes the money exchange from investors. The person in charge of deciding whether a company sells stocks or not is usually the *CEO* of the company.

So the database we're aiming to build should enable the management of the stock market via secure transactions between companies, investors, and banks.

Objectives

- Manage company stocks by building a database to store stock data (Company associated with Stock, number of stocks, etc.)
- Accelerate the trade of stocks by systematizing the process online via a database (In the past trading was not done over the internet)
- Securely trade stocks between companies and investors

Data requirements

- **Stock Market's** name, market cap, currency
- Info about a **Company's** name, commercial registration number (رقم السجل التجاري) is collected as well as info about the **CEO** of the company
- In each transaction, we should store the **Investor** info such as his name and IBAN, along with the **Stock** he bought (identified by its stock symbol) and the **Bank** that made this transaction. This is to ensure secure trade among parties

Functions

- Display a **Stock's** data (e.g. price, no. of available Stock)
- Display a **Company's** data to **investors** (e.g. Company Equity, CEO data, etc.)
- Process buy and sell transactions
- Add new Companies, Stocks, Investors, etc
- Delete Companies, Stocks, Investors, etc
- Keep track of each **Stock's** data and update it periodically

Entities and attributes

- Stock Market is identified by Name. Currency, market cap, and number of stock symbols are also recorded
- Stock is identified by Stock symbol. Number of public stocks, stock price are also recorded
- Investor is identified by IBAN No. Networth, ID, sex, age, name are also recorded.
- Company is identified by Commercial registration number. Company equity, company name, number of directors are also recorded
- Bank is identified by Commercial registration number. name, number of branches are also recorded
- The CEO is identified by name. Sex, age are also recorded

Red	Primary Key
Green	Composite Attribute
Yellow	Partial Key

Relationships

- Stock Market has a relationship **Manage** with Stock **(1-m)**
- Company has a relationship **Run** by with CEO **(1-1)**
- Company has a relationship **Associated** with Stock **(1-1)**
- Stock has a relationship **Owned** with Investor **(n-m)**
- Stock has a relationship **Secures** with Bank **(n-m)**
- Investors has a relationship **Secures** with Bank **(n-m)**

Business rules

Constraints

- The CEO **can't** run more than one Company
- Company **can't** be associated with more than one Stock
- Stock **can only** be managed by one Stock Market

Participation

- Stock Market **totally participate** in manage
- Stock **totally participate** in manage
- Stock **totally participate** in secures
- Stock **totally participate** in associate
- Stock **partially participate** in own
- Company **totally participate** in associate
- Company **totally participate** in run
- CEO **totally participate** in run
- Investors **totally participate** in secures
- Investors **partially participate** in own
- Bank **totally participate** in secures

Queries

1	SELECT ALL **INVESTORS** WITH NETWORTH > 420 MILLION RIYALS
2	SELECT ALL **STOCKS** WITH NO. PUBLIC STOCKS < 20
3	DISPLAY LAST NAME OF **INVESTOR** WITH IBAN NO. NL12RABO8139718173
4	SELECT ALL **INVESTORS** WHO ARE SECURED BY **BANKS** WITH COMMERCIAL REGISTRATION NO. 1110001116
5	SELECT ALL **INVESTORS** WHO OWN **STOCK** WITH STOCK SYMBOL 4001
6	LIST ALL **COMPANIES** WITH **STOCK** WITH STOCK PRICE > 103.5
7	LIST ALL **STOCKS** ASSOCIATED WITH **COMPANIES** THAT HAS MINIMUM NO. OF DIRECTORS OF 3
8	LIST ALL **BANKS** WHO SECURE **INVESTORS** WITH OWNED **STOCK** WITH STOCK SYMBOL 4161
9	SELECT ALL **CEOS** WHO RUN **COMPANIES** WHICH ARE ASSOCIATED WITH **STOCK** WITH STOCK PRICE < 200
10	SELECT ALL MALE **CEOS** THAT RUN **COMPANIES** ASSOCIATED WITH **STOCKS** OWNED BY **INVESTORS** WHOSE NETWORTH IS OVER 50,000

Entity Relationship Diagram (ERD)
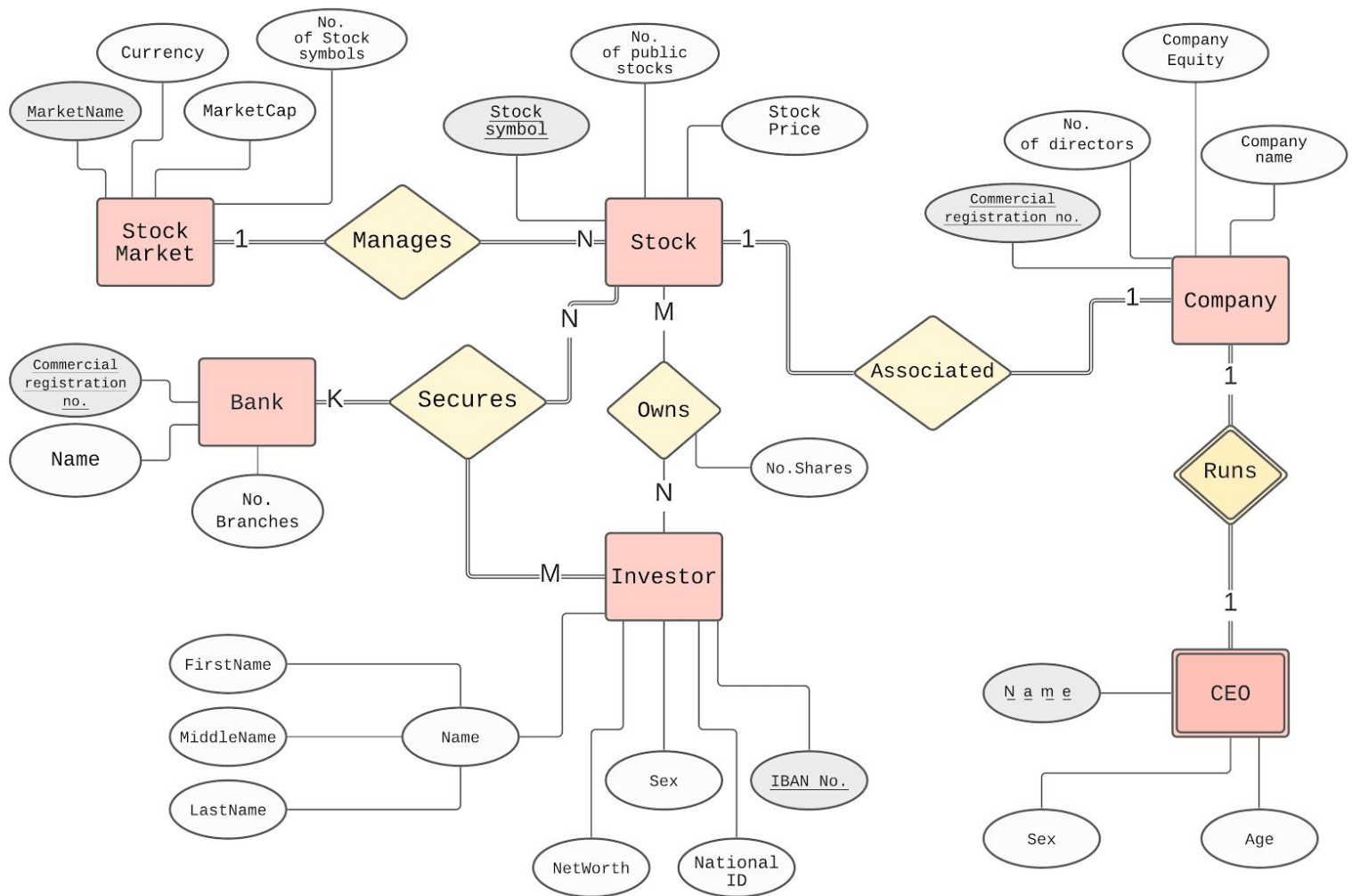
Relational Model Diagram:

Stock Market

Market name	Currency	Market cap	No. of stock symbols

Stock

Stock symbol	No. of public stocks	Stock price	Market Name	Commercial registriation no.

Secures

Stock symbol	IBAN no.	Commercial registriation no.

Company

Commercial registriation no.	No. of directors	Company Equity	Company name

Owns

Stock symbol	IBAN no.	No. Shares

CEO

Name	Sex	Age	Commercial registriation no.

Investor

IBAN no.	National ID	Sex	NetWorth	FirstName	MiddleName	LastName

Bank

Commercial registriation no.	Name	No. of Branches

12