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汇丰金融科技创新黑客松大赛

Financial investment appraisal system

Technical documentation

Project name:	Financial investment appraisal system
Project leader:	LeeHW

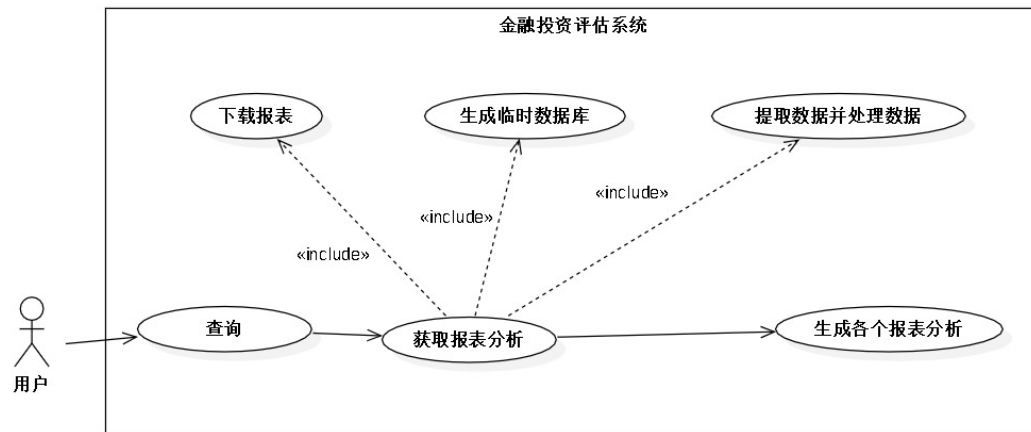
二〇一九年四月

一、Project structure

程序/源码

--load_data.py	Data processing source code
--Main.py	Main source code
--mainwindow.py	UI display code
--qss.qss	UI style file
--code.txt	Company code

二、Use Case Diagram



三、Runtime environment

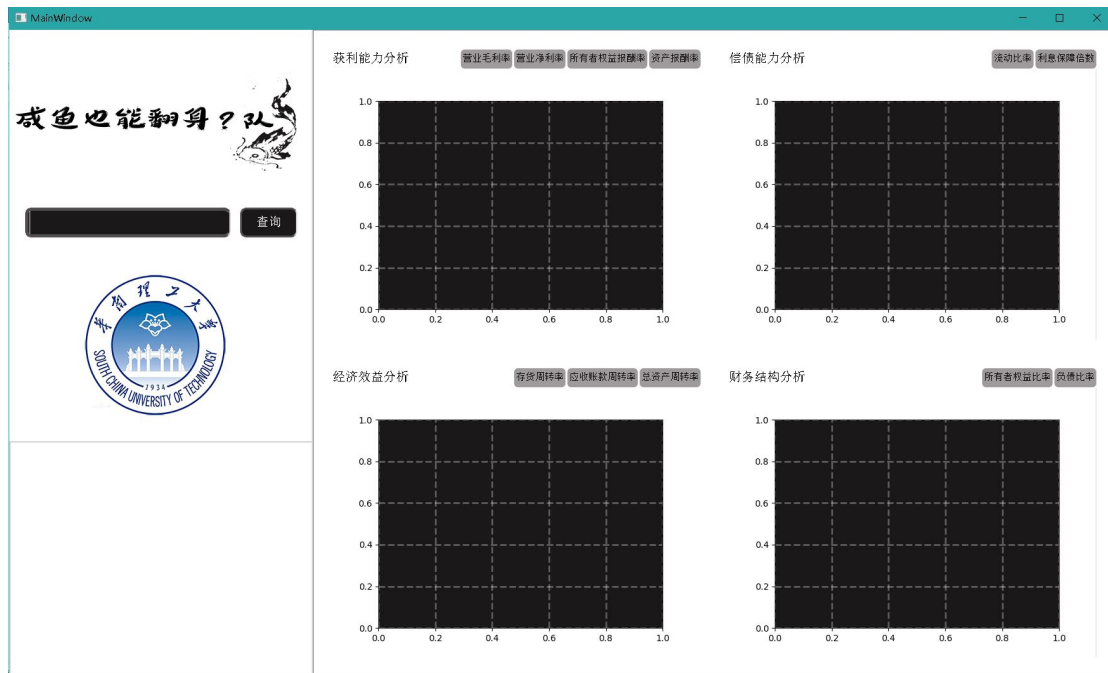
Windows10, Internet。

四、Input example

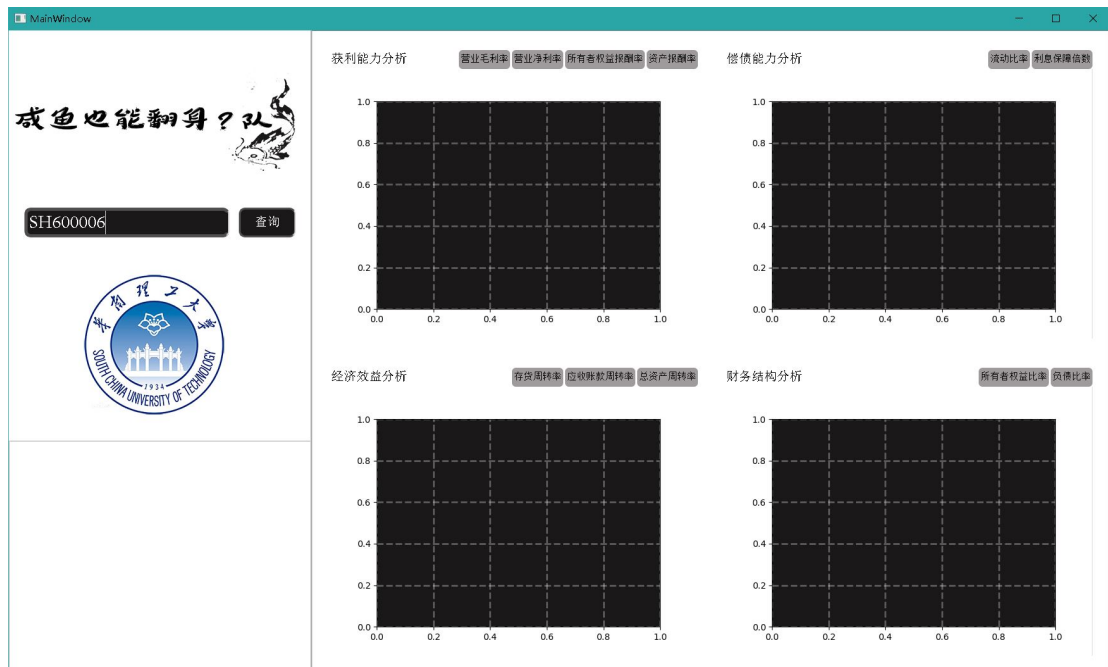
input: SH600006
input: SH600002
input: SZ000019
input: SZ000020
input: SZ000021

五、Start

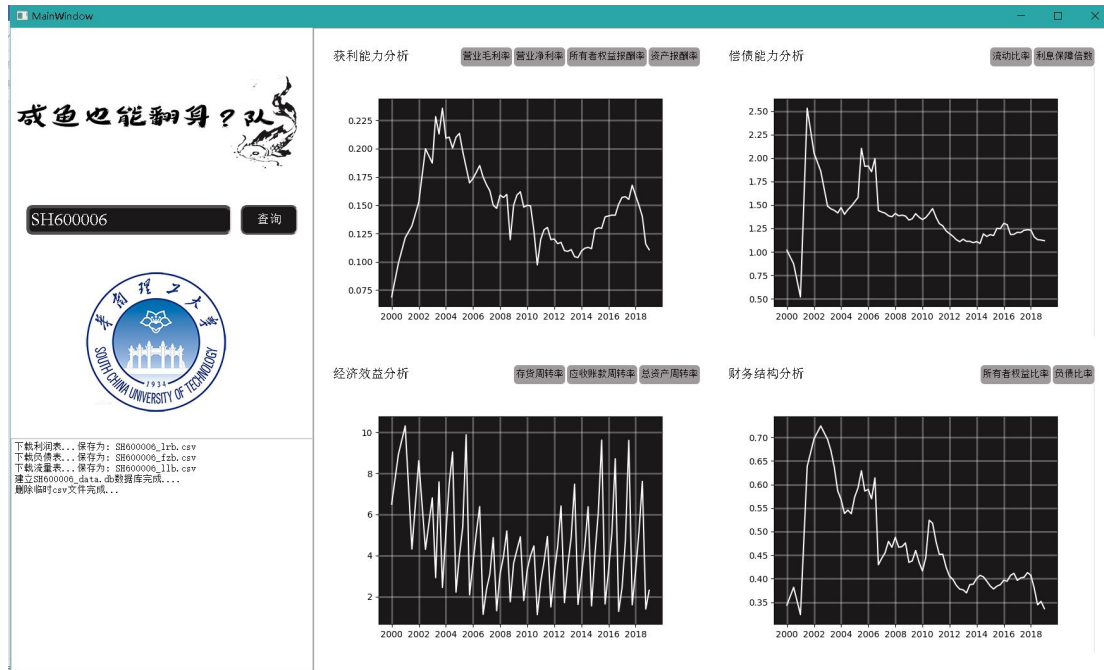
1) Open the executable file 程序/可执行文件/Run_this.exe



2) Please enter the correct specification query code in the input box on the left



3) Click the query to output the report



六、Source Code Analysis

4.1 Main package

4.1.1 PyQt5 Designer

The UI of this project is made with PyQt5 Designer.

Writing UI interfaces in PyQt can be done directly through code or through Qt Designer. The design of Qt Designer conforms to the architecture of MVC, which realizes the separation of view and logic, thus realizing the convenience of development. The operation mode in Qt Designer is very flexible, which can be viewed at any time by dragging and dropping the control.

This project USES Qt Designer to generate. UI files, and then USES the pyuic5 tool to convert them into. Py files.

4.1.2 Matplotlib

Matplotlib is a Python 2D drawing library that produces publicly-quality graphics in a variety of hardcopy formats and in a cross-platform interactive environment.

With Matplotlib, developers can generate drawings, histograms, power spectra, bar charts, error charts, scatter charts, and more in just a few lines of code.

4.1.3 Sqlite3

Sqlite3, a lightweight database, is an acid-compliant relational database management system contained in a relatively small C library. It is a public domain project set up by d.rochardhipp. It is designed to be embedded, and has been used in many embedded products, it occupies very low resources, in embedded devices, may only need a few hundred K of memory is enough. It can support Windows/Linux/Unix and other mainstream operating systems, and can be combined with many programming languages.

4.2 Function analysis

4.2.1 Download the reports

Download the input query code for the company's income statement, balance sheet, and flow statement from the requests database.

The corresponding download address of the three tables is

'http://api.xueqiu.com/stock/f10/incstatement.csv?page=1&size=10000&symbol='+ 公司代号

4.2.2 Generate temporary database

Once you download the report, generate a temporary database over sqlite3 and pandas.

4.2.3 Extract the data

After the temporary database is generated, the library sqlite3 is used to extract the data that needs to be used.

七、Financial analysis

5.1 Profitability analysis

In the "financial structure analysis", we selected two items, the ratio of owners' equity and the ratio of liabilities, to reflect the proportion and role of shareholders' investment or their own profits in the operation, as well as the debt situation of the whole enterprise, to generally show the financial structure of the enterprise.

营业毛利率: $(\text{营业收入} - \text{营业成本}) / \text{营业收入}$

营业净利率: $\text{净利润} / \text{营业总收入}$

所有者权益报酬率: $\text{净利润} / \text{所有者权益}$

资产报酬率: $(\text{净利润} + \text{利息支出} + \text{所得税费用}) / \text{资产总计}$

5.2 Solvency analysis

In the "solvency analysis", we choose the current ratio and the interest protection multiple, in order to reflect the short-term debt repayment ability and the ability to pay interest of the enterprise, comprehensively show the ability of the enterprise in the face of debt problems.

流动比率: $\text{流动资产合计} / \text{流动负债合计}$

利息保障倍数: $\text{营业利润} / \text{财务费用}$

5.3 Economic benefit analysis

In the "economic efficiency analysis", we choose the inventory turnover rate, accounts receivable turnover rate and total assets turnover rate to reflect the "make money" efficiency, marketing efficiency and overall operation efficiency of the enterprise. The combination of the three aspects can make it easier and faster for the analyst to control the efficiency of the entire enterprise.

存货周转率:营业成本/存货

应收账款周转率:营业收入/应收帐款

总资产周转率:营业收入/资产总计

5.4 Financial struture analysis

In the "financial structure analysis", we selected two items, the ratio of owners' equity and the ratio of liabilities, to reflect the proportion and role of shareholders' investment or their own profits in the operation, as well as the debt situation of the whole enterprise, to generally show the financial structure of the enterprise.

所有者权益比率:所有者权益/资产总计

负债比率:负债合计/资产总计