Dedicated Financial Indicator System (D-FIS)

by

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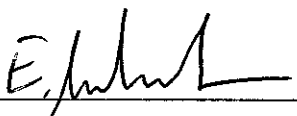Perak Darul Ridzuan

CERTIFICATION OF APPROVAL

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A Project dissertation Submitted to the

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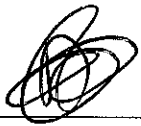

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July 2007

CERTIFICATE OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified persons or sources.

Makgowe Adam Pholo

ABSTRACT

Financial analysis interprets a company's past and present financial health and predicts its future condition. Although company financial statements contain a wealth of information to support this analysis, their interpretation may be complicated. Experts in this field are limited. This research focuses on automating the current practice of financial ratio analysis to identify the various features that need to be incorporated into the system. This involves calculating the ratios, establishing the relationships between the ratios, determining the technique for accurately forecasting the financial statements and/or ratios, developing heuristics for analyzing the ratios and providing a system for recommendations. This project focuses on meeting all of these financial needs. The system is capable of performing five types of analysis: liquidity, leverage, turnover, profitability, and industry comparison or benchmarking. The output of the system is a list of conclusions and recommendations based on these analyses.

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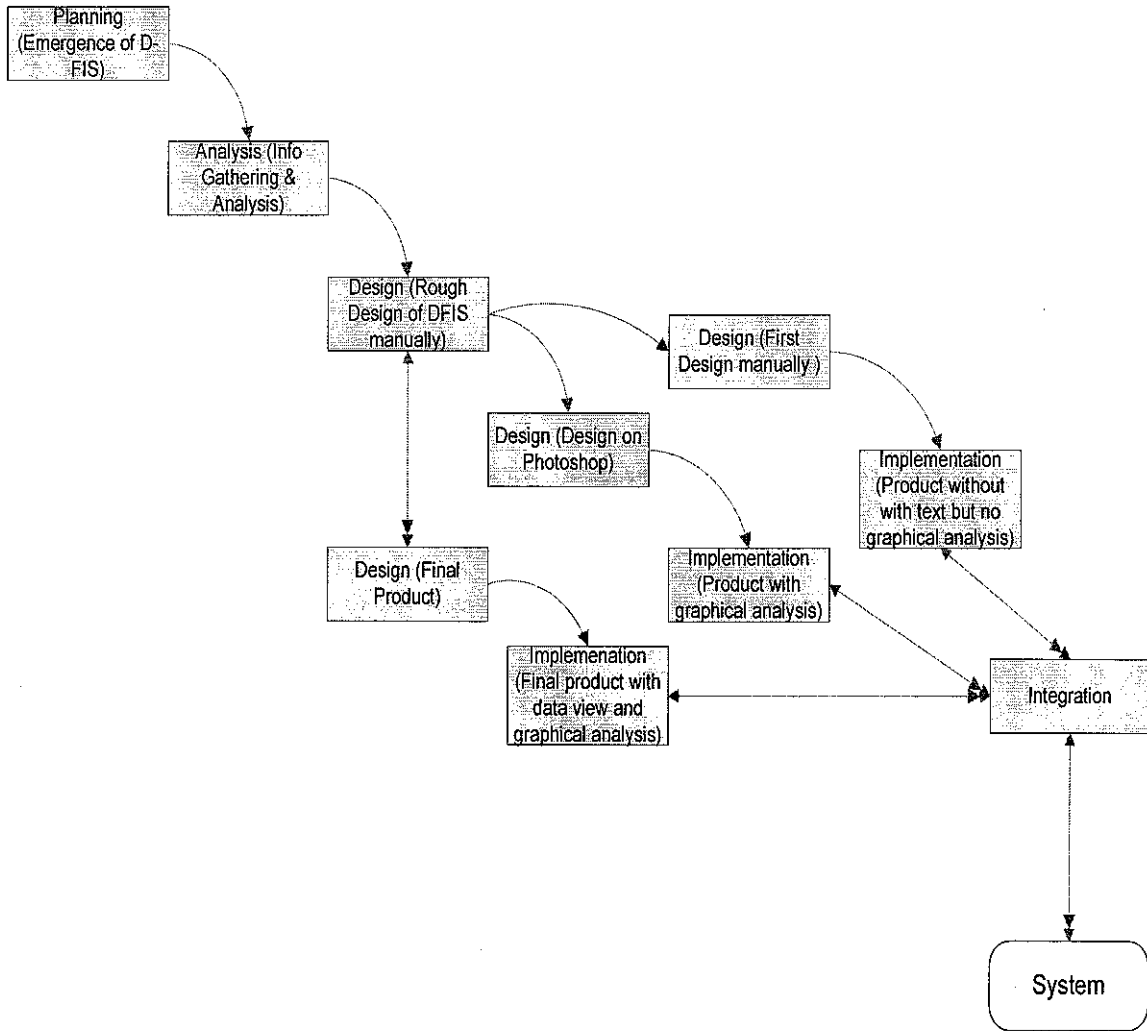- Saipudnizam Muhamad

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Figure 1: D-FIS' System Methodology

ABBREVIATION ANS NOMENCLATURES

D-FIS

Dedication Financial Indicator System

VB.NET

Visual Basic.NET

SQL

Structured Query Language

JAD

Joint Application Development

RAD

Rapid Application Development

BDC

Business Development Bank of Canada

GUI

Graphical User Interface

ROA

Return On Assets

ROE

Return On Equity

CHAPTER 1:

1. INTRODUCTION

1.1 Project Background

Finance is a very important aspect of every organization regardless of the size or lifespan (operation period) of the organization. However, these results can be meaningless if they cannot be interpreted or used for operational efficiency. It is essential for companies (more so for large corporations) to have Accountants who not only prepare the financial statements but calculates the financial ratios and interpret and analyze them. In this project a mechanism for calculating and analyzing Financial Information is introduced. This system will allows users to input values into input fields provided and on click of certain buttons users will have the calculated financial ratios. Users will be able to benchmark their company's performance against those of their peers in the same industry.

1.2 Problem Statement

A measurement of how companies perform from year to year is conducted periodically by company financial managers, external consultants or anyone with some sort of financial background/qualifications. Financial indicators calculations are often a mundane process which is prone to many unforeseen errors. Most corporations (if not all) use spreadsheets for computing their financial ratios. This method (usage of spreadsheets) of calculating ratios is still being used by companies nowadays and it clearly shows that companies have in it, however a relatively easier way of calculating Financial ratio is introduced through this dedicated financial ratios calculator system. Everything happens on a GUI and hence no need for a spreadsheet.

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1.3 Project Objectives

1.3.1 Provide a unique financial analysis system for meeting organizational financial requirements.

1.3.2 Develop an easy to use Financial GUI system with minimal user clicks.

1.3.3 Provide real time information that can be used by everyone in the finance field (or anyone who has financial background).

1.3.4 Make the process of financial calculation and ratio analysis a less time consuming task for managers and organizations

1.4 Scope

This system caters for companies in a specific industry for more realistic and feasible comparison. Two industries that have been selected for D-FIS are the Hotel and Technology industry. Initially the sectors that were chosen are Finance and Technology, the reason for changing industries was based solely on the fact that the finance sector has too many companies and the information gathering process (Financial statements) took longer than expected because some company financial statements did have the required information, hence the scope was narrowed to the Hotel sector. The hotel sector has fewer companies than the Finance sector, which made the information gathering process less tedious. Any industry could have been chosen, but because of the scope of the project, it was necessary to narrow it to sectors that do have too many companies. Financial ratios that will comprise the system are the most frequently used ones. Not all financial ratios will be included in the system. The system assumes that users already have basic financial background needed to analyze and interpret financial information or ratios.

CHAPTER 2

2. LITERATURE REVIEW

Finance is an integral part of any business entity. Each and every department in an organization will at some point (whether present or future), use, require or provide information/resources to the finance department, hence financial knowledge is very important and has to be nurtured at very early stages. It is essential for information technology and computer science graduates to have in-depth financial background. One person who this need for IT and CS students to have in-depth knowledge and did something about it is Howard Shwartz (2005). He prepared a presentation for his students on financial ratio analysis. He introduced students to income statements, balance sheets and cash flow statements (which are all key components in preparing and calculating financial ratios), but most importantly how to use financial radio data sources and formats to analyze Profitability, Operational efficiency and Financial stability. From his research he found that it was very essential to nurture and nourish financial skills at an early stage. Shwartz used a company called Bizstats.com (www.bizstats.com) because Bizstats has a system of this nature in place.

Bizstats provide instant access to useful financial ratios, business statistics and benchmarks. Bizstats has an instantaneous benchmark section whereby an individual or company can just enter an amount and on the click of a 'Compute' button, get comparisons of their Total Revenue to that of a particular related industry; however, an industry must be selected first before entering the amount or clicking the 'Compute' button. A user must ensure that they select the applicable industry so as to get realistic comparison.

Bizstats provides useful information related to financial performance of a company. Not only does it provide useful information, it gives industry averages and percentages so you can compare your company to the industry, however Bizstats does not have mechanism for calculating all the ratios that they have on their site. The assumption is that use has

already calculated all the necessary ratios. This remotely presents a loophole in their system.

A user is expected to already have calculated the ratios before using Bizstats' services. Ratios can be calculated using any one of the following methods:

- Manually
- Calculator
- Project-specific worksheets
- Computer with spreadsheet software

The fourth method is the one that is widely used by companies. Two companies that formed part of my research (VentureLine Pty. Ltd. and Bizwiz Consulting Group Ltd.) use the spreadsheet method to calculate the financial ratios.

Ventureline is a company that was founded in 1995 in Silicon Valley, California. The company was created for students and professionals alike to find tools and current data with which to conduct near instantaneous financial analysis on any business entity and the industries in which they compete.

Bizwiz does have the 'About Us' link of section on their homepage or any explicit explanation or introduction of what the company is about. From the information articulated on the website, one can conclude that they provide Business Analysis & Planning software for companies. They provide everything from financial statement ratios analysis spreadsheets to business valuation analysis software which is based on excel platform.

Whereas VentureLine and BizWiz provide Microsoft Excel based financial ratio calculators, Bizstats takes these calculated ratios and accumulated (aggregated) amounts and compares them to industry averages for benchmarking.

The proposed Financial Ratio calculator system acts as a hybrid between the two types of systems. It encompasses both methods into one system.

Instead of going through Excel to calculate the ratios, users can calculate everything on the GUI screen without going through an excel program like Microsoft Excel. Interpretation/Analysis will be provided immediately after getting all the calculated fields.

One of the revelations of during the project work, especially the implementation phase is a company called Business Development Bank of Canada (BDC). BDC is a financial institution wholly owned by the government of Canada. BDC plays a leadership role in delivering financial, investment and consulting services to Canadian small and medium-sized businesses. These services complement those of private sector financial institutions.

It happened that BDC, have a financial ratio analysis program that looks somewhat similar to D-FIS. With their ratio calculation and analysis program, a user does not need to invoke external software programs like Microsoft Excel, as we saw with the other two companies that comprises D-FIS' Literature Review.

The company provides a wide variety of financial services and ratio calculation and analysis happens to be one of them. However, it appeared that BDC did not offer graphical analysis/interpretation of their ratios. Graphical analysis is crucial factor when it comes to analysis of financial statements/results.

Another drawback that was found in BDC's system is that their industry comparison is not very comprehensive; in fact BDC does not have industry comparison in their analysis, what they have is simply textual interpretation on the underlying ratio. D-FIS is developed on the same concept but with the inclusion of industry averages.

CHAPTER 3

3. METHODOLOGY

3.1 Research Methodology

Various information have been captured for the project, all from pertinent project information has been collected using different methods. Currently the information that is available for the project includes:

- Financial Statements
- Financial Ratios
- List of Companies (according to specific industries)
- Research companies
- Bursa Malaysia (previously known as the Kuala Lumpur Stock Exchange)

The List of companies and their industries were solicited from 'The Star' newspaper's business section. Newspapers have a way of grouping the companies according to the industries which their companies fall under which makes it easy for analyzing company performance and comparing its performance to its peers that are in the same industry.

Financial Statements were attained from Bursa Malaysia website. Bursa Malaysia is the official stock exchange in Malaysia. On Bursa's website, listed companies' financial results which can be used by the general public or potential investors for making investment decisions are provided.

3.2 System Development Methodology

The methodology that was employed for the Development of D-FIS (Dedicated Financial Indicator System) is RAD (Rapid Application Development)

Rapid Application Development is a software development methodology that involves iterative development, the construction of prototypes, and the use of Computer-aided software engineering (CASE) tools. This type of methodology described as a process through which the development cycle of an application is expedited. Rapid Application Development thus enables quality products to be developed faster, saving valuable resources.

The nature of this project was more suited to this type of methodology. Finance as a subject is a never ending process. One year after the other, financial statements are prepared, ratios are calculated and analyzed. This system was developed on that notion. An initial prototype was developed and then modifications were made until the system became final. Through the testing phase, there was always a prototype that served as a benchmark to the enhanced system.

Moreover, RAD-based methodologies recommend that analysts use special techniques and computer tools to speed up the analysis, design and implementation phases such as the Joint Application Design (JAD) and fourth generation/visual programming languages like Visual Basic or Visual Basic.NET (Dennis & Wixon & Tegarden, 2005). D-FIS is developed on the VB.NET environment which makes it conducive to Rapid Application Development.

3.3 Project Activities

3.3.1 Initial Research Work and Project planning (including the emergence of D-FIS)

This is the first activity in the development of any system. The research work that was conducted, involved talking to fellow students who are taking financial management as their elective, liaising with the Finance Lecturer (Mr. Lai Fong Woon). Other media were utilized includes 'The Star' and 'New Straits' times newspapers and the internet. The purpose here was to find if there were similar systems that were identical to the one I had in mind. It emerged that are systems which are similar to D-FIS.

3.3.2 Information/Data Analysis

After doing the initial research, substantial amount of information was gathered and knowledge acquired. However not all of it, were relevant to the project at hand. The information/data had to be downsized to information/data that is required to make the project a success.

3.3.3 System Planning

This is the planning phase that involves that involves, inter alia,
- How the system will look like (User interface)
- Data Access and Database Design
- Tools required to accomplish the above tasks
- How will users access the system

3.3.4 System Design

PhotoShop CS 2 was employed for designing the system

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3.3.5 System Implementation

The implementation part of the system surprisingly took consumed most of the project time. The implementation happened over a period of time because 3 prototypes were developed for the system. Eventually there was only one which encapsulated all of the aspects required to make the system fully functional.

3.4 Tools

The tools required that were required to make was as mentioned in previous paragraph, Visual Basic.NET, which was used mainly for the Graphical User Interface part of the system. Visual Basic was also used for programmatically for ratio calculations and analysis and database configuration part.

The database that was employed is SQL Server 2005. The information that is stored in the database comprises of industry ratios that have been pre calculated and loaded into the system. SQL Server 2005 is used also for registering new users to the system. In order to use the site resources, the system requires all users to create an account or Login.

Another tool that was employed is PhotoShop CS 2. Photoshop was used for the design of home page. D-FIS is a web based application, which requires the design of a User Interface. The usage of PhotoShop provided seamless integration with VB.NET. However there were some limitations in that as soon as you deploy the PhotoShop design to VB.NET, the design becomes static changes (to the design itself) are not possible.

Another tool employed in the system is Matlab. Matlab is employed to generate dynamic graphs on the system through the employment of a simple mathematical function. The function takes the industry ratios and Company ratios as its parameters and plots the charts for visual comparison/benchmarking.

3.5 The System Gantt Charts

3.5.1 The System Gantt chart (FYP Part 1)

ID	Task Name	Start	Finish	Duration	Jan 2007		Feb 2007				Mar 2007				Apr 2007				May 2007			
					1/21	1/28	2/4	2/11	2/18	2/25	3/4	3/11	3/18	3/25	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20	5/27
1	Selection of Topic	1/22/2007	2/2/2007	2w																			
2	Preliminary Research Work	1/29/2007	2/16/2007	3w																			
3	Submission of Preliminary Report	2/16/2007	2/16/2007	.2w																			
4	Seminar 1	2/19/2007	3/9/2007	3w																			
5	Requirement Specification (System Analysis)	2/19/2007	3/9/2007	3w																			
6	Submission of Progress Report	3/26/2007	3/26/2007	.2w																			
7	Seminar 2	4/10/2007	5/4/2007	3.6w																			
8	Literature Review	4/2/2007	5/4/2007	5w																			
9	Submission of Interim Report	5/14/2007	5/14/2007	.2w																			
10	Oral Presentation	5/17/2007	5/17/2007	.2w																			

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3.5.2 The System Gantt chart (FYP Part 2)

ID	Task Name	Start	Finish	Duration
1	Project Work (System Interface) continues	7/24/2007	8/13/2007	15d
2	Submission of Progress Report 1	8/20/2007	8/20/2007	1d
3	Finalising Project Interface and Database	8/10/2007	9/19/2007	29d
4	Submission of Progress Report 2	9/19/2007	9/19/2007	1d
5	Seminar/Progress Reporting	9/24/2007	9/28/2007	5d
6	Exhibition/PreEdx	10/3/2007	10/3/2007	1d
7	Submission of Final Report	10/5/2007	10/5/2007	1d
8	Oral Presentation - Final Reporting	10/22/2007	10/26/2007	5d
9	Submission of Project Dissertation	11/2/2007	11/2/2007	1d

CHAPTER 4:

4. DISCUSSION

4.1. System Analysis

4.1.1. System Architecture
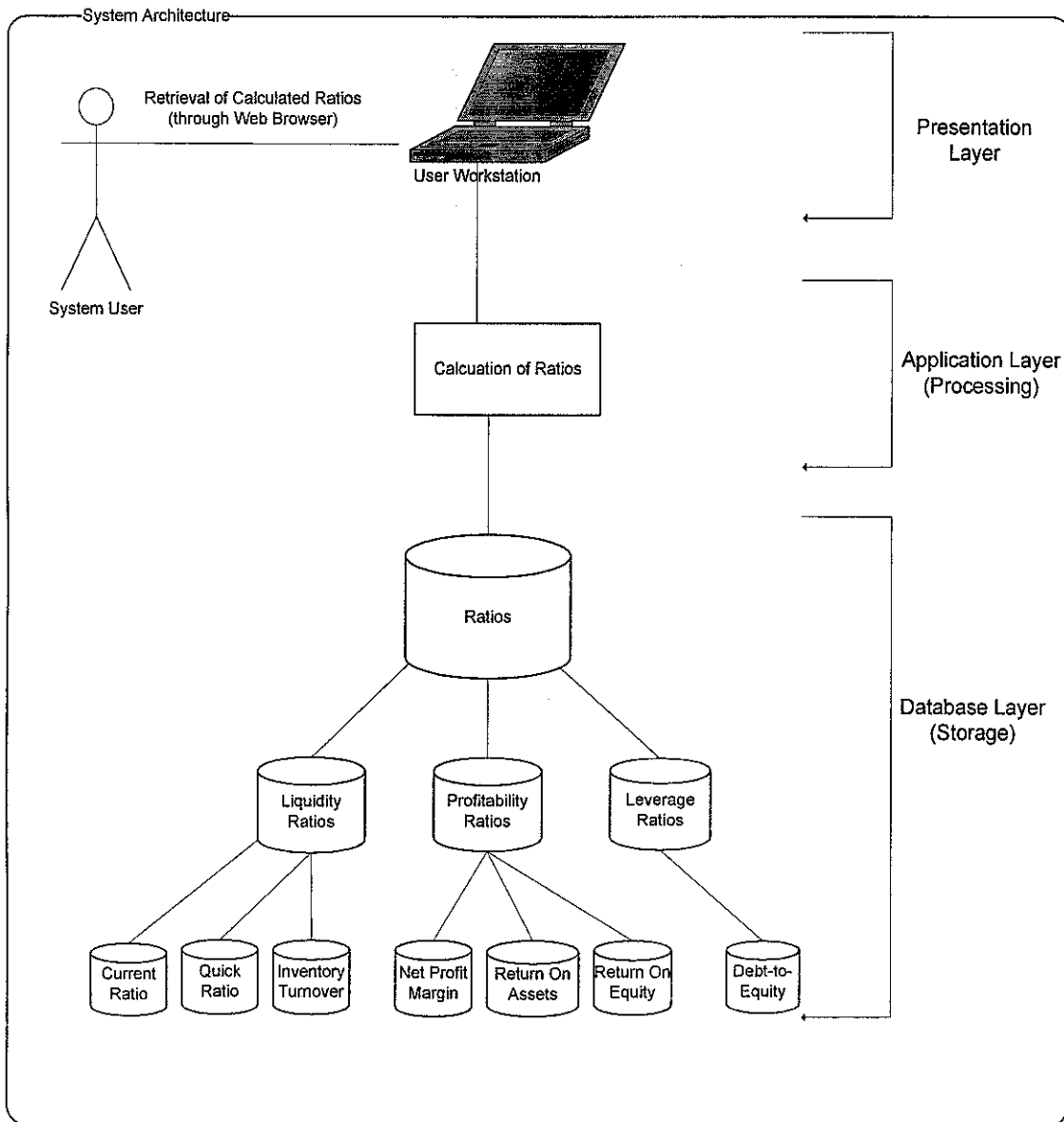
4.1.2. System Use Case
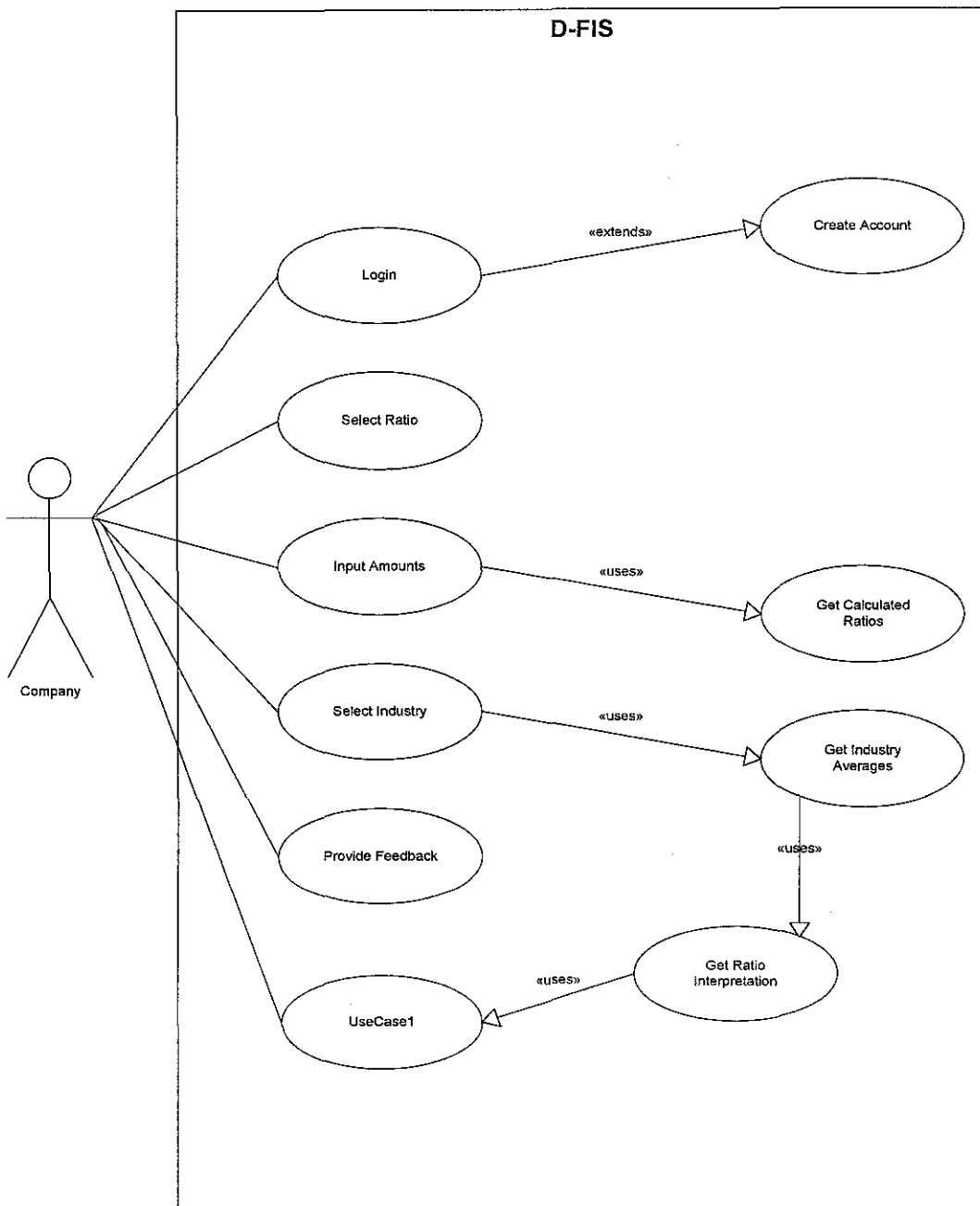
4.1.3. System Class Diagram
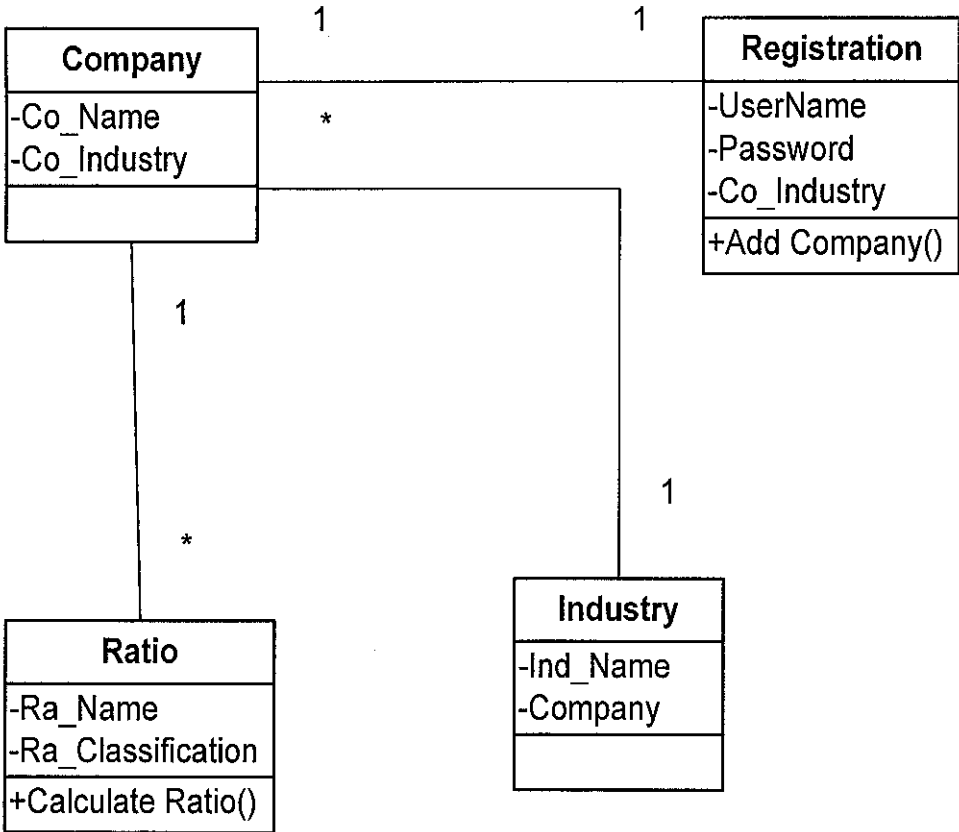
4.2. Data Gathering and Analysis

The Data gathering and analysis process continued till the second half of the Final Year Project. It turned out that greater data gathering was required when as the project progresses.

The outstanding data/information that needed to be gathered was the rest of the financial statements from Bursa Malaysia. The financial statements were obtained from Company Annual Reports. The Financial statements that were used are the ones for the financial year ended 2006. All companies that comprise the research have to have financial statements up to the financial year ending 2006.

The Initial Stages of the development process required all the financial statement to be readily available. However, because of the length and depth of the Annual Reports, it was necessary to only the necessary information was extracted.

One thing that was noticed from all the financial statements is that the financial ratios are not calculated nor given; which means that the accountants have to calculate them manually, or use any other method. This is precisely why D-FIS becomes useful to companies.

One of the companies that are included in the (Gula Perak Ltd.) is used as demonstration on how the basic functionality of the system will be like. This is just a prototype of what will be happening on the background when the user inputs the correct amounts in the necessary fields.

All the financial ratios are illustrated to give a clear indication of the system's functionality.

Most businesses at some point or another, face opportunities that require an in depth look at their financial structure. This may be due to an expansion project or simply a need for additional financing.

And often the signals are clear:

- you may have low cash reserves or your expenses are increasing
- you need to extend longer than normal credit terms to a customer for a large order
- you may find yourself borrowing more frequently as your sales are increasing

One way to analyze your financial health and identify where you can improve it is by looking closely at your financial ratios. Ratios are used to make comparisons between different aspects of a company's performance or within a particular industry or region. They reveal very basic information such as whether you've accumulated too much debt, are stockpiling too much inventory or not collecting receivables fast enough.

As earlier illustrated, the most frequently used financial ratios will be employed.

The first set of ratios has been calculated for one of the companies that makes up the list of companies in the research.

The following ratios are the most frequently used industry ratios and are the ones that will be covered by the Dedicated Financial Indicator System.

4.3. Liquidity ratios

These ratios measure the amount of liquidity (cash and easily converted assets) that you have to cover your debts and they give a broad overview of your financial health.

Current ratio (also called the working capital ratio) measures your company's ability to generate cash to meet your short-term financial commitments. The current ratio is calculated by dividing your current assets such as cash, inventory, and receivables by your current liabilities such as line of credit balance, payables, and current portion of long term debts.

Gula Perak's Current Ratio:

Current Assets: Current Liabilities

45846   : 130682

2.85   :1

Quick ratio measures your ability to access cash quickly to support immediate demands. Also known as the acid test, the quick ratio divides current assets (excluding inventory) by current liabilities (excluding current portion of long term debts). A ratio of 1.0 or greater is generally acceptable, but depends on your industry.

Gula Perak's Quick Ratio:

Current Assets – Inventory: Current Liabilities

45846 – 17716: 130862

28130:130862

4.65:1

4.4. Efficiency Ratios

Often measured over a 3 to 5 year period, these ratios give additional insight into areas of your business such as collections, cash flow and operational results.

Inventory turnover looks at how long it takes for inventory to be sold and replaced during the year. It is calculated by dividing total purchases by average inventory in a given period. For most inventory-reliant companies, this can be a make or break factor for success. After all, the longer the inventory sits on your shelves, the more it costs.

Gula Perak's Inventory Turnover:

Sales / Inventory

4,185,000 / 17,716,000

0.24

Average collection period looks at the average number of days customers take to pay for your products or services. It is calculated by dividing receivables by total sales and multiplying by 365. To improve how quickly you collect payments, you may want to establish clearer credit policies and a set of collection procedures. For example, to encourage your clients to pay on time, you can give them incentives or discounts. You should also compare your policies to those of your industry to ensure you remain competitive.

Gula Perak's Average Collection Period:

Accounts Receivables / Sales * 365

13,833,000 / 4,185,000 * 365

1206.46

4.5. Profitability ratios

These ratios are used not only to evaluate the financial viability of your business, but are essential in comparing your business to others in your industry. You can also look for trends in your company by comparing the ratios over a certain number of years.

Net profit margin measures how much a company earns (usually after taxes) relative to its sales. In general, a company with a higher profit margin than its competitor is more efficient, flexible and able to take on new opportunities.

Gula Perak's Net Profit Margin
Net Profit / Sales * 100
1,714,000 / 4,185,000 * 100
40.96%

Operating profit margin also known as coverage ratio measures earnings before interest and taxes. The results can be very different from the net profit margin due to the impact of interest and tax expenses. By analyzing this margin, you can better assess your ability to expand your business through additional debt or other investments.

Gula Perak's Operating Profit Margin
Operating Profit / Sales * 100
1,714,000 / 4,185,000 * 100
40.96%

Return on assets (ROA) ratio tells how well management is utilizing all the company's resources (assets). It is calculated 1by dividing net profit (before taxes) by total assets. The number will vary widely across different industries. Capital-intensive industries such as railways will yield a low return on assets, since they need expensive assets to do business. Service based operations such as consulting firms will have a high ROA: they require minimal hard assets to operate.

Gula Perak's Return On Assets

Net Profit / Total Assets

1,714,000 / 4,185,000 * 100

2.0

Return on equity (ROE) measures how well the business is doing in relation to the investment made by its shareholders. It tells the shareholders how much the company is earning for each of their invested dollars and is calculated by dividing the equity in the company by net profits (usually before tax).

Gula Perak's Return On Equity

Net Profit / Average Equity

1,714,000 / 456,948,000

0.37

4.6. Leverage ratios

These ratios provide an indication of the long-term solvency of a company and to which extent you are using long-term debt to support your business.

Debt-to-equity and debt-to-asset ratios are used by bankers to see how your assets are financed, for example, by creditors or through your own investments. In general, a bank will consider a lower ratio to be a good indicator of your ability to repay your debts or take on additional debt to support new opportunities.

Gula Perak's Debt-to-Equity Ratio

Long term debt: Equity

271,377 / 185571

1.46

Ratios when calculated like that without any interpretation are totally meaningless. Management need to know what those figures mean. Accountants always have to be conscience of what the market and industry performance is like. These ratios will be compared to the industry average to see how good (or bad) the company a particular company is performing. The above calculations are an illustration of how the system back-end will execute tasks. Users will not be able to see the process.
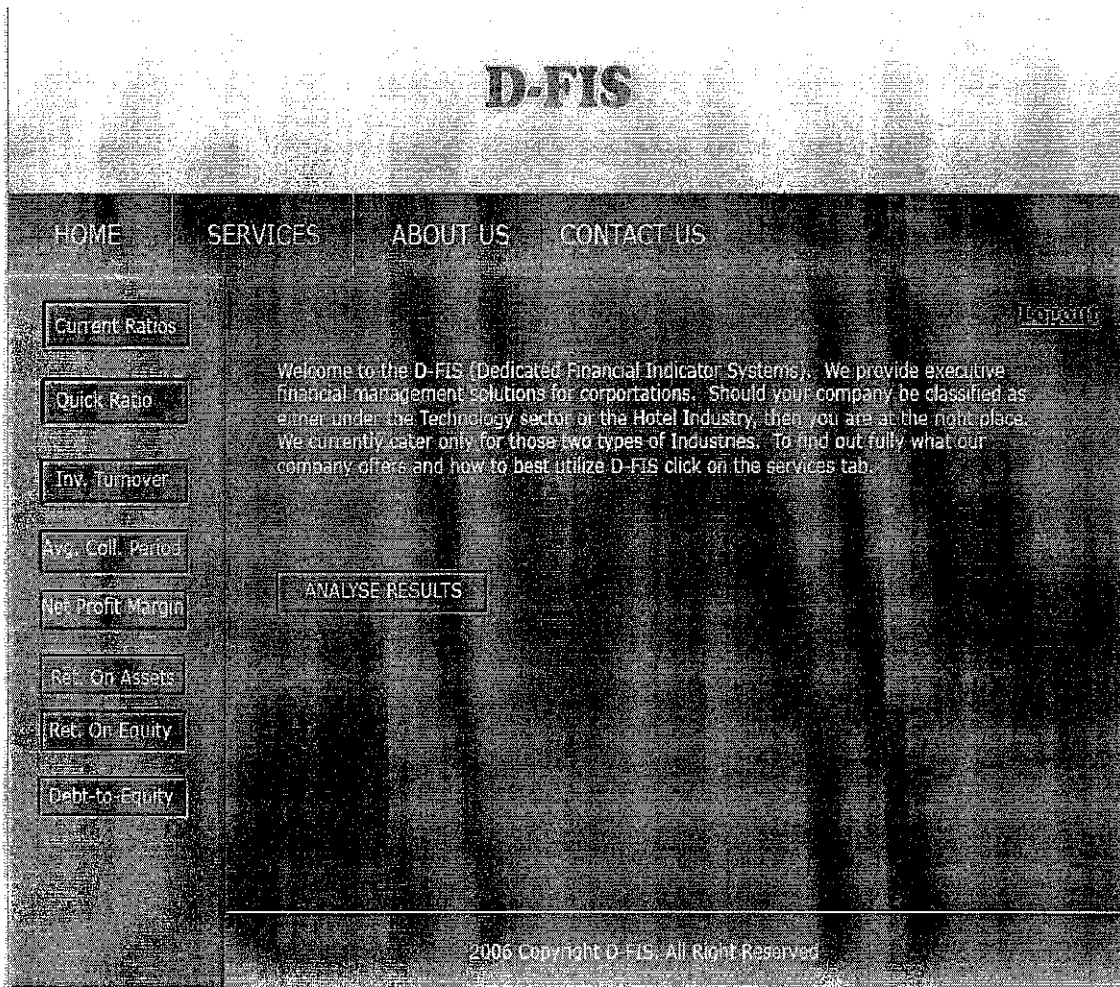
Figure 4.6 (a)

The above figure is the page that the user will be redirected to after successfully logging in to the system.

The buttons on the left hand pane of the window are the ratios themselves. Clicking on the ratios redirects a user to another page where more information about that ratio is supplied.

One of the pages looks like the following figure

Inventory Turnover

DEFINTION

Sales
Inventory

This ratio shows how many times in one accounting period the company turns over (sells) its inventory and is valuable for spotting under-stocking, overstocking, obsolescence and the need for merchandising improvement. Faster turnovers are generally viewed as a positive trend; they increase cash flow and reduce warehousing and other related costs.

Home

Figure 4.6 (b)

The 'Analyse Results' button is the most important control on that window. This is where the calculation and analysis of financial ratios will be taking place. The page looks like the following figure
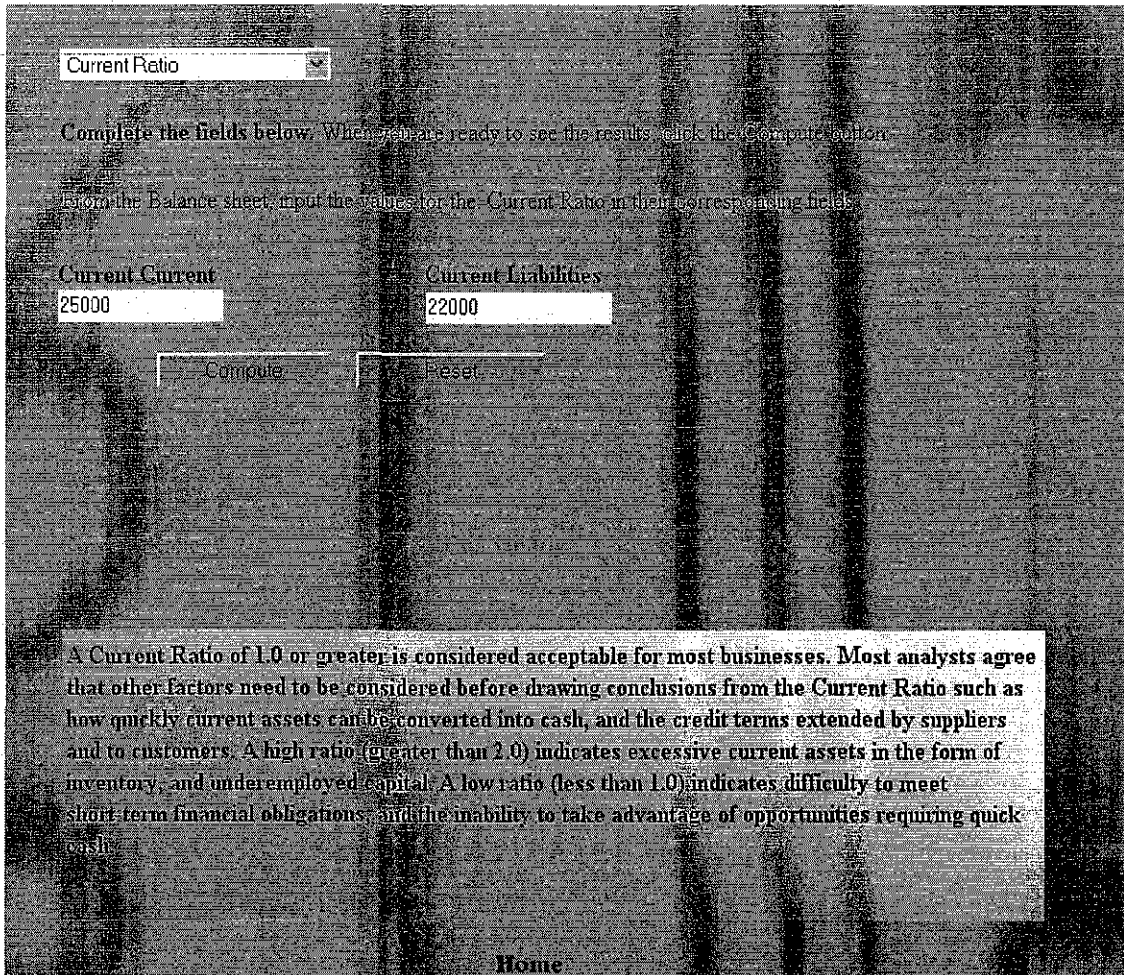
Figure 4.6 (c)

The above figure shows the flow of the system from the calculation of the appropriate ratio to the analysis part.

For industry comparison, the user will have to select a particular industry first before clicking the compute button.

Two industries that comprises D-FIS' industry comparison are the Hospitality Industry (Hotels) and the Technology Industry. Selecting the appropriate industry will bring the industry averages of all the ratios encapsulated in the system.

The page will appear as follows

QuickRatio   0.05260124490089372

Indicates the number dollars of quick assets available to pay each dollar of current liabilities. Generally, a Quick
Ratio of 1.0 or greater is considered adequate to ensure a company's ability to pay its current obligations. A
ratio of less than 1.0 signals a problem in meeting short-term obligations

Select your industry to view industry results

Technology

The Industry Averages for the Technology Industry are listed below. Check the corresponding ratio
and feed D-FIS Analysis

Industry	CurrentRatio	QuickRatio	InventoryTurnover	NetProfitMargin	ReturnOnAssets	ReturnOnEquity	Debt2Equity
Select Technology	32.74	32.34	504.82	57.19	8.61	13.54	26.27

Perform Another Calculation

Home

Figure 4.6 (c)

The Figure shows the final results that user attains after going through the whole process
of calculating the ratios. The system assumes the user is not from a financial background
by offering basic information, such as, from which statement to retrieve which ratio
amounts.

Finally, the end result is industry comparison with pre calculated industry averages
showing up.

That is the process flow for D-FIS. There are other buttons (e.g. Contact Us) on the
home page, the coverage of which were excluded from this System Prototype preview
because they do not form part of the core project process flow.

CHAPTER 5:

5. CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSION

The development phase of the project is at its penultimate stages at the moment. The database has been created and developed for companies/individuals who wish to register with D-FIS so as to be able use the resources on the site. However, a few problems have been encountered; there is a need to use graphical interpretation/analysis with any financial system in the market. This project requires a financial chart to be generated automatically on the click of a button after the user has compared their respective company with the ratio of the industry. Graphical analysis help make reading financial results an easy and less time consuming task. However, the essential elements of the project have been addressed. The User Interface created meets the desired user aesthetics, because, as per Objective 2, the amount of clicks on the home page is at a minimal level. Only the most important and relevant buttons forms part of the system.

The information provided on the system is real time, which means that on the simple click of buttons, users get calculated ratios and analysis on those ratios. The financial environment requires real time information for better decision making and strategic planning. Readily available software like DFIS and the information contained therein makes the task of a financial manager a less time consuming process

Other important features that are included in the system but do not form part of the core project activities are the 'About Us' and 'Services' buttons on the home page. As standard procedure and good practice to web page design, it is essential and makes good design principle to include and explain fully the kind of services that your company/website offers. That informs people who don't know anything about you or your website, before using it, how to best utilize what it offers.

Another button that was added is the 'Contact Us' button. This button is used to collect User information and what they (users) think of the website and how it could be improved to meet their requirements.

5.2 RECOMMENDATIONS

The development and implementation of successful financial indicator systems does not end with the completion of this report. As mentioned in the three companies that formed part of the literature review, there are many aspects that could be improved upon. Many key components of financial analysis have been developed and used as the standard requirements, features like, the calculation of different types of ratios (i.e. Liquidity, Profitability etc.) and analysis of the calculated ratios; however there are still some loopholes.

Some features that could still be improved upon include provisions for company historical data comparisons. Better dynamic charts that present the textual and tabular analysis in a visual/graphical form could be encapsulated into financial systems to provide clear image of a company's performance to top management.

Many of the past researches (and developed financial systems), as shown in the Literature review, have developed full functioning financial indicator system, but the drawback is that they had to invoke external applications (e.g. Microsoft Excel) to either perform some calculation or do some manipulation on the data. It is not a bad practice to invoke applications when a system is still in its development phase, but once the system is complete and live, it should be able to function on its own without invoking other applications and run its own programs. That is another aspect financial systems could improve upon.

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APPENDIX

The System Source:

The VB.NET 'Code-behind'

```
Imports System.Data.SqlClient
Imports System.Data

Partial Class _Default
    Inherits System.Web.UI.Page

    Public Sub Page_Load(ByVal sender As Object, ByVal e As
System.EventArgs)
        If Not IsPostBack Then
            BindGridView(String.Empty)
        End If

        lblCR.Visible = False
        lblQR.Visible = False
        lblIT.Visible = False
        lblNP.Visible = False
        lblROA.Visible = False
        lblROE.Visible = False
        lblD2E.Visible = False

    End Sub

    Protected Sub ddlRatios_SelectedIndexChanged(ByVal sender As Object,
ByVal e As System.EventArgs) Handles ddlRatios.SelectedIndexChanged
        lblRatio.Text = ddlRatios.SelectedValue
        lblStatus.Visible = True
        If ddlRatios.SelectedIndex = 1 Then
            lblSelectedRatio.Text = "From the Balance sheet, input the
values for the: " & ddlRatios.SelectedValue & " in their corresponding
fields"
            lblAmount1.Text = "Current Current"
            lblAmount2.Text = "Current Liabilities"
            lblMinus.Visible = False
            lblAmount3.Visible = False
            txtAmount3.Visible = False

        ElseIf ddlRatios.SelectedIndex = 2 Then
            lblSelectedRatio.Text = "From the Balance sheet, input the
values for the: " & ddlRatios.SelectedValue & " in thier corresponding
fields"
            lblAmount1.Text = "Current Assets"
            lblAmount2.Text = "Current Liabilities"
            lblAmount3.Visible = True
            lblAmount3.Text = "Inventory"
            lblMinus.Visible = True
            txtAmount3.Visible = True
        ElseIf ddlRatios.SelectedIndex = 3 Then
```

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```
                lblSelectedRatio.Text = "From the Balance sheet, input the
values for the: " & ddlRatios.SelectedValue & " in thier corresponding
fields"
                lblAmount1.Text = "Revenue/Sales"
                lblAmount2.Text = "Inventory"
                lblMinus.Visible = False
                lblAmount3.Visible = False
                txtAmount3.Visible = False
        ElseIf ddlRatios.SelectedIndex = 4 Then
                lblSelectedRatio.Text = "From the Balance sheet, input the
values for the: " & ddlRatios.SelectedValue & " in thier corresponding
fields"
                lblAmount1.Text = "Accounts Receivables"
                lblAmount2.Text = "Revenue/Sales"
                lblMinus.Visible = False
                lblAmount3.Visible = False
                txtAmount3.Visible = False
        ElseIf ddlRatios.SelectedIndex = 5 Then
                lblSelectedRatio.Text = "From the Income Statement and the
Balance Sheet, input the values for the: " & ddlRatios.SelectedValue &
" in thier corresponding fields"
                lblAmount1.Text = "Net Profit"
                lblAmount2.Text = "Sales"
                lblMinus.Visible = False
                lblAmount3.Visible = False
                txtAmount3.Visible = False
        ElseIf ddlRatios.SelectedIndex = 6 Then
                lblSelectedRatio.Text = "From the Income Statement and the
Balance Sheet, input the values for the: " & ddlRatios.SelectedValue &
" in thier corresponding fields"
                lblAmount1.Text = "Operating Profit"
                lblAmount2.Text = "Total Assets"
                lblMinus.Visible = False
                lblAmount3.Visible = False
                txtAmount3.Visible = False
        ElseIf ddlRatios.SelectedIndex = 7 Then
                lblSelectedRatio.Text = "From the Income Statement and
Balance Sheet, input the values for the: " & ddlRatios.SelectedValue &
" in thier corresponding fields"
                lblAmount1.Text = "Net Profit"
                lblAmount2.Text = "Average Equity"
                lblMinus.Visible = False
                lblAmount3.Visible = False
                txtAmount3.Visible = False
        ElseIf ddlRatios.SelectedIndex = 8 Then
                lblSelectedRatio.Text = "From the Balance sheet, input the
values for the: " & ddlRatios.SelectedValue & " in thier corresponding
fields"
                lblAmount1.Text = "Total Debt"
                lblAmount2.Text = "Total Equity"
                lblMinus.Visible = False
                lblAmount3.Visible = False
                txtAmount3.Visible = False
        End If

    End Sub
```

```
      Protected Sub btnCompute_Click(ByVal sender As Object, ByVal e As
System.EventArgs) Handles btnCompute.Click
          Dim Sum As Double
          Dim Amount1 As Double
          Dim Amount2 As Double
          Dim Amount3 As Double

          Amount1 = txtAmount1.Text
          Amount2 = txtAmount2.Text

          If ddlRatios.SelectedIndex = 1 Then
              Sum = Amount1 / Amount2
              lblCR.Visible = True
              lblQR.Visible = False
              lblIT.Visible = False
              lblNP.Visible = False
              lblROA.Visible = False
              lblROE.Visible = False
              lblD2E.Visible = False

          ElseIf ddlRatios.SelectedIndex = 2 Then
              Sum = (Amount1 - Amount3) / Amount2
              lblCR.Visible = False
              lblQR.Visible = True
              lblIT.Visible = False
              lblNP.Visible = False
              lblROA.Visible = False
              lblROE.Visible = False
              lblD2E.Visible = False

          ElseIf ddlRatios.SelectedIndex = 3 Then
              Sum = Amount1 / Amount2
              lblCR.Visible = False
              lblQR.Visible = False
              lblIT.Visible = True
              lblNP.Visible = False
              lblROA.Visible = False
              lblROE.Visible = False
              lblD2E.Visible = False

          ElseIf ddlRatios.SelectedIndex = 4 Then
              Sum = (Amount1 / Amount2) * 100
              lblCR.Visible = False
              lblQR.Visible = False
              lblIT.Visible = False
              lblNP.Visible = True
              lblROA.Visible = False
              lblROE.Visible = False
              lblD2E.Visible = False

          ElseIf ddlRatios.SelectedIndex = 5 Then
              Sum = Amount1 / Amount2
              lblCR.Visible = False
              lblQR.Visible = False
              lblIT.Visible = False
```

```
                lblNP.Visible = False
                lblROA.Visible = True
                lblROE.Visible = False
                lblD2E.Visible = False

        ElseIf ddlRatios.SelectedIndex = 6 Then
                Sum = Amount1 / Amount2
                lblCR.Visible = False
                lblQR.Visible = False
                lblIT.Visible = False
                lblNP.Visible = False
                lblROA.Visible = False
                lblROE.Visible = True
                lblD2E.Visible = False

        ElseIf ddlRatios.SelectedIndex = 7 Then
                Sum = Amount1 / Amount2
                lblCR.Visible = False
                lblQR.Visible = False
                lblIT.Visible = False
                lblNP.Visible = False
                lblROA.Visible = False
                lblROE.Visible = False
                lblD2E.Visible = True
        End If

        lblSum.Text = Sum.ToString
    End Sub


    Protected Sub DropDownList1_SelectedIndexChanged(ByVal sender As
Object, ByVal e As System.EventArgs) Handles
DropDownList1.SelectedIndexChanged
        If DropDownList1.SelectedValue = "Hotels" Then
            lblHospitality.Text = "The Industry Averages for the Hotels
Industry are listed below. Check the corresponding ratio and heed D-
FIS' Analysis: "
            lblTechnology.Visible = False

        ElseIf DropDownList1.SelectedValue = "Technology" Then
            lblTechnology.Text = "The Industry Averages for the
Technolgy Industry are listed below. Check the corresponding ratio and
heed D-FIS' Analysis: "
            lblHospitality.Visible = False
        End If

        BindGridView(DropDownList1.SelectedItem.Text)

    End Sub

    Private Sub BindGridView(ByVal strIndustry As String)
        Dim cn As SqlConnection = New
SqlConnection(SqlDataSource1.ConnectionString.ToString())
        cn.Open()
        Dim strQuery As String = "SELECT DISTINCT * FROM [Ratios]"
        If strIndustry <> String.Empty Then
            strQuery &= " Where Industry = '" & strIndustry & "'"
```

```
            End If
            Dim sqlAd As SqlDataAdapter = New SqlDataAdapter(strQuery, cn)
            Dim ds As DataSet = New DataSet()
            sqlAd.Fill(ds)
            If (ds.Tables(0).Rows.Count > 0) Then
                GridView1.DataSource = ds
                GridView1.DataBind()
            End If
            sqlAd.Dispose()
            ds.Dispose()
            cn.Close()
            cn.Dispose()
        End Sub


    Protected Sub Button1_Click(ByVal sender As Object, ByVal e As
System.EventArgs) Handles Button1.Click
            txtAmount1.Text = ""
            txtAmount2.Text = ""
            txtAmount3.Text = ""
        End Sub


    Protected Sub LinkButton1_Click(ByVal sender As Object, ByVal e As
System.EventArgs) Handles LinkButton1.Click
            ddlRatios.SelectedIndex = 0
            lblSelectedRatio.Visible = False
            txtAmount1.Text = ""
            txtAmount2.Text = ""
            txtAmount3.Text = ""
            lblSum.Visible = False
            lblCR.Visible = False
            lblQR.Visible = False
            lblIT.Visible = False
            lblNP.Visible = False
            lblROA.Visible = False
            lblROE.Visible = False
            lblTechnology.Visible = False
            lblHospitality.Visible = False
            GridView1.Visible = False
        End Sub
End Class
```

The HMTL Coding (In line)

```
<%@ Page Language="VB" AutoEventWireup="false"
CodeFile="Default.aspx.vb" Inherits="_Default" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
    <title>Untitled Page</title>
    <link href="StyleSheet.CSS" rel="stylesheet" type="text/css" />
</head>
<body bgcolor="#999999">
    <form id="form1" runat="server">
    <div>
         
        <asp:Label ID="lblChoose" runat="server" Style="z-index: 100;
left: 327px; position: absolute;
        top: 76px" Text="To get started, Choose a Ratio you would
like to calculate from the drop down menu"
        Width="656px"></asp:Label>
        <asp:DropDownList ID="ddlRatios" runat="server"
AutoPostBack="True" Style="z-index: 101;
        left: 327px; position: absolute; top: 141px">
            <asp:ListItem>Select a ratio</asp:ListItem>
            <asp:ListItem>Current Ratio</asp:ListItem>
            <asp:ListItem>Quick Ratio</asp:ListItem>
            <asp:ListItem>Inventory Turnover</asp:ListItem>
            <asp:ListItem>Average Collection Period</asp:ListItem>
            <asp:ListItem>Net Profit margin</asp:ListItem>
            <asp:ListItem>Return On Assets</asp:ListItem>
            <asp:ListItem>Return On Equity</asp:ListItem>
            <asp:ListItem>Debt-to-Equity </asp:ListItem>
        </asp:DropDownList>
        <asp:Label ID="lblRatio" runat="server" Style="z-index: 102;
left: 325px; position: absolute;
        top: 456px; color: darkblue;" Width="201px" Font-
Bold="False" Font-Size="Large">Ratio</asp:Label>
        <asp:Label ID="lblStatus" runat="server" Style="z-index: 103;
left: 327px;
        position: absolute; top: 413px; color: navy;"
Text="Results" Width="108px" Font-Bold="True" Font-
Size="Large"></asp:Label>
         
        <asp:TextBox ID="txtAmount1" runat="server" Style="z-index: 104;
left: 323px; position: absolute;
            top: 304px" Width="112px"></asp:TextBox>
        <asp:TextBox ID="txtAmount2" runat="server" Style="z-index: 105;
left: 576px; position: absolute;
            top: 305px" Width="126px"></asp:TextBox>
        <asp:Label ID="lblAmount1" runat="server" Style="z-index: 106;
left: 324px; position: absolute;
            top: 285px" Width="116px" Font-
Bold="True">Amount1</asp:Label>
```

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```
        <asp:Label ID="lblAmount2" runat="server" Style="z-index: 107;
left: 576px; position: absolute;
            top: 285px" Width="130px" Font-
Bold="True">Amount3</asp:Label>
        <asp:Label ID="lblMinus" runat="server" Style="z-index: 108;
left: 443px; position: absolute;
            top: 307px" Text="-" Visible="False"
Width="1px"></asp:Label>
        <asp:TextBox ID="txtAmount3" runat="server" Style="z-index: 109;
left: 459px; position: absolute;
            top: 305px" Visible="False" Width="109px"></asp:TextBox>
        <asp:Label ID="lblAmount3" runat="server" Style="z-index: 110;
left: 458px; position: absolute;
            top: 285px" Visible="False" Width="114px" Font-
Bold="True">Amount2</asp:Label>
        <asp:Button ID="btnCompute" runat="server" Style="z-index: 111;
left: 392px; position: absolute;
            top: 344px; background-color: steelblue; border-top-style:
none; border-right-style: none; border-left-style: none; border-bottom-
style: none;" Text="Compute" Width="120px" />
        <asp:Label ID="lblSum" runat="server" Style="z-index: 112; left:
534px; position: absolute;
            top: 456px; color: darkblue;" Width="120px" Font-
Bold="False" Font-Size="Large"></asp:Label>
        <asp:HyperLink ID="Home" runat="server"
NavigateUrl="~/Main.aspx" Style="z-index: 113;
            left: 653px; position: absolute; top: 1027px" Font-
Names="Cooper Black" Width="57px">Home</asp:HyperLink>
                         
     
                        
    
                         
         

        <br />
        <asp:Label ID="lblROE" runat="server" Font-Bold="True"
Height="175px" Style="z-index: 114;
            left: 329px; position: absolute; top: 522px"
Text="Indicates the dollar amount of after-tax and after-interest
profit generated for each $1 of equity. This result can postive or
negative, depending on the industry standard for companies of similar
size and activity."
            Width="667px" Visible="False"></asp:Label>
        <br />
        <asp:Button ID="Button1" runat="server" Style="z-index: 115;
left: 529px; position: absolute;
            top: 344px; background-color: gray; border-top-style: none;
border-right-style: none; border-left-style: none; border-bottom-style:
none;" Text="Reset" Width="130px" />
        <br />
        <asp:Image ID="Image1" runat="server" Height="183px"
ImageUrl="~/images/MiniTemp.bmp"
            Style="z-index: 116; left: 327px; position: absolute; top:
520px" Width="675px" />
        <asp:Label ID="lblD2E" runat="server" Font-Bold="True"
Height="141px" Style="z-index: 117;
```

left: 329px; position: absolute; top: 526px" Text='The Debt-to-Equity proportions are decided by management and thus there is no "ideal" ratio value. The reliance on creditor financing needs to be analyzed in light of other factors such as: the historical trend of this ratio for the business, industry standards for companies of similar size and activity, and whether the company is in the start-up or established phase. Term lenders prefer a lower debt-to-equity ratio as it indicates a lower reliance on creditors and therefore a greater capacity for the business to repay its creditors.'
Width="670px" Visible="False"></asp:Label>
<asp:Panel ID="Panel1" runat="server" Height="21px" Style="z-index: 118; left: 325px;
position: absolute; top: 196px" Width="575px">
Complete the fields below. When you are ready to see the results,
click the Compute button.</asp:Panel>
<asp:Label ID="lblSelectedRatio" runat="server" Style="z-index: 119; left: 326px;
position: absolute; top: 239px" Width="583px"></asp:Label>
<asp:Label ID="lblCR" runat="server" Font-Bold="True" Height="135px" Style="z-index: 120;
left: 330px; position: absolute; top: 526px" Text="A Current Ratio of 1.0 or greater is considered acceptable for most businesses. Most analysts agree that other factors need to be considered before drawing conclusions from the Current Ratio such as how quickly current assets can be converted into cash, and the credit terms extended by suppliers and to customers. A high ratio (greater than 2.0) indicates excessive current assets in the form of inventory, and underemployed capital. A low ratio (less than 1.0) indicates difficulty to meet short-term financial obligations, and the inability to take advantage of opportunities requiring quick cash."
Width="667px" Visible="False"></asp:Label>
<asp:Label ID="lblQR" runat="server" Height="133px" Style="z-index: 121; left: 329px;
position: absolute; top: 526px" Text="Indicates the number dollars of quick assets available to pay each dollar of current liabilities. Generally, a Quick Ratio of 1.0 or greater is considered adequate to ensure a company's ability to pay its current obligations. A value of less than 1.0 signals a problem in meeting short-term obligations."
Width="669px" Visible="False"></asp:Label>
<asp:Label ID="lblIT" runat="server" Font-Bold="True" Height="126px" Style="z-index: 122;
left: 330px; position: absolute; top: 526px" Text="This result may be considered postive or negative, depending on the industry standard for companies of similar size and activity. A high turnover rate is an indication of good inventory management as the appropriate amount of inventory is being purchased to meet demand. High turnovers are also a good indicator that the business is less likely to suffer problems carrying inventories of products that may become obsolete (such as fashion items), are seasonal (such as snow shovels), or that deteriorate (such as groceries). It is important to note that this ratio varies according to the type of business. For perishable goods, the turnover rate should be high; for durable goods, it can be lower. A major variance from industry standards may indicate an inventory surplus resulting from a poor purchasing or marketing policy."
Width="666px" Visible="False"></asp:Label>

```
        <asp:Label ID="lblNP" runat="server" Font-Bold="True"
Height="170px" Style="z-index: 123;
        left: 330px; position: absolute; top: 526px"
Text="Indicates the number of profit dollars generated for each $100 in
sales. This result may be considered postive or negative, depending on
the industry standard for companies of similar size and activity."
        Width="665px" Visible="False"></asp:Label>
        <asp:Label ID="lblROA" runat="server" Font-Bold="True"
Height="173px" Style="z-index: 124;
        left: 331px; position: absolute; top: 524px" Text="A higher
ratio result than industry standards usually indicates an efficient use
of assets. There are several factors to consider before drawing
conclusions from this ratio such as seasonal variability in sales and
whether assets are bought or leased."
        Width="669px" Visible="False"></asp:Label>
        <asp:Label ID="lblACP" runat="server" Height="166px" Style="z-
index: 125; left: 330px;
        position: absolute; top: 522px" Text="This result may be
considered postive or negative, depending on the industry standard for
companies of similar size and activity. A high value can indicate a
collection problem. A low value usually indicates good management of
collections but it could also signal an overly tight credit policy
limiting sales and profits."
        Width="663px" Font-Bold="True" Visible="False"></asp:Label>
           
        <asp:Label ID="Label1" runat="server" Style="z-index: 126; left:
545px; position: absolute;
        top: 723px" Text="Select your industry to view industry
results" Width="266px"></asp:Label>
        <asp:Label ID="lblHospitality" runat="server" Style="z-index:
127; left: 332px; position: absolute;
        top: 827px; color: #000099;" Width="667px" Font-
Bold="True"></asp:Label>
        <asp:Label ID="lblTechnology" runat="server" Style="z-index:
128; left: 332px; position: absolute;
        top: 826px; color: #000099;" Width="668px" Font-
Bold="True"></asp:Label>


    </div>
         <br />
      <br />
        <asp:GridView ID="GridView1" runat="server"
AutoGenerateColumns="False" DataKeyNames="Industry"
                EmptyDataText="There are no data records to display."
                Style="z-index: 129; left: 222px; position: absolute;
top: 892px" CellPadding="4" ForeColor="#333333" GridLines="None">
                <Columns>
                        <asp:CommandField ShowSelectButton="True" />
                        <asp:BoundField DataField="Industry"
HeaderText="Industry" ReadOnly="True" SortExpression="Industry" />
                        <asp:BoundField DataField="CurrentRatio"
HeaderText="CurrentRatio" SortExpression="CurrentRatio" />
                        <asp:BoundField DataField="QuickRatio"
HeaderText="QuickRatio" SortExpression="QuickRatio" />
                        <asp:BoundField DataField="InventoryTurnover"
HeaderText="InventoryTurnover" SortExpression="InventoryTurnover" />
```

```
                    <asp:BoundField DataField="NetProfitMargin"
HeaderText="NetProfitMargin" SortExpression="NetProfitMargin" />
                    <asp:BoundField DataField="ReturnOnAssets"
HeaderText="ReturnOnAssets" SortExpression="ReturnOnAssets" />
                    <asp:BoundField DataField="RetrunOnEquity"
HeaderText="RetrunOnEquity" SortExpression="RetrunOnEquity" />
                    <asp:BoundField DataField="Debt2Equity"
HeaderText="Debt2Equity" SortExpression="Debt2Equity" />
                </Columns>
            <FooterStyle BackColor="#5D7B9D" Font-Bold="True"
ForeColor="White" />
            <RowStyle BackColor="#F7F6F3" ForeColor="#333333" />
            <EditRowStyle BackColor="#999999" />
            <SelectedRowStyle BackColor="#E2DED6" Font-Bold="True"
ForeColor="#333333" />
            <PagerStyle BackColor="#284775" ForeColor="White"
HorizontalAlign="Center" />
            <HeaderStyle BackColor="#5D7B9D" Font-Bold="True"
ForeColor="White" />
            <AlternatingRowStyle BackColor="White" ForeColor="#284775"
/>

            </asp:GridView>
            <asp:SqlDataSource ID="SqlDataSource1" runat="server"
ConnectionString="<%$ ConnectionStrings:RatiosConnectionString1 %>"
                ProviderName="<%$
ConnectionStrings:RatiosConnectionString1.ProviderName %>"
                SelectCommand="SELECT DISTINCT * FROM
[Ratios]"></asp:SqlDataSource>
            <asp:DropDownList ID="DropDownList1" runat="server"
AutoPostBack="True" DataSourceID="SqlDataSource1"
                DataTextField="Industry" DataValueField="Industry"
Style="z-index: 130; left: 628px;
                position: absolute; top: 774px"
OnSelectedIndexChanged="DropDownList1_SelectedIndexChanged">
            </asp:DropDownList>
        <asp:LinkButton ID="LinkButton1" runat="server" Font-
Bold="True" Style="z-index: 132;
            left: 580px; color: darkslategray; position: absolute; top:
975px">Perform Another Calculation</asp:LinkButton>
    </form>
</body>
</html>
```