REPORT DOCUMENTATION

On

STOCK TRACKING SYSTEM

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CONTENTS

Stock Tracking System

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***Abstract*—This report is a documentation of the project, "Stock Tracking System" built as a semester project and to use in the real world. It describes the details of the need of such system, the features, how the whole system works, way of using and the challenges in bringing the program in use with the real world application.**

Keywords—stock, shares, looping, arrays, functions, strings, libcurl

I. Introduction

Stock trading has become one of the vital financial activities. Nonetheless, it is getting tougher day by day. In spite of such hassle in investment in our market, we can never get the desired price for stock trading. At a moment, it is up and the other moment, it is down. So, there seems to be a requirement of quick market analysis to trade safely. Sometimes it takes a whole day to reach a pick point value and it happens out of the blue. Many people have experienced such atrocities in the so called, hassle market. To come up with a targeted solution, although very small, "Stock Tracking System" program is built. It sums up to the easier mode of accessibility for us in the shares market. It is especially designed for the ease of use in stock value monitoring, where the user can enter a desired value for trading and the system utilizes the value to return result if the desired value is reached. However, this system is not only limited to tracking stock data but also displays the availability of active stocks and all the market parameters of a particular stock/share.

C is a general-purpose programming language [1]. For this program, a simple yet powerful program is written in C Programming language with the use of basic concepts and techniques of procedural programming in C. The overall functionality of program is aimed to aid the enthusiastic investors on following the stocks of their wish without conventionally viewing through the ups and downs of the market.

II. Features

A. Easy Handle

Firstly it is a stock tracker program and secondly it is also a program that can give information of active shares. It is very easy to use program with the full accessibility of stock viewing, stock analysis through stock information and value tracking by entering the desired value. The ease of analysis of stocks is beneficial as it can upgrade one's portfolio of investments.

B. Procedure oriented and descriptive

The program is designed in such a way that leads the users to enter stock name and values following a procedure of its own. Moreover, the program is descriptive in a sense that any user can easily be directed to what one wishes to opt for.

III. Whereabouts of the program

The program uses the basic concepts that are used in programming in C. The looping structures, conditional statements, arrays, strings, struct and file handling, etc. are conceptually used in this program. The functions used are a part of the C Library and are installed via compiler.

On addition, the program has the essence of use of the libcurl library, which is a free URL transfer library. With the help of libcurl, or just curl, the program downloads the webpage scripts and stores them on to a separate file. These are briefly described below.

A. Looping Structures

Entry controlled loops and exit controlled loops, namely for loop and while loop are precisely used in the program to control the program flow, and file searching.

B. Conditional Statements

Conditional statements like if, if…else, else if and switch are widely used to test conditions before execution of the program. These statements are very vital in procedural programming language like C.

C. Arrays

The arrays are the variables storing multiple data of same type. They are used with the conditional statements for data comparison, storing values and sorting. In this program, array is mostly used in storing results and for comparing the values. Out of different types of arrays, one dimensional and two dimensional arrays are commonly used.

D. Strings

In C programming language, strings are the array of characters. Strings are used alongside the arrays for many purposes. They have special properties of comparison, concatenation, finding lengths of characters, etc. which are appropriately used in this program. The header file is <string.h>.

E. Functions

Functions are the special areas of the program that accepts certain values to perform the desired task on the data. It can return the result of the performed task when called in the program. Many functions are used in this program to distribute the tasks that are required to be performed at certain conditions or for given arguments. The return type of non-return types of functions are used in handling the parts of the program.

F. Libcurl

Libcurl or simply curl is an essential tool used in this program to download the webpage scripts. The downloaded script is then used to work on the values entered by the users, followed by comparison, matching and finally delivering the results. libcurl is highly portable, it builds and works identically on numerous platforms [2]. It has many in-built functions for various operations. In this program, some of the main functions used are curl_easy_init(), curl_easy_setopt(), curl_easy_perform() and curl_easy_cleanup(). This multifunctional file transfer library is solidly designed to meet the requirements of one of the best file transfer libraries. Curl is a library package that is installed via compilers. The header file is <curl/curl.h>.

G. Windows library

It defines a very large number of Windows specific functions that can be used in C [3]. This library is especially used to create short optimizing operations for displaying menu, stock information, and notification. It is a small yet very powerful library to make a program systematic and user friendly. Hence, it is used as an additional library which is basically used to help the program work systematically. The header file is <windows.h>.

H. Stdlib

It stands for standard library which has operations for various categories such as conversion, memory, process control, sort and search, mathematics. In this program, it is mainly used for process control using system(). The header file is <stdlib.h>.

I. Stdio library

It stands for standard input output library which has operations of input using scanf(), gets(), etc. and for output using printf(), puts(), etc. This library the most basic library used in any C programming language. Although, it is a basic form of the programming technique, this library has served to give undeniable operations for this program. The header file is <stdio.h>.

J. Conio library

It stands for console input output library which has operation of getch() used in this program. getch() gets the character to be entered on the screen.

K. File Handling

A file can be thought of as a stream of characters [4]. File handling is a technique which importantly the backbone of this program used for storing the webpage scripts via file transfer using curl. FILE is declared with a pointer and the operations are done based on the pointer. It has various functions like fopen() which opens a file in read/write mode in either text or binary mode in the program. Similarly, fgets(), fgetc() are used to get characters from the file and fclose() is used to close the file.

IV. Requirements

- Windows, Mac, Linux Operating System
- C compiler- gcc with curl/libcurl installed
- System Path change

V. Insights

1) Main Screen

Main screen is a typical screen used for creating user friendly and applicable system. It has simple prompt which asks for password to enter the system. Looping structures, Conditional statements, described in [Section III-A, B] are used to create the main screen.

2) Menu

The journey of the application of stock tracking process begins from the menu. Menu consists of list of items like Name of all Stocks, Stock Information, Follow (track) a Stock and Exit. The user must select one of the desired lists to proceed further. Menu works basically as a calling function that calls certain function when the user selects from the list. Menu is created with stdio, stdlib, string and conio libraries. The functions and the properties of the libraries used in this are described in [Section III].

3) Downloader

The downloader is very important part of the program. It is a separate function where the use of curl library or libcurl as described in [Section III-F] is done. It also has the use of file handling as described in [Section III-K]. The variables are defined for curl as CURL and file as FILE. The webpage [5] URL is given and stored to a variable, which is then used by curl to operate the downloading process.

curl_easy_init() is used to initialize curl and it is stored in the pointer of curl. Next is the curl_easy_setopt() function which is used to optimize the curl to give the curl the URL, say the filename to transfer the file from the webpage [5] and finally, handle any error that may appear during the process. The result of the process can be known using curl_easy_perform() function. At the end, curl_easy_cleanup() is used to end the process of file transfer by curl library.

4) Finding and Displaying all Stock Names

This program simply displays the available stocks which are active in the webpage. It has the libraries described in Section [III-D, H, I, J] and the concept of file handling described in [Section III-K] is used. Firstly, it opens the file in read mode, then searches for particular symbol used in HTML script of the webpage [5] and if it matches with the input HTML that is used for searching, concatenated with the entered stock code (symbol), then the code is stored on a variable array.

The stock code stored in variable array is sorted and displayed on the screen. Hence, users can see the active available stocks at the present moment. It is only an additional feature of this program as the whole program is centered to tracking the stock.

5) Finding and Displaying Stock Information

This part of the program is very interesting and important for the user, i.e. trader as it displays all necessary parameters of the stock market like last traded price (LTP), Stock Quantity, Percentage Change, Open value, High and Low values of trading price and so on.

For this, the program again uses the same libraries and operations as described in [Section IV-4]. It lets the user to enter the stock code to display the latest market information of the particular stock. Then it compares the input concatenated code with the same HTML script of the webpage [5] stored in the file, downloaded using curl. After looping through the end of file, it searches for the particular character used in HTML script for all the required parameters of stock market. Finally, it stores the values of the parameters in separate variables and they are displayed on the screen.

6) Stalking the stock

This is where the program is centered. It is that part of the program which is built to track any available stock. It has many libraries used described in [Section III].

The user is allowed to enter the stock code for which they are wanting to stalk. After that the user is asked with the prompt message of whether to buy or sell stocks. If buy then at what stock price value. If sell then at what stock price value.

The entered stock code is compared with the HTML script of the webpage [5], as previously described in [Section IV-4, 5]. The stock price entered by the user is checked in the downloaded script stored in the file. If the value reaches lesser than or equal to the entered value then the stock is appropriate for buying. If the value reaches more than or equal to the entered value then the stock is appropriate for selling. So, the program notifies with a sound that the value is reached and the user can know about the stock status as well.

This part of the program also asks user to wait till the process continues which is actually used to let the program process. It also conditionally checks whether the stock code or the value entered by the user is found or not. Hence, the overall functionality of the system is depended on this particular stock stalking program.

7) Notification Sound

This is an additional function of the program to notify the user with their result of the input. It uses functions like sleep() and beep() to create rhythmic patterns of the sound using library as described in [Section III-G]. This function is solely created to make a user friendly program and aid the users to be notified.

VI. Using the Program

While using the program, the user must pre-decide about buying or selling the stock and the value of desired stock.

A. Login and Menu

The login screen appears which asks a password to log into the menu screen. The menu screen displays options to select which involves names of all available stocks, stock information and follow stock. Exit option is to exit from the program.

B. Name of available stocks

All available shares in the market are displayed by this function. It aids the user to know about the live market and the continuation of stocks in the market.

C. Stock Information

The stock information is a really important function for the users to know about the stocks ready to be traded in the market. It gives all the value related to stocks like Last Trade Price(LTP), Percentage change, Quantity, High, Low, etc. Once the user enters the symbol of their desired stock, all important information related to the particular stock is displayed on the screen.

D. Follow a Stock

This is where everything about the program sums up to. Once the user enters the symbol(short form) of the stock, they are directed to either buying or selling the stock. Once the price reaches, the program notifies with sound, depicting that they can trade the desired stock. Otherwise, the program seizes to stop.

VII. Challenges

The real world application is nearly the same as we just need a stock live status webpage. However, there are many challenges to use such a program. The reasons may be legal actions, copyright infringements, and accuracy. The webpage script may not give the rights to be copied. Moreover, the accuracy of the program is determined by the frequency of changing values and webpage server response. The results may also be a vague if input given by the user is wrong.

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