

## **Introduction**

The objectives of this assignment are to gain practical experience in interacting with a relational database management system using an Application Programming Interface (API) (Python DB-API). This assignment additionally provides an opportunity to use more advanced features of a database such as functions.

## **Task 1: The SharePlus Online Trading (SOT) System**

In this assignment, you will be working with the SOT system which is currently under development. The system still requires work in numerous areas, including interaction with the database. Your main task in this assignment is to handle requests for reads and writes to the database coming from the user interface (UI). We first describe the main features that the SOT system should include from a UI perspective, and then discuss where the majority of your database code needs to be implemented.

### ***Logging In***

The first form a user is presented with when starting the SOT system is Login, as shown in Figure 1. This feature is still under development and currently requires that an administrator enters their username and password to be validated prior to successfully log in to the system. Security features such as password encryption/hashing will be implemented at a later stage (and is out of scope for this assignment). Once logged in, the user is taken to the regular investment instructions list page to view their associated instructions for

their customers.

## Log in

Log in

Figure 1 – Login form

### Viewing Instructions List

Once a user has logged in, they are shown a list of all their associated instructions, as shown below in Figure 2. This list must be ordered such that only active instructions appear at the top. The list is also sorted by expiry date in ascending order, and customer full name in descending order. Each instruction has an amount, frequency, expiry date, customer full name, ETF name, and notes. An instruction is associated with an administrator if the administrator is allocated as the staff assisting customers with their investment instructions.

### Viewing Instructions List

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SharePlus Online Trading

Instructions

Add Instruction

Logout

## Investment Instructions

Search Instructions						Find
ID	Amount	Frequency	Expiry	Customer	ETF	Notes
5	1500.00	Fortnightly	27-01-2023	James Swift	Global Banks	Follow up with customer in 2 months time.
7	3170.00	Monthly	24-02-2023	Carie Bowtel	iShares MSCI Japan	Client wants to increase investment amount.
2	1880.00	Fortnightly	04-10-2023	Carie Bowtel	BetaShares A200	
9	1400.00	Monthly	26-06-2022	Maggie Chan	Ishares Yield Plus	Instruction not renewed.

Figure 2 – Viewing Instructions List

### Finding Instructions

A user can search through all investment instructions by entering a word or phrase (a 'keyword') in the field next to the Find button, as shown in Figure 3, and then clicking on Find. When such a keyword is specified, then the retrieved instructions and shown on the list are those that include this word or phrase in the customer's full name, ETF name, or notes. The search must ignore case sensitivity. For example, given the search keyword 'carie b', Find will return all instructions that include the keyword 'carie b' in the customer's full name, ETF name, or notes. Searching with a blank/empty keyword field will show all of the logged in user's associated instructions. Any search results returned must be ordered such that instructions without an administrator would appear at the top, and by expiry date in ascending order. The search results must also exclude instructions that have expired.

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InstructionsAdd InstructionLogout

Investment Instructions

carie b

Find

ID	Amount	Frequency	Expiry	Customer	ETF	Notes
7	3170.00	Monthly	24-02-2023	Carie Bowtel	iShares MSCI Japan	Client wants to increase investment amount.
2	1880.00	Fortnightly	04-10-2023	Carie Bowtel	BetaShares A200	

Figure 3 – Finding Instructions

### ***Adding an Instruction***

Users may also add a new instruction by clicking on the *Add Instruction* tab in the title bar, entering investment instruction details such as amount, frequency, and customer, in the popup dialog that appears, and then clicking on Add Instruction button, as shown in Figure 4. A new regular investment instruction has a default expiry of twelve months from the current date.

SharePlus Online Trading		Instructions	Add Instruction	Logout
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## New Instruction

Amount:

Frequency:

Customer:

ETF:

Notes:

Add Instruction

*Figure 4 – Adding an Instruction*

### Updating an Instruction

Users can also update an instruction by modifying data in the instruction details screen as shown in Figure 5, and clicking on Update Instruction button. You can access this update screen by clicking on an instruction from the list of instructions in the Instructions tab.

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InstructionsAdd InstructionLogout

## Update Instruction

ID:

5

Amount:

3700.00

Frequency:

Monthly

Expiry Date:

11/01/2023

Customer:

jswift

ETF:

ethi

Notes:

Follow up with the customer next month.

Figure 5 – Updating an Instruction