Real-Time Net Value Requirements
Automated Testing Framework Example

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1 Introduction

The purpose of this document is to define the requirements for an Android app that will allow a user to enter and store stocks in a portfolio and, with the app, see the net value of the portfolio.

1.1   Scope

This document defines the interface, processing, and displays for an Android app that is intended to work on Android versions greater than or equal to 4.4.2. The purpose of this app is mostly to demonstrate the generic embedded testing framework that I've developed.

1.2   Features

Real-Time Net Value (rtnv) will be a single menu Android demonstration app that has a user interface to enter stock tickers, number of shares, and value of each share. The values are updated when an internet interface is available, so the displayed net value varies with the value of the stocks.

1.3   Acronyms

2 RTNV

The following paragraphs outline the operation of rtnv and the detailed requirements that define the expected behavior of the app.

2.1   Theory of Operation

When rtnv is selected to run from an Android main menu, it will read a portfolio from a persistent database of stocks and update the value of the stocks based on the last closing price. Each stock in the portfolio will have a ticker, number of shares, and value for each share associated with it. If the app is running on the Android device for the first time, the database will be initialized as empty.

The user will be able to enter a ticker symbol and the number of shares owned. When the "enter" button is pressed, the ticker on the screen will be used to query for the stock's last closing price and, if available, store that price in the portfolio along with the newly entered ticker and number of shares.

If the "delete" button is pressed, the ticker symbol on the display will be removed from the persistent database.
If the "next" button is pressed, the stocks in the persistent database will be displayed one by one until the list is exhausted.

2.2   External Interface Requirements

ID::RTNV-EXT-IF-010 rtnv shall have a displayable and editable field that allows a user to enter stock ticker symbols.

ID::RTNV-EXT-IF-020 rtnv shall have a displayable and editable field that allows a user to enter the number of shares owned of a given ticker symbol.

ID::RTNV-EXT-IF-030 rtnv shall have a displayable field that shows the value of a stock share identified by the displayed ticker.

ID::RTNV-EXT-IF-040 rtnv shall have a displayable field that shows the net value of the portfolio stored in the persistent database.

ID::RTNV-EXT-IF-050 rtnv shall have buttons labeled "enter", "delete", "next", and "calculate net value" that conform to the processing requirements identified below.

ID::RTNV-EXT-IF-060 rtnv shall use a public server such as Yahoo finance to retrieve the closing prices of stocks identified by the ticker symbols.   Note: this is a demonstration app only and is not meant to be massively distributed for large scale use.

ID::RTNV-EXT-IF-070 rtnv shall use SQLite to create a persistent store of the portfolio on the target device.

2.3   Processing Requirements

The following paragraphs identify the processing to be performed at initiation of the app and with each button press or screen touch.

2.3.1   Startup

ID::RTNV-PR-INIT-010 When the app is started by selecting from the Android app selection menu, the app shall do the following:

ID::RTNV-PR-INIT-010.001 If the portfolio database does not exist, the app shall create the database and then display a blanked main menu.

ID::RTNV-PR-INIT-010.002 If the portfolio database does exist, the app shall query the public server to retrieve and store the latest closing price for each stock ticker in the portfolio and then display a blanked main menu.

2.3.2   Enter button

ID::RTNV-PR-ENTER-010 When the enter button is pressed, rtnv shall send a retrieve request to the public server if the ticker field is not empty.

ID::RTNV-PR-ENTER-010.001 rtnv shall store a persistent copy of the ticker, number of shares, and value of each share in the persistent database.

ID::RTNV-PR-ENTER-010.002 The ticker shall be the primary and unique key of the persistent store (previous definitions will be replaced).

ID::RTNV-PR-ENTER-010.003 rtnv shall store zero as the number of shares if the number of shares was not entered by the user.

ID::RTNV-PR-ENTER-010.004 rtnv shall store zero as the value of a share if the value can not be retrieved by the public server.

ID::RTNV-PR-ENTER-010.005 rtnv shall clear the ticker, number of shares, and value of each share fields at completion of processing.

ID::RTNV-PR-ENTER-020 When the enter button is pressed, rtnv shall do nothing if the ticker field is empty.

2.3.3   Delete button

ID::RTNV-PR-DELETE-010 When the delete button is pressed, rtnv shall remove the persistent copy of the stock referenced by the ticker symbol in the display.

ID::RTNV-PR-DELETE-020 When the delete button is pressed, rtnv shall do nothing if the ticker field is empty.

2.3.4   Next button

ID::RTNV-PR-NEXT-010 When the next button is pressed and it is the first press after any other button press, rtnv shall display the first stock in the the persistent copy of the portfolio.

ID::RTNV-PR-NEXT-020 When the next button is pressed and it is not the first button press, rtnv shall display the next stock in the persistent copy of the portfolio.

ID::RTNV-PR-NEXT-020.001   If there are no remaining stocks to display, the display fields for ticker, number of shares and value of shares shall be blanked.

ID::RTNV-PR-NEXT-020.003   If there are no remaining stocks to display and the display has already been blanked, rtnv shall display the first stock in the persistent copy of the portfolio.

2.3.5   Calculate Net Value button

ID::RTNV-PR-CNV-010 When the calculate net value button is pressed, the sum of the products of the number of shares and value of each share shall be calcuated and that total displayed (in dollar format) in the calculated net value display field.

2.4   Provisioning Requirements

ID::RTNV-PROV-010   rtnv shall initialize and create an empty portfolio if none exists

(first time run on the device).

ID::RTNV-PROV-020 rtnv shall be able to store at least 20 stocks in the portfolio.

2.5 Performance Requirements

ID::RTNV-PERF-010 rtnv shall be able to display the main menu within 20 seconds of selecting the app from the Android menu given 20 stocks in the portfolio and access to the internet.