

Department of Electronic and Telecommunication Engineering

Internet of Things
EN3250

Currency Converter Service Project Report



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1 Introduction

1.1 Overview

Foreign exchange market is a global market, where people around the world buy and sell different foreign currencies everyday for various purposes. One purpose of the traders in the market is engaging in day-trading activities. Day trading is performed by normal people who intend to obtain profits and earn out of small price mismatches that are available for a short amount of time. Day traders' activity is influenced by information generated from past foreign currency price information. This information is generated by performing various kinds of mathematical transformations on time series price charts. These people find a lot of value in this information generated and they usually buy required market information from their trusted services.

This project mainly focuses on providing foreign exchange market day-traders, a selected set of useful information. This is achieved by using a currency API that provides live currency prices of various currencies around the world. Usually, hourly past currency price data are not available easily, because past currency data is usually provided on a daily basis. Due to this reason, storing the live currency data in the database is useful for making predictions. Users will also find the notification system that warns when the prices are beginning to exceed their expected boundaries, valuable.

ESP8266 is used for controlling the display as well as connecting to the user's mobile phone and Node-Red through WiFi technology. Node-Red to Node-MCU communication happens through the MQTT communication protocol. Node-MCU's ability to enter into sleep mode is also utilized. Node-MCU acts as both Wifi access point and http server. The user may sign-in using a username and a password, when the Node-MCU is functioning as a server. The access point mode is required when it is fetching and submitting data.

1.2 Objectives

- To provide several technical analysis charts such as Simple Moving Average
- to the day-trader so that they can make useful predictions
- To provide the useful information in a user friendly manner through the Node-Red dashboard as well as mobile interface.
- To notify and alarm the day-trader clients when their set upper and lower boundaries are exceeded so that they can take quick actions.
- To provide the user flexibility to choose the interested currencies for observation

1.3 Scope

The scope of the project is to build an innovative IOT application using IOT concepts, tools and standards available. The basic architecture should include a realtime database, an open-source API, Node-Red, Node-MCU and a client mobile phone. Use of a communication protocol such as CoAP or MQTT is also encouraged.

1.4 Architecture

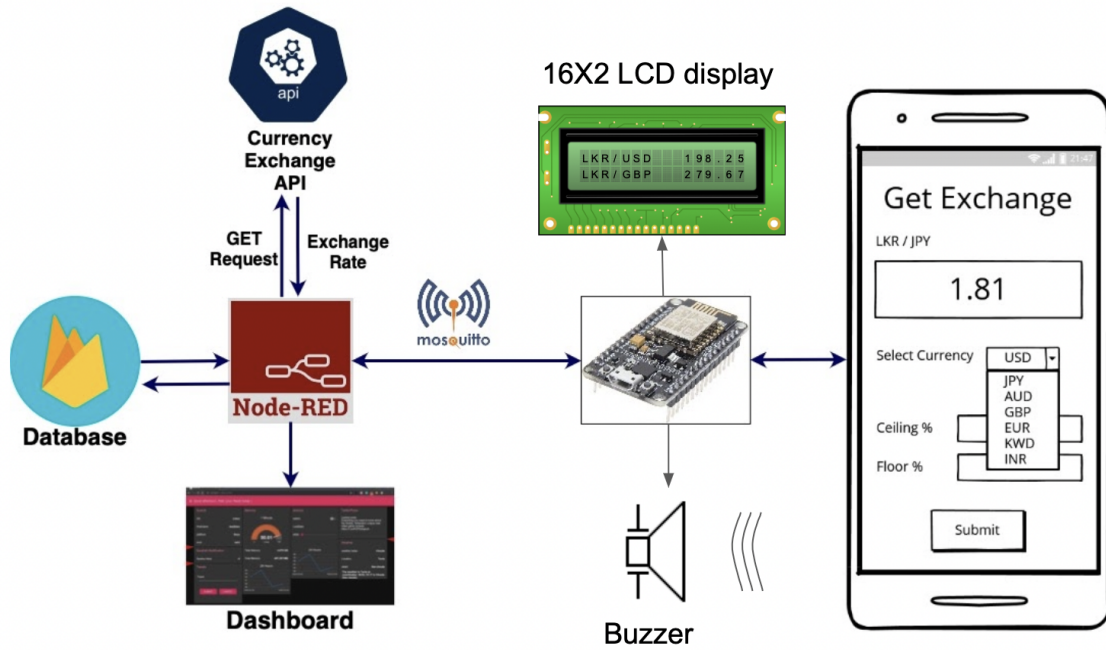


Figure 1: Architecture of Currency Converter Service

2 Methodology

2.1 Exchange API

2.2 Integrating Firebase

2.3 Creating the Node-Red dashboard

2.4 Technical analysis charts

2.5 Problems and proposed solutions

2.6 Configuring ESP8266

3 Conclusion