RV College of Engineering®, Bengaluru – 59
Department of Computer Science and Engineering
Database Design Self-Study (18CS53)

Synopsis

TITLE: Gaming Device-to-Cloud gateway		
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1. Introduction

This project presents a design and implementation technique to develop an IoT gateway that works as Device-to-Cloud gateway. The gateway is specifically designed and implemented based on industrial automation systems. Also, it can communicate to microcontroller devices like NODEMCU using HTTP protocol. With these design features, the proposed system can be used in Gaming Device Automation.

2. Existing System

In the existing system, Gaming Arcades have gaming machines which use manual tickets made of paper or plastic coins to validate customers and start its operation. The users have to pay a predetermined amount for the chosen time to play the game, for which, they will be given paper/plastic tickets which have to be scanned or inserted into the gaming device after which the device starts running.

This system involves a lot of manual processing, the tickets often do not scan properly, or tickets mismatch often takes place which leads to confusion and poor customer feedback. Payment should be made for every time period if the user wishes to continue the game, which is also cumbersome.

3. Proposed System

In the proposed system, a user pays the specified amount through a mobile application by scanning a QR code attached on the gaming machine specific to it. Each QR code contains the amount payable for the Gaming machine. The user can also alter the time period for which he wants to play, accordingly the amount is changed.

The payment is validated and processed by the Razorpay API and a feedback is sent to the mobile application. The app on receiving the payment authentication posts a HTTP request to update the payment table in the firebase cloud.

The Nodemcu on the other side will be attached to the gaming machine which will be continuously querying for data from the cloud. Whenever a payment is successful for a particular machine, Nodemcu will recognise the updated payment status, process the data and produce necessary electronic pulses for triggering the electronic gaming device for a necessary amount of time.

4. Database Structure

This system uses a non-relational database - NoSQL hosted on the FIREBASE cloud. The database mainly includes the following:

- User Authentication: There will be two types of Users, Customer and the Gaming Arcade Owner.
- Transaction data table for the Owner to keep track of all the transactions for all the machines taken place, arranged according to Week, Month and Year wise.
- The Gaming Product Data which includes the Gaming Machine ID, Name, Payment Status, Duration, Cost per hour etc..
- The Payment Data which includes the Razorpay API information like Payment ID, Gaming Machine for which the payment is made, payment date, time, amount, customer name etc..

5. Societal Concern

IoT devices impact society in a meaningful way. It helps reduce human errors and decreases manual process of operating devices significantly by making the devices smart. There is also a huge community in the society who visit and play arcade games frequently. Thus, this project helps the Gaming community by automating the working of Gaming machines.

Plastic tickets required for the machine need to be manufactured and plastic is a known global threat and therefore, online payments reduce this risk and also helps avoid some of the hardware required on the machines.