SMART RECEIPT COUNTER

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Abstract— **The proposal on Smart Receipt Counter is been designed for reducing the huge queues at the college receipt counter or any other places where receipts have to be taken for various purposes. The receipt counter which is handled manually is always time consuming and there is high possibility of human errors involved in it. Smart Receipt Counter is introduced to not only provide high precision but also saves a lot of time. This system is based on raspberry pi which use python programming language.**

Index Terms—**Raspberry pi ,Python, Pyscripter , RFID,GSM,FPGA,Zigbee.**

I. INTRODUCTION

Traditional counters are used for dispensing the tickets or receipts only when the money is handed to the counter person. Nowadays, such type of vending machines can be found everywhere like at railway stations for getting the train tickets, in schools for stationary purpose, etc and in offices for vending drinks and snacks, in banks as ATM machine.
Smart receipt counter is receipt generating machine. It is used to generate receipt for various purposes. It is similar to that of vending machine but not coin based. Traditional machines were coin based. The drawback of such system was that the people always need to carry coins with them. Smart receipt counter uses Identity Card scanning technique to avoid carriage of coins.

This machine is designed specially for college purpose due to problems faced by students for taking the receipts by waiting in a large queues. In this paper new approach is purposed to design smart counter.

II. LITERATURE SURVEY

A.Journalpaper1

A. Objective:
From [6] journal paper we observed that the proposed concept is to replace the manual work in traditional ticket system into embedded based ticket system. To make the system as automatic and also to ensure that the comfort journey in the bus we are going for automatic ticket vending system using ARM processer. This system provides all information related to the passenger. Even normal people also operate the system easily because of the design of machine. Once the passenger reserved the ticket, automatically seating allotment of the passenger and other details send to the passenger's mobile with the help of GSM. RFID reader integrated with the ZIGBEE technology will benefit from communications and sensing capabilities.

B. Drawback
    1. Interfacing of GSM module, Zigbee and RFID reader will be slightly a difficult task.
2. Zigbee module gives low data speed.
3.The overall cost of the system would be very high.

C. SMART COUNTER ADVANTAGES:

1. Our proposal is based on Raspberry Pi which is well known for its high data speed.
2. It is highly authenticated because of RFID and password provided to each user.
4. This proposal will be comparatively of low cost then the GSM and Zigbee based vending machine.
5. Our proposal is based on Raspberry Pi which is a full-fledged computer. It can handle computations easily and also store large databases without any external memory interfacing.
6. The mode of payment will be the identity card with unique barcodes.
7. It is highly authenticated because of barcode and password provided to each user.
8. This proposal will be comparatively of low cost then the FPGA based vending machine.

III. BLOCK DIAGRAM OF THE MACHINE

The simplified block diagram of this proposal is shown as below. In this block diagram the raspberry pi model(which works as a minicomputer) controls lcd , barcode scanner, printer. After scanning ID card ,the valid user account is accessed and the options for printing is displayed on LCD. At the end of the process the receipt will be printed
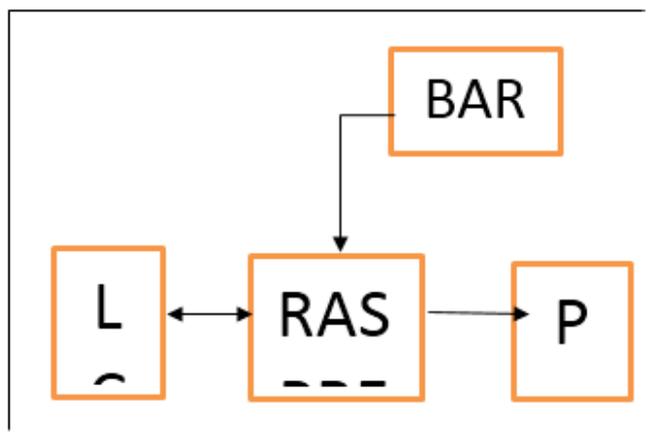
IV. PROPOSAL REQUIREMENT

i..HARDWARE REQUIREMENT

A.Raspberry pi (Model2B)
The Raspberry Pi 2 Model B is the second generation Raspberry Pi model. The Raspberry Pi 2B Model is a credit-card sized ARM Processor based PC that is running when a keyboard, mouse, display, PSU and Micro SD card with installed OS are interfaced with it. In 2B model the power consumption is lesser, better audio performance can be obatained and a 40-pin GPIO connector is available.

Fig1:Raspberrypi (model 2B)

B.Thermal Printer
A thermal printer comprises of components like thermal head, platen, spring, controller boards. Thermal printers are usually faster than dot matrix printer. They are also smaller in size, lighter and consume less power. Roll-based printers can be rapidly refilled. Thermal transfer printers are popular for printing barcodes, labels, price tags ,and other special print jobs.

Fig2: Thermal printer

C.Webcam
A Webcam [1] is used to process Images in real-time. It feeds this processed images into computer or computer networks. The captured images or video stream can be sent to any other network via internet or Email attachment. The Webcam is connected via USB cable whereas other IP camera is connected using Ethernet or Wi-Fi.
Webcam used in this standalone machine is used to scan the Barcode of the student's Identity card. This webcam captures the barcode of the ID and then captured image is sent to the Raspberry Pi for decoding it.

Fig3:Webcam

ii. SOFTWAREREQUIRED

A.Python2.7
Python is a programming language that is compatible with the Raspberry pi. Python has a set of rules, known as PEP8, which helps every Python developer to format their code. This means you always know where to put new lines. The basic data types are: numbers (floating point, complex, and unlimited-length long integers), strings(both ASCII and Unicode), lists, and dictionaries [3]. Python supports object-oriented programming with classes and multiple inheritance.
Code can be grouped into modules and packages. In Python, memory management process is automatic because of this the manual allocation of memory is not required. Pyscripter is a **free** and **open-source** Python Integrated Development Environment (IDE) created with the Aim so0 that it becomes competitive in functionality with commercial Windows-based IDEs available for other languages.

B. Tkinter
Python provides various options for developing graphical user interfaces (GUIs). Tkinter [5] is the Python interface to the Tk GUI toolkit shipped with Python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit. Creating a GUI application using Tkinter is an easy task. All you need to do is perform the following steps −
• Import the *Tkinter* module.
• Create the GUI application main window.
• Adding one or more widgets to the GUI application.

C. Putty

Putty [2] is a free and open source software. It works as an emulator, serial console and network file transfer application. It supports many network protocols like SCP, SSH, rlogin, etc. It supports many encryption key and protocol version. Putty software is used for interfacing raspberry pi with laptop.

D. Xming

Xming is a display server for Microsoft Windows operating systems. Xming [4] may be used with implementations of Secure Shell (SSH). It features several languages like Python.

A.

V. IMPLEMENTATION

We will design a standalone system which will take user input. The input will be the option for which the receipt is to be printed. The identity card provided with barcode will be scanned. The amount on receipt will be deducted from the pre-charged account. The information related to identity and account balance will be stored in a database.

A. Database:

The database of all the students are stored in Excel file and then it is imported into python. In this database the students roll number and corresponding password and recharging amount is stored.

Fig4: Database made in Excel sheet

B. Authentication:

For login into your account, firstly the ID card is scanned using Webcam. Then the username and password is entered. The entered username and password is checked with stored database. If it is matched, then authentication is obtained successfully.
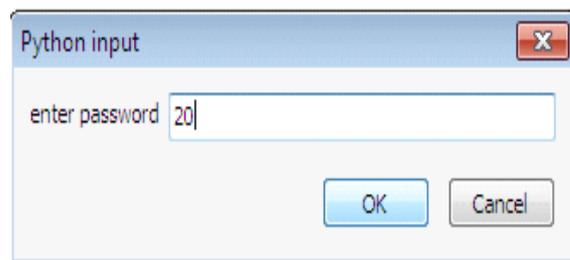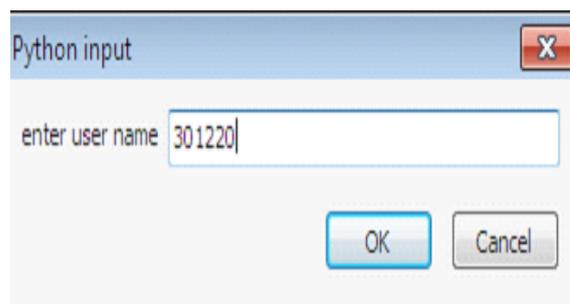
Fig5: Authentication of user

C.Recharge

The account of individual student is recharged using valid username and password. The amount will be deducted whenever the account is accessed for taking receipt.

V. CONCLUSIONS

We are working on a machine which will be used for taking receipt for various purposes. This standalone system is compact ,secure, and provides high authentication. The performed transaction will be deducted from the account balance.

VI. FUTURE WORK

We are going to interface thermal printer with Raspberry pi.
We are planning to interface Touch screen with RPI instead of LCD.

VII. ACKNOWLEDGEMENT

about this proposal and people who willingly supported in overcoming the difficulties coming across.

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