

SMART E-GUIDE SYSTEM

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Abstract: This paper presents an e-Guide application for supporting information in schools and colleges. The application recommends the new visitor to the school or college campus. Generally This project is used to provide a detailed information about each and every lab of any department without need of any person. It is developed using Raspberry Pi 3 B+. This type of applications for mobile phones are distinct from other domain in respect of the type of content to be provided, the way this content is made available to the user and the way these types of application are developed.

Keywords: Smart Guide, Raspberry Pi 3 B+, Python

I. INTRODUCTION

In this paper, we describe a Raspberry Pi based service providing functionality enabling e-guides and simplifying the visit to various departments and lab of the college. Humans invent and develop a technology that will reduce the time complexity of their works. Lab and classroom of any department are displayed on the interface of the all in one machine in the form of list.

For this purpose we decided to use board on which the code of that spot is to be displayed. As if the visitor enters the displayed code on the keypad, quickly the raspberry pi will show the name of spot on the LCD. User device will read this unique number for detecting the location. This device is more suitable for this purpose because it having very less maintenance. This project is used to provide detail information about each and every Lab and Classroom of any department without need of any person. This project is developed using Raspberry Pi 3 B+.

It is intended to support, record, and extend exhibit-based, informal science learning. The system will continuously wait for user input. In this project the each fort and each spot in every fort is provided with the unique code. When any visitor will come at that place, then visitor have to enter the code on that spot on the keypad. Unique code make id of particular place. So the location will be identified. Then compare it with the corresponding identification stored in database and relevant information is retrieved means that the name of the place displayed on the LCD and audio of that particular place is play out in the headset. All the information will be stored in memory card.

II. SYSTEM BLOCK DIAGRAM

In this section we will emphasize on detailed overview of each of the block shown in Figure 1 shown below. In every description of the block respective schematic and working is explained.

The E-Guide system consist of following blocks:

1. Raspberry pi3 model B
2. Power supply
3. 4*4 Keypad
4. LCD display
5. Headset

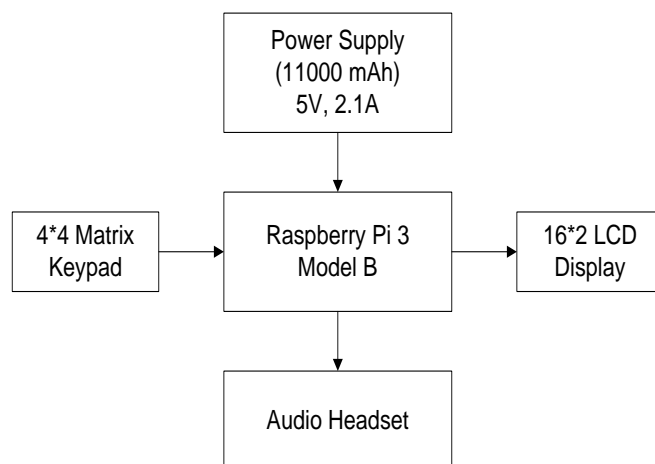


Fig.1 System Block Diagram



III. SOFTWARE REQUIREMENT

1. Python Programming:

Installing Raspbian on the Raspberry Pi is pretty straightforward. We'll be downloading Raspbian and writing the disc image to a micro SD card, then booting the Raspberry Pi to that micro SD card. For this project, you'll need a micro SD card (go with at least 8 GB), a computer with a slot for it, and, of course, a Raspberry Pi and basic peripherals (a mouse, keyboard, screen, and power source). This isn't the only method for installing Raspbian (more on that in a moment), but it's a useful technique to learn because it can also be used to install so many other operating systems on the Raspberry Pi. Once you know how to write a disc image to a micro SD card, you open up a lot of options for fun Raspberry Pi projects.

2. Python Script:

You don't have to write Python programs using a text editor like Leaf pad and run them in the terminal. Instead, you can use a neat all-in-one solution, known as an 'IDE' (integrated development environment). IDEs combine a text editor with program-running functionality. Often, they'll include fancy features like debugging and text completion.

Click Menu > Programming > Python 3 (IDLE), and you'll get a new window called 'Python 3.4.2 Shell:' This Shell works just like Python on the command line.

Programs written python IDE called as python script. These scripts are written in the editor and saved with the file extension .py. The editor has features for cutting/pasting and searching/replacing text. The shell area gives feedback while saving, resetting and also display errors. The toolbar buttons allow you to verify and download programs in raspberry, new, save, open and restart the shell.

Compile: checks your code for errors by compiling it.

New: Create a new script.

Reset: It will stop the current execution and start executing code from start.

Open: Presents a menu of all the scripts in home. Clicking one will open it within the current window.

Save: Saves the python scripts.

3. Program Python with Terminal:

You don't need to do anything to set up Python on your Raspberry Pi. Open a terminal in Raspbian and enter python – version. It will display 'Python 2.7.9' as shown in figure 2. Enter python3 –version and you'll see 'Python 3.4.2'. We use Python 3 in our programming guides. You can open Python 3 in the terminal by just typing python3.

```

pi@raspberrypi:~
File Edit Tabs Help
pi@raspberrypi:~$ python
Python 2.7.9 (default, Sep 17 2016, 20:26:04)
[GCC 4.9.2] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello World")
Hello World
>>>

```

Fig.2 Program Python with Terminal

4. Library Installation:

The RPLCD library can be installed from the Python Package Index, or PIP. It might already be installed on your Pi, but if not, enter this at the command prompt to install it:



sudo apt-get install python-pip.

After you get PIP installed, install the RPLCD library by entering:

sudo pip install RPLCD

5. Raspbian Version Details:

You can check the release of Raspbian, simply reading the content of the os-release file in figure 3. Or you can install lsb-release package and then run it to get the version of the operating system. Instead, if you want to know the Kernel version in your Raspberry Pi, you can use the uname command.

```

File Edit Tabs Help
pi@raspberrypi:~$ cat /etc/os-release
PRETTY_NAME="Raspbian GNU/Linux 8 (jessie)"
NAME="Raspbian GNU/Linux"
VERSION_ID="8"
VERSION="8 (jessie)"
ID=raspbian
ID_LIKE=debian
HOME_URL="http://www.raspbian.org/"
SUPPORT_URL="http://www.raspbian.org/RaspbianForums"
BUG_REPORT_URL="http://www.raspbian.org/RaspbianBugs"
pi@raspberrypi:~$

```

Fig.3 Raspbian Version Details

Raspberry Pi OS has 3 installation options:

Raspberry Pi OS Lite

Raspberry Pi OS

Raspberry Pi OS Full

Raspberry Pi OS Lite is the smallest version and doesn't include a Desktop Environment.

Raspberry Pi OS includes the Pixel Desktop Environment.

Raspberry Pi OS Full also comes pre-installed with additional productivity software.

All versions are distributed as .img disk image files. These files can then be flashed on to microSD cards where Raspberry Pi OS runs. In March 2020, the Raspberry Pi Foundation also published the Raspberry Pi Imager,[14] a custom disk flasher that allows for the installation of Raspberry Pi OS as well as other operating systems designed for the Raspberry Pi, including RetroPie, Kodi OS, and others.

IV. ENTIRE SYSTEM OPERATION

E-guide is electronic guide, mainly contains a Raspberry Pi3, a LCD display and 4*4 keypad. Raspberry Pi 3 module is considered as main processing hardware which processes the text and audio file and interface with all above mentioned modules.

The system will continuously wait for user input.

In this project the each classroom and each lab in department is provided with the unique code. When any visitor will come at that place, then visitor have to enter the code on the keypad. Unique code make id of particular classroom/lab. So the location will be identified. Then compare it with the corresponding identification stored in database and relevant information is retrieved means that the name of the place displayed on the LCD and audio of that particular place is play



out in the headset. All the information will be stored in memory card.

Suppose in case user entered any wrong code then the system will guide the user to press the correct code along with the audio of same. This will really help to the visitor to go in the right way.

The device module is built successfully by interfacing Raspberry Pi module, LCD display. The programming of raspberry pi used in this project is done in python IDE. The Raspbian OS is successfully installed on device. The result of the project is shown in figure 4.



Fig.4 Setup

V. APPLICATION DETAILS

Our system is going to replace manual guide by electronic guide which provide self-learning environment. We have developed a system which is portable. We can use it anywhere. Some of the applications are listed below

- Historical places
- Museum's
- Big campus areas
- Molls
- Showrooms

VI. CONCLUSION

This project is really brought revolutionary change in the field of tourism. Here visitor get 100% authenticated and pure information that will increase the scope of researcher as with very attractive way. This system is also cost effective.

Our system is going to replace manual guide by electronic guide which provide self-learning environment, which include historical importance, specifications of the place, along with this we provide services like the name of the place to be displayed on the display and other is security etc.

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