FINAL PROJECT

Report

www.pololu.com

-**Ishan Verma**

Due – May 5, 2017

TABLE OF CONTENTS

INTRODUCTION

VOTING MACHINE

The possibilities of creating very useable projects from Raspberry PI are endless. I came across a lot of raspberry pi projects online, but could not find a one that would really stand out and be different. As an International Student from India, I'm really astonished by the fact that my country conducts world's largest democratic election through EVM successfully.

This fact motivated me to make an EVM using raspberry pi.

DEFINATIONS, ACRONYMS AND ABBREVIATIONS

- EVM - Electronic Voting Machine – A device used to count votes for survey, elections, etc.
- Raspberry PI – affordable small single board computer used to teach students computer organization and create useful projects.
- Python – High level programming language used for general purpose programming

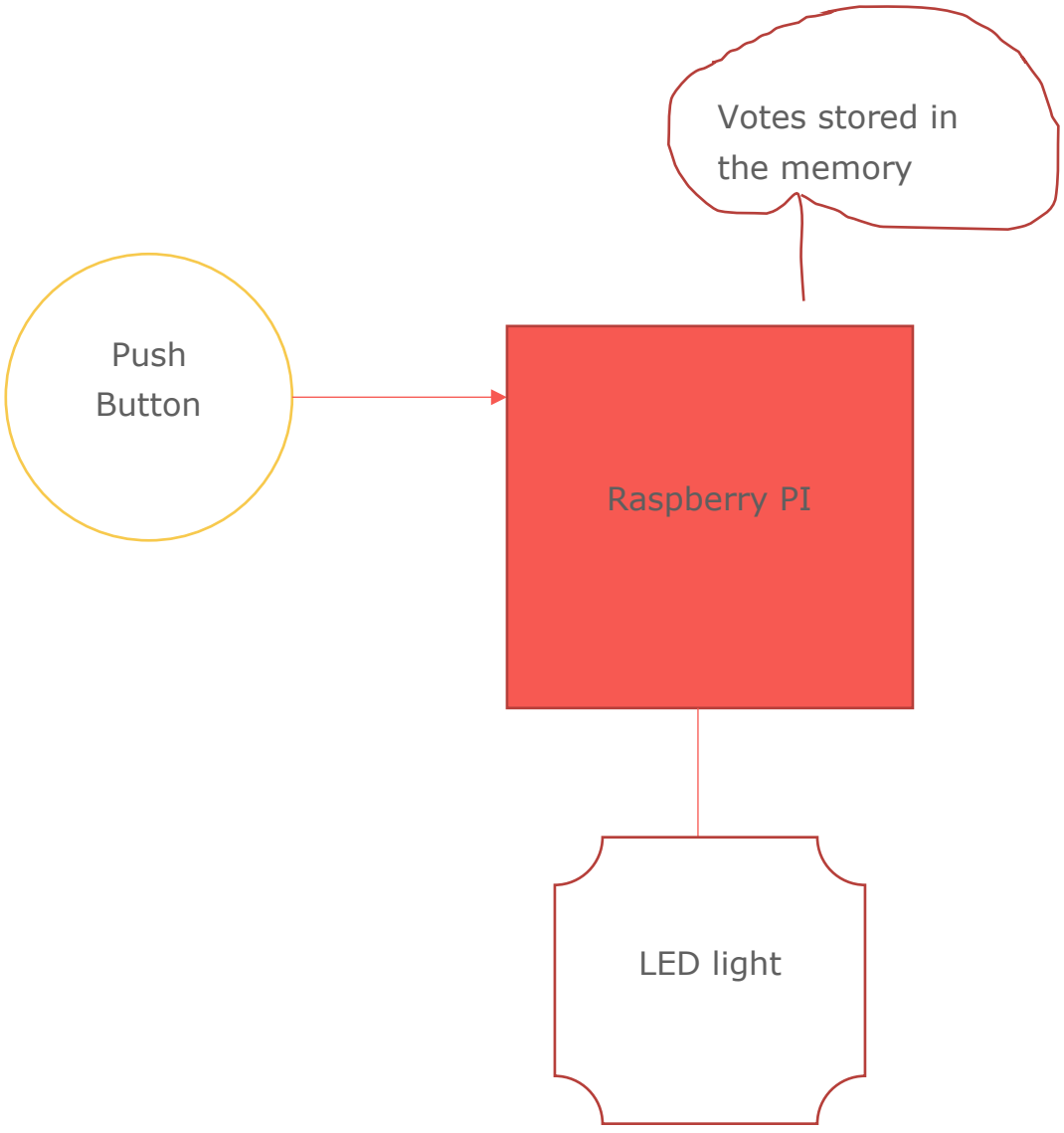
PROJECT DETAIL

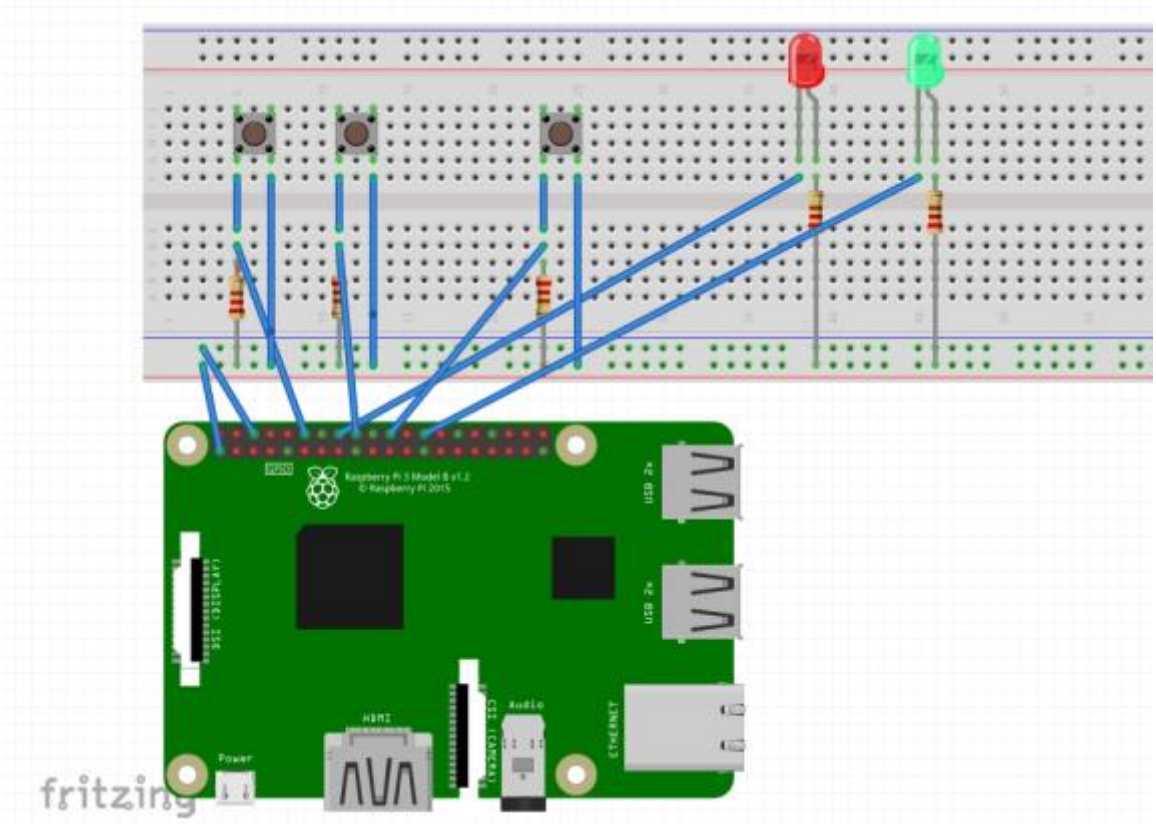
EVM

The Concept of EVM is complex yet achievable, thanks to the open raspberry pi environment. Here is an example of small EVM that I found on google .

As we can see EVM consist of the button with description to record the votes submit by the audience. All the buttons are fitted into a board for convenience and durability.

I’m going to using python and raspberry pi to take votes and record them on a memory card. I Used 3 buttons and 2 led lights which will allow user to get votes from voters for 2 options. The button will be connected to the raspberry pi so that raspberry pi and record them and led light will physically notify if the votes was given. 2 buttons are used for voting and 1 button was used for result. I used Led light to display result for each option. If both options received same votes then both led lights will blink together.




Raspberry Pi 3 Model B v1.2
© Raspberry Pi 2015
USB 2x
USB 2x
HDMI
Audio
ETHERNET
Power
fritzing

BUDGET

ITEMS	EST COST	ACTUAL COST
Raspberry pi and SD Card	N/A	
LEDS (1)	1 $	0 $
Buttons (4)	20 $	20 $
Structure for Machine	20 $ (estimate)	0.01 $
TOTAL	41 $ (excluding the materials provided in class)	20.01 $(excluding the materials provided in class)

As we can see this product is very cheap, but cost was reduced by using cheaper materials. It can be more expensive if we choose to make a very big voting machine with lots of led’s, buttons and lcd display.

PROJECT PLAN

ROLES – Since I’m a really motivated and hardworking student, I decided to do this project by myself. I was responsible for all the process that was required in making this product.

LABOR

	TIME	PROJECTED
Raspberry pi and SD Card		
Research about the Concept	1 hour	2
Shopping of required parts	1 hour	.5
Gpio and Assembly	2 hours	1
Python coding and debugging	1.5 hours	2
Total	5.5 hours	5.5

FINAL REFLECTION

Overall, it was not really that hard to learn and implement the concept. During the making of this voting machine I realized the endless possibilities of addition that could be made to this voting machine

Challenges: the biggest challenge was the shortage of equipment. This could've been solved if the shipping time for equipment were not very long. While planning to add to LCD to this voting machine I realized that raspberry pi doesn't have enough GPIO pins. I could have used a LCD display, but the shipping time was more than a week and it was expensive.

Take-away: the biggest takeaway is to be realistic with the project. If I was to make the project very complex by adding numerous functionality, I could've failed in completing the project on time. The most important thing in making a project is understanding the basic concept of the project, and making a functional prototype.

TARGET MARKET

The product is made for different reasons, But I made this product to make lives of professors and students easier

Students can use this for taking surveys from other people on campus. If successful this product can replace the use of pen and paper. Not only that, with use of python programming language, we can easily calculate the number of votes. Professors can use EVM for the same reason. EVM can also be used by professors to take attendance and quizzes in class. We can also use a 2x16 LCD for display or connect it to a big screen using HDMI.

Security was not considered for the small voting machine prototype, but we can definitely add a fingerprint or student ID reader for a big scale project that requires security.

REFERENCES

- *http://www.cnn.com/interactive/2014/04/world/infographic-india-by-the-numbers/*
- *https://www.pololu.com/*
- *https://www.teamgantt.com*
- *https://www.allindiaword.com/2015/08/is-evm-electronic-voting-machine-exposed-to-fraud-in-India.html*