

Telegram enabled Automation for LED's control, sharing Text & Files using Raspberry Pi

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Abstract:

In order to get a file from the large set of data, we need to search for the file, which takes a lot of time and human involvement. And automation of LED's can also done from anywhere through internet. This can be applicable for Home automation which also helps to save power and Time.

Here we have developed an interesting way to share data (files/photos/audios/text) between Raspberry Pi and our Mobile phone through a popular chat application called Telegram. And also to automate LED's to Raspberry Pi GPIO pins and toggle them using natural language (chatting like) from Telegram.

Keywords: Internet of Things, Raspberry Pi, Telepot,

1. Introduction:

Raspberry Pi has always been fun and easy to build projects. Its powerful ARM architecture and open-source Linux based Operating System has help us a lot in getting our projects online in no time. In this project we have built a model to share data (files/photos/videos/audios/text) between Raspberry Pi and our Mobile phone through a popular chat application called Telegram.

For those who are new to Telegram, it is a chat based application available in play store for

Android (also available for Iphone and windows) that is very similar to Whatsapp. People claim it to be faster and more functional than Whatsapp (fingers crossed). One special features of this application is that they support bots. Meaning this smart phone application can not only be used by Humans but also by machine. In our case the machine will be Raspberry Pi. Once you train Raspberry Pi on how to act as a bot, anyone (if you make it public) can chat with your Raspberry

Pi like chatting to any normal person and even share Photos Pictures Documents and Audio files.

2. Materials Required:

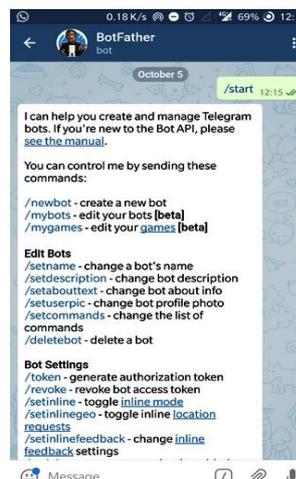
- ❖ Any Raspberry Pi connected to Internet
- ❖ A mobile running Telegram Application.

Step 1: Installing Telegram on your Mobile

The first step would be to install Telegram on your Mobile. Telegram is available for Android, IOS and even for Windows platform so just go ahead and download your Telegram application. Just like all application there will be a small Sign Up procedure to start using Telegram, continue with it until you reach your home screen.

Step 2: Talk to Bot Father

The next step would be to request the Bot Father to create us a new Bot. On the top right corner of the Home screen there will be a search icon, click on it to search for the name “botfather”. Botfather is a Bot by itself, it will guide you to create a new bot for you. Click on **start** and select **/newbot** as shown in the picture below. Now, the bot will ask for few details like name of your Bot and the user name of the bot. Fill those details and remember the username for we will needing it in future.



Step 3: Getting your token for access

I have named bot as ecebot and the username as eceBot. After this process the botfather will give you a Token for access. This is like the password for your bot, people can control program your bot using this token key. So keep it safe and do not share it with anyone. Once you have received this token key it is time to move on to Raspberry Pi.

Step 4: Telepot for installing Telegram on Raspberry Pi

Using Telegram Bot in Raspberry Pi is made possible by the python package called Telepot. We need to install this package on Raspberry Pi by using the following commands on Lx terminal *sudo apt-get install python-pip sudo pip install telepot*

Once Telepot is imported into Raspberry we can use this package in our python program to communicate with our Telegram Bot.

Step 5: Programming your Raspberry Pi

The bot that we just created on Telegram is just like a baby, it cannot do anything on its own unless we teach it what and how to do things. This teaching can be done through Raspberry Pi and Python script. In this tutorial I have programmed the bot to perform some basic actions like sending a message, Photo, Audio and Document. So when you say a particular command it will respond with a particular action the command and action is listed in the table below

Command from Telegram	Response by Raspberry Pi
/hi	Replies with a string “Hi! SJCET”
/time	Replies with current time
/logo	Replies with an Image (logo of College)
/file	Replies with a file (that contains current program)
/audio	Replies with a demo audio file

Step 7: Enjoying the Output

Now, all that is left is to check how good your bot is responding for your program. Search for your

bot name in my case it is “nameBot”. Search for username and not or Bot name, you user name should end with bot.

Once you open your bot, click on start and type in any commands like /hi, /time, /file, /logo, or /audio and you should be replied accordingly.

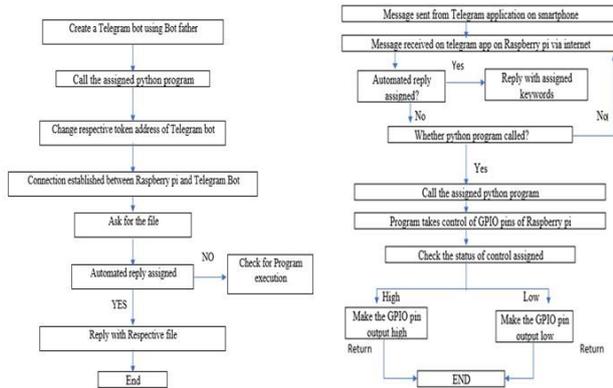
Note: You might have problem with /audio and /file if you have not changed your directory to a proper file that is available on your Raspberry Pi.

Controlling LEDs with Raspberry Pi and Telegram bot:

Connect your LEDs and launch your program on python. Make sure you have **changed the Token address** for your bot. And start typing in the commands you wish. For example to turn on the red and yellow light you can use any of the following command.

1. Turn **on Red and Yellow** Light
2. Switch **on Red and Yellow** colour right
3. **On red and yellow**
4. Please put **on the yellow and red light 3.**

System Flowchart:



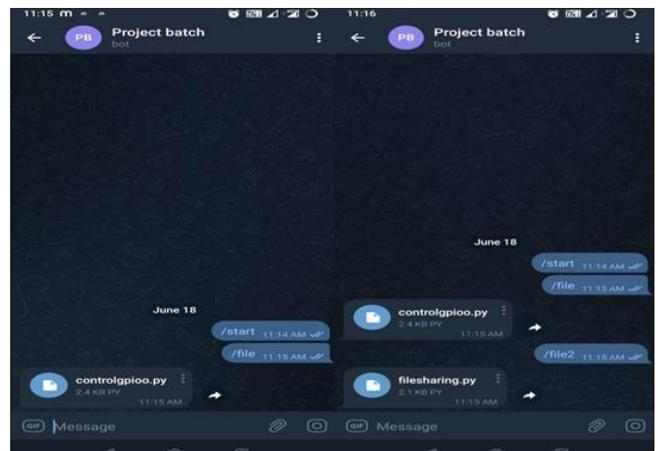
4. Results:

System Setup for automation of LED's:



(i) Controlling various GPIO pins through Telegram app:

(ii) Sharing text & files using Raspberry pi with commands:



5. Advantages:

Control – Besides a busy schedule, automation technologies enable you to keep proper control

Convenience – It provides comfort and convenience, as simple commands are used.

Savings – In addition to energy, smart light bulbs reduce utility costs.

Safety – This benefit is offered by a majority of home automation technologies. They are perfect to make your home safer and secure sharing of files.

6. Conclusion: Here, An interesting way of sharing text & files between Raspberry Pi and chat application called Telegram is developed.

And also automation of LED's by controlling GPIO pins of Raspberry Pi using simple texts through Telegram app is designed.

7. Future Enhancements:

(i) Raspberry Pi can also be used for home appliances that are of high AC supply. To control the high voltage AC from Raspberry Pi, you will need a 5V relay switch. You can control the relay switch using the GPIO pins of Raspberry Pi using Telegram App. The relay switch can then control the AC home appliances through Raspberry Pi. This helps to save power and energy also reduces human effort.

(ii) Also, Sharing text & files using Raspberry pi can also be adopted for a huge database with flexible file formats and sizes.

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