



Instagram based Home Automation using Python Scripting & Raspberry Pi IOT

ABSTRACT

Home automation is turning out to be mainstream day by day because of its various points of interest. This can be accomplished either by local network administration or by using a remote control. This paper focuses on planning an essential home automation application using Raspberry Pi through perusing the content of the message sent from a cloud-based messaging mobile application - Telegram, the algorithm for it has been developed in the python environment which is also the default programming environment offered by Raspberry Pi. Results demonstrate the productive execution of proposed algorithm for home automation. Led's are used to demonstrate the switching activity in the GPIO pins of the Raspberry Pi.

INTRODUCTION:

Raspberry Pi is a credit-card sized singleboard computer unit that is developed in the UK with the goal of reaching to the people who cannot afford the mainstream computers available in the market and thus created a revolution in the field of personal computers.

The latest development of the Raspberry Pi mini-PC has opened great potential for the use of computing in a large number of fields. Because of the extraordinary points of interest of the Raspberry Pi framework, this innovation holds awesome guarantee for giving arrangements inside of the creating scene.

This incorporates however is not restricted to training devices, particularly the utilization of GPIO (General Purpose Input/Output) which permits robotized information procurement and creating basic computerized control frameworks in a school research facility environment. Most particular component of Raspberry Pi when utilized for instructive objects is GPIO module which consists of various pins, which permits interfacing with the broadly useful hardware.



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This paper presents a basic application of raspberry Pi in the field of home automation and Internet of Things, in which the control signal of the respective GPIO pin of the Raspberry Pi is controlled by the content of the message received by the application client running on the Raspberry Pi.

The application used here is a cloud based multi-platform messaging application - 'Telegram'. The system responds to a particular message by triggering a set of instructions which may include a reply back to the sender and a python program which can further be used to take control of the GPIO pins on the Raspberry Pi.

The python program can be used to either make the control signal via GPIO high or low based on the requirements.

The Raspberry Pi can also be connected to a camera and a set of instructions can be triggered according to the utilization. In this way, pictures captured from the camera can also be sent over to the end user.

There can be numerous other applications based on this algorithm. The accepting of content from the end user by Raspberry Pi and replying according can also make it as a bot.

Thus the Raspberry Pi end of the client can also work as a bot to the user of the application so that a particular set of instructions can be set according to the content of the incoming message.

In this exceptionally creating period, where specifically or in a roundabout way, everything is reliant on processing and data innovation, Raspberry Pi ends up being a keen, monetary and productive stage for executing the home automation. We make the telegram application client on Raspberry Pi to accept a particular content as to trigger a python program which will further set the control signal to the respective GPIO pin of the board.

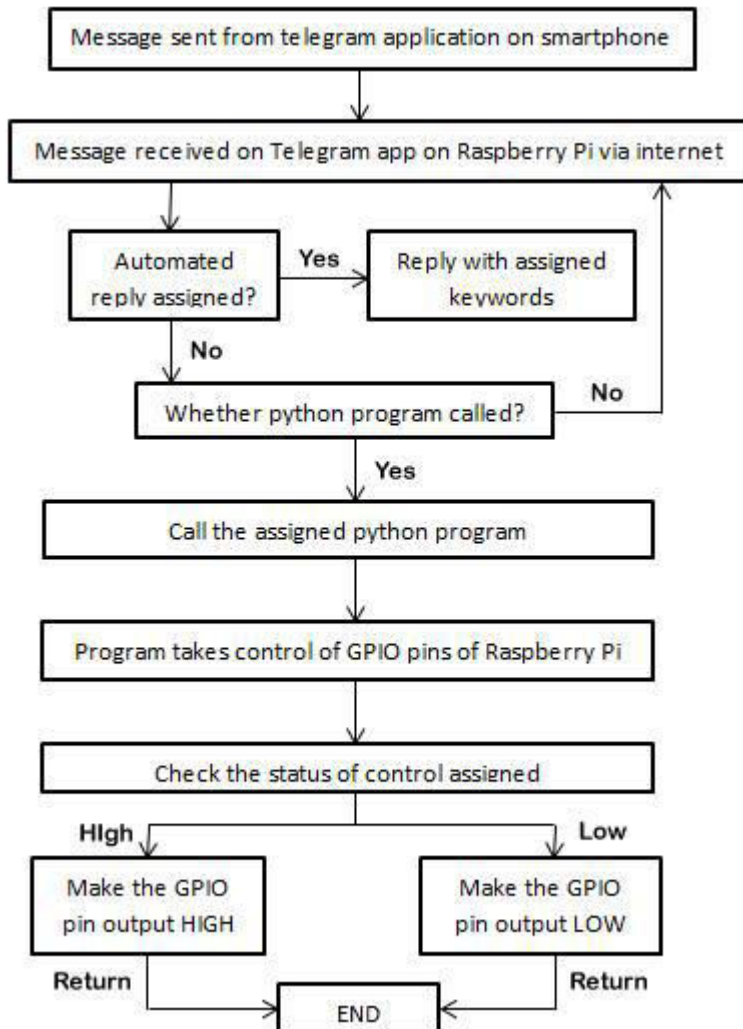
In order to evaluate the output and the performance of our algorithm we used leds and attached it to the respective pins of Raspberry Pi, confirmed the application of the algorithm by getting the output.



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Flow of the project:





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Expected output Table:

Message sent from Telegram app on smartphone	Reply from Telegram Client on Raspberry Pi	Python program called	GPIO pin used	GPIO status
hello	Hi, device is ready to operate	none	-	LOW-0
Turn led on	ON	switchon.py	17(BCM)	HIGH-1
Turn led off	OFF	switchoff.py	17(BCM)	LOW-0
Status	Status is- led1: Led2:	none	-	previous

CONCLUSION & FUTURE SCOPE:

Today everything is reliant on calculation and data innovation, Raspberry Pi turns out to be a savvy, monetary and effective stage for executing the home automation. This paper gives an essential utilization of Raspberry Pi in home automation. The code used is very generic and adaptable in an easy to use way and can be stretched out for any future usage like power control mechanism, surveillance system, anti-theft system and so forth, effectively. Also, this strategy is superior to other home automation techniques in a few ways. Since Telegram is a cloud based messaging application with focus on security and speed, it makes it easy to use by anyone since it is being offered in most of the platforms available in the market.



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What makes it unique is the secure end-to-end user protocol that it makes use of and the speed which it provides. On the other hand, it offers the unique property of being heavily encrypted and self-destruction of messages.