Develop By

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# Introduction

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| The main idea of this project is to toggle LEDs with normal language (chatting) by using the Telegram application which is based on cloud. Telegram allows humans to talk with machine by API Bot. In this project we will use Raspberry pi to connect the GPIO pins with four LEDs and use python code to toggle LED via Telegram Bot. Telegram Bot is a robot which can be programmed to interact with user by giving sets of instructions and answer of that.Problem Statement |
| To toggle LEDs (Blue, Red, Yellow, Green) using Telegram applicationand Raspberry Pi GPIOs.   controlling raspberry pi gpio using telegram app circuit diagram  (Source: <https://circuitdigest.com/microcontroller-projects/control-raspberry-pi-gpio-with-telegram/>) Proposed Solution The LEDs are connected with GPIOs 6,13,19,2 of LED Green, Yellow, Red and blue respectively. Then the BotFather is added in Telegram application from which we get the Token Number that we have to place in our programming in python. After completing the python code in new file, open the bot name that we have to create while creating a newbot. Next, the LEDs can be toggled through telegram application by using Keywords added in the code. Block Diagram and Implementation **Components used:** Raspberry Pi  Four LEDs Jumper wires Resistors (220 Ohm)  Breadboard  **Step: 1** Install Telegram and add BotFather on it.  **Step: 2** Now write “/start” to start chatting with the bot.  **Step: 3** Now write “/newbot’ to request a new bot.   **Step:4** Next, we have to name our bot and username for the same which should end with \_bot, I have named it as Project1bot and Systemintegration\_bot respectively.    Note: Save the Token Number, it is used in programming.  **Hardware Part:**  I have used four LEDs connected with Raspberry Pi with GPIO Pins as below: Blue LED: GPIO 2 Red LED: GPIO 19 Yellow LED: GPIO 13 Green LED: GPIO 6      **Programming Part:**  # To install Telepot  sudo pip install telepot  # To create new file  Sudo nano tele.py  # import all necessary libraries import time, datetime  import RPi.GPIO as GPIO  import telepot  from telepot.loop import MessageLoop  # defininig and initializing LEDs as output pins and setup GPIOs green=6  yellow=13  red=19  blue=2  now = datetime.datetime.now()  GPIO.setmode(GPIO.BCM)  GPIO.setwarnings(False)  GPIO.setup(blue,GPIO.OUT)  GPIO.output(blue,0)  GPIO.setup(yellow,GPIO.OUT)  GPIO.output(yellow,0)  GPIO.setup(red,GPIO.OUT)  GPIO.output(red,0)  GPIO.setup(green,GPIO.OUT)  GPIO.output(green,0)  # Whenever the Pi receives a message from the Telegram bot, it will call the action function and this function reads the message and separate the text from it. def action(msg):  chat\_id = msg['chat']['id']  command = msg['text']  print('Received: %s' % command)  # Now, by using the if condition we will toggle the LED by using the keywords used in programming. if 'on' in command:  message = "on"  if'blue' in command:  message = message + "blue"  GPIO.output(blue,1)  if'yellow' in command:  message = message + "yellow"  GPIO.output(yellow,1)  if'red' in command:  message = message + "red"  GPIO.output(red,1)  if'green' in command:  message = message + "green"  GPIO.output(green,1)  if 'all' in command:  message= message+ "all"  GPIO.output(blue,1)  GPIO.output(yellow,1)  GPIO.output(red,1)  GPIO.output(green,1)  message=message+ "light(s)"  message=message+ "light(s)"  telegram\_bot.sendMessage (chat\_id, message)  if 'off' in command:  message = "off "  if 'blue' in command:  message = message + "blue "  GPIO.output(blue, 0)  if 'yellow' in command:  message = message + "yellow "  if 'red' in command:  message = message + "red "  GPIO.output(red, 0)  if 'green' in command:  message = message + "green "  GPIO.output(green, 0)  if 'all' in command:  message= message+ "all"  GPIO.output(blue,0)  GPIO.output(yellow,0)  GPIO.output(red,0)  GPIO.output(green,0)  message= message+ "lights(s)"  telegram\_bot.sendMessage (chat\_id, message)  # The “bot.getMe()” will check whether a connection between the Pi and the Telegram bot was made successfully by printing a response, and enter the Token Number  telegram\_bot =telepot.Bot('1744905365:AAFBb\_vAQhpcG6tkbAS4y1\_eR8VHW0FF00A')  print (telegram\_bot.getMe())  MessageLoop(telegram\_bot, action).run\_as\_thread()  print('Up and Running....')  while 1:  time.sleep(10)   * **Screenshots of codes:**         Now use **python tele.py**  command to toggle the LED with telegram    Screenshots and Results **command = on blue**    **Command = on red (off blue to take clear picture)** Command = on yellow (off red to take clear picture) Command = on green (off yellow to take clear picture) Command = on all Command = off all |