

EXPERIMENT NO.9

AIM : To control Home Appliances / LED through telegram application using Raspberry Pi.

APPARATUS: Raspberry Pi development board KIT, Mobile handset with Telegram app , LED and connecting wires.

THEORY :

Telegram is a messaging app, very much like WhatsApp. This experiment teaches how to send a Telegram message to your Raspberry Pi, and how to make your Pi telegram back. Make sure the Pi has internet access

PROCEDURE:-

Step 1: Install Telegram on Your Phone

Go to App Store (iPhone) or Play Store (Android), download and install Telegram on your phone. Now, you can use Telegram. Not yet for the Raspberry Pi. Telegram reserves a special kind of accounts for machines, called bot accounts. As the owner of your own Pi, you have to obtain a bot account for it.

Step 2: Text / newbot to BotFather

Open Telegram on your phone, search for a user called Bot Father. As the name implies, he is the Father of All Bots. As you may have guessed, he is not of our own species, but is actually a machine. He accepts special commands, because he does not understand plain English very well.

To obtain a bot account, text him /new bot. (you need the slash '/' in front) He will then ask a couple of questions. I call my bot "Led". You will see why in a few moments. But you can give it any name you want. At the end of process, you will be given a token, something like 123456789:ABCdefGhIJKlmNoPQRsTUVwxyZ. This token represents the bot account. You are going to put this token on the Pi.

Step 3: Install Telepot on Raspberry Pi

Enter the Pi, via SSH or a USB-TTL serial cable . Install telepot , a Python package that enables the Pi to speak Telegram Bot API. On the command line, run these two commands:

```
sudo apt-get install python-pip sudo pip install telepot
```

Step 4: Test Token

On the command line, type python to enter the Python interpreter.

In the Python interpreter, enter these three lines;import telepot

```
bot = telepot.Bot('*** copy bot token from bot father **')
```

```
bot.getMe()
```

You should keep bot token secret too. Having the token means having access to the bot account. If the last command, getMe(), returns a dictionary describing the bot account (as in the screenshot), all is good.

Type exit() to leave the Python interpreter.

If not, you have copied the wrong token. Type `exit()` to leave the Python interpreter. Then type `python` to come in again, and repeat those three lines of code.

Step 5: Connect red LED at pin 40 (GPIO21)

Step 6: Python code

Create a python file name `telegram.py` in raspberry pi and write the code.

Step 7: Run It and Text It

Assuming you have named the file you have just saved "`telegram.py`", to run the bot, type

```
sudo python /home/pi/telegram.py
```

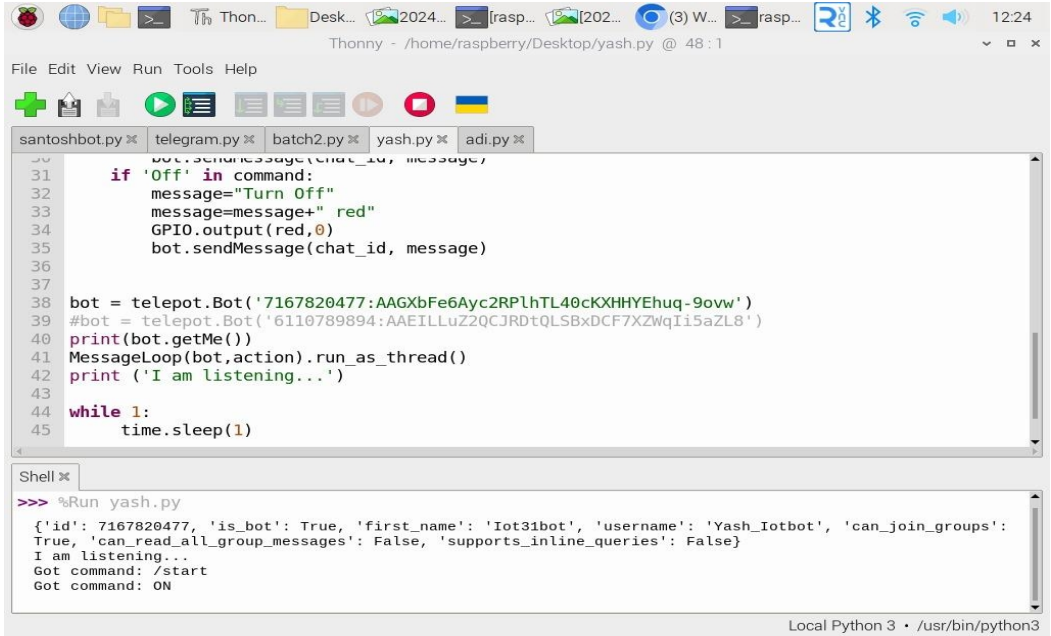
Open Telegram on your phone, search for your bot using its name or username. Text it On or Off, and see how it responds.

PROGRAM:

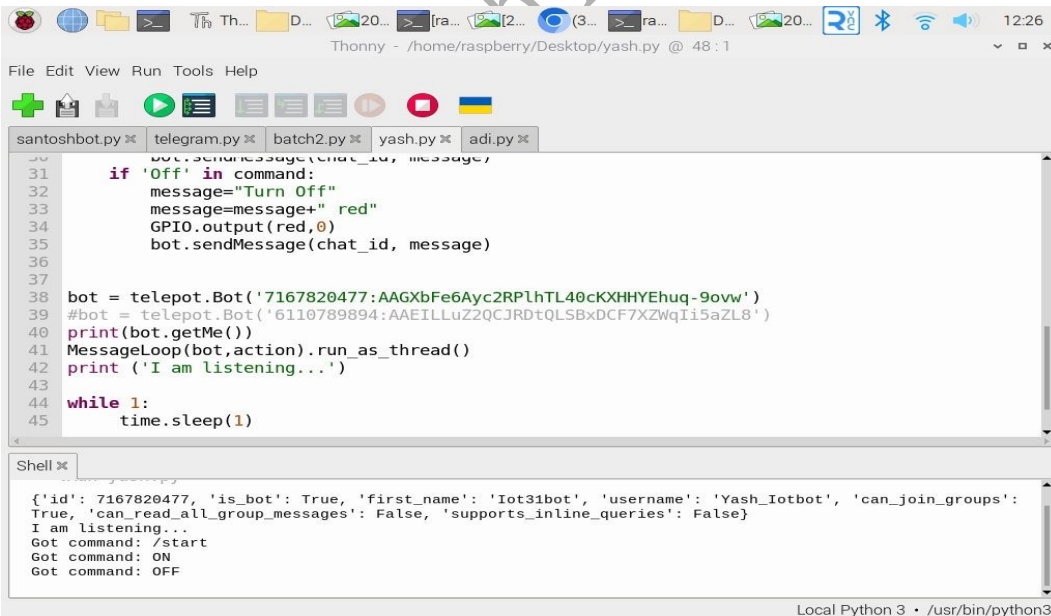
```
import sys
import time
import random
import datetime
import telepot
import RPi.GPIO as GPIO
from telepot.loop import MessageLoop
red=40
# connect red led at pin 40 of raspberry pi
now=datetime.datetime.now()
GPIO.setmode(GPIO.BOARD)
GPIO.setwarnings(False)
GPIO.setup(red,GPIO.OUT)
GPIO.output(red,0)
def action(msg):
    chat_id = msg['chat']['id']
    command = msg['text']
    print ('Got command: %s' %command)
    if 'On' in command:
        message="Turn On"
        message=message+" red"
        GPIO.output(red,1)
        bot.sendMessage(chat_id,message)
    if 'Off' in command:
        message="Turn Off"
        message=message+" red"
        GPIO.output(red,0)
        bot.sendMessage(chat_id, message)
    bot = telepot.Bot('626665131:AAHsNzQbqSj9GZ9-w2t4I')
    print(bot.getMe())
    MessageLoop(bot,action).run_as_thread()
    print ('I am listening...')
```

```
#paste your bot token here.  
while 1:  
time.sleep(10)
```

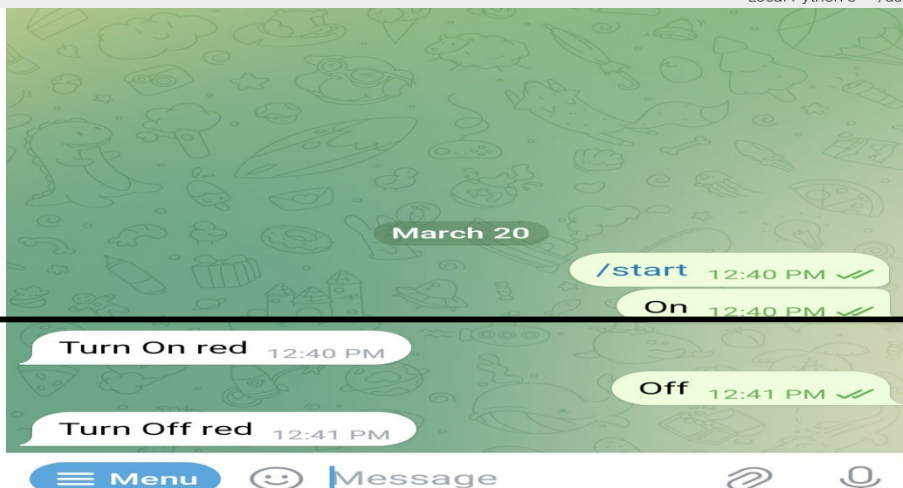
OUTPUT/OBSERVATION:



```
File Edit View Run Tools Help  
Thonny - /home/raspberrypi/Desktop/yash.py @ 48:1  
santoshbot.py telegram.py batch2.py yash.py adi.py  
31 bot.sendMessage(chat_id, message)  
32 if 'Off' in command:  
33     message="Turn Off"  
34     message=message+" red"  
35     GPIO.output(red,0)  
36     bot.sendMessage(chat_id, message)  
37  
38 bot = telepot.Bot('7167820477:AAGXbFe6Ayc2RPlhTL40cKXHHYEhuq-9ovw')  
39 #bot = telepot.Bot('6110789894:AAEILLuZ2QCJRdtQLSBxDCF7XZwqiI5aZL8')  
40 print(bot.getMe())  
41 MessageLoop(bot,action).run_as_thread()  
42 print('I am listening...')  
43  
44 while 1:  
45     time.sleep(1)  
Shell %  
>>> %Run yash.py  
{'id': 7167820477, 'is_bot': True, 'first_name': 'Iot31bot', 'username': 'Yash_Iotbot', 'can_join_groups':  
True, 'can_read_all_group_messages': False, 'supports_inline_queries': False}  
I am listening...  
Got command: /start  
Got command: ON
```



```
File Edit View Run Tools Help  
Thonny - /home/raspberrypi/Desktop/yash.py @ 48:1  
santoshbot.py telegram.py batch2.py yash.py adi.py  
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{'id': 7167820477, 'is_bot': True, 'first_name': 'Iot31bot', 'username': 'Yash_Iotbot', 'can_join_groups':  
True, 'can_read_all_group_messages': False, 'supports_inline_queries': False}  
I am listening...  
Got command: /start  
Got command: ON  
Got command: OFF
```



RESULT : Thus LED is controlled through telegram application using Raspberry Pi as shown in output figure.

CONCLUSION : We can control any home appliances remotely using telegram application connected with Raspberry pi.