REMOTE TEMPERATURE MONITORING USING TELEGRAM

We will be using Telegram Bots to send alerts on our Telegram Channel.

To send alerts and messages via Telegram, we will require,

1. An **Android/iOS/Windows phone** with **Internet connectivity**.

2. A **Telegram account** (You will require a mobile number for this).

3. Access to your **Ubuntu OS via puTTY**.

➢ **Setup Telegram**

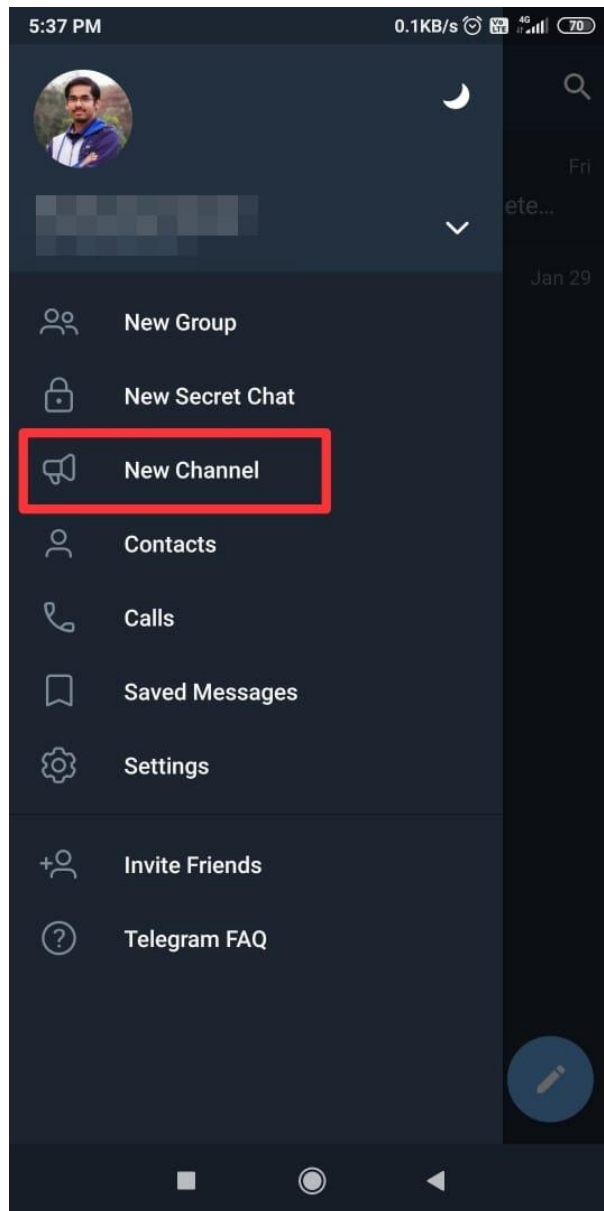❖ **Steps to sign-up/sign-in to Telegram**

1. Go to the Playstore or App Store on your phone and install the latest version of the Telegram app.

2. Signup for a new account or sign in to Telegram by providing your mobile number.

3. Telegram will call you OR send you an SMS to verify your mobile number.

4. Get your account verified and approve any permissions if required.

5. You will be logged in to Telegram

You have successfully installed Telegram and Set up your Account
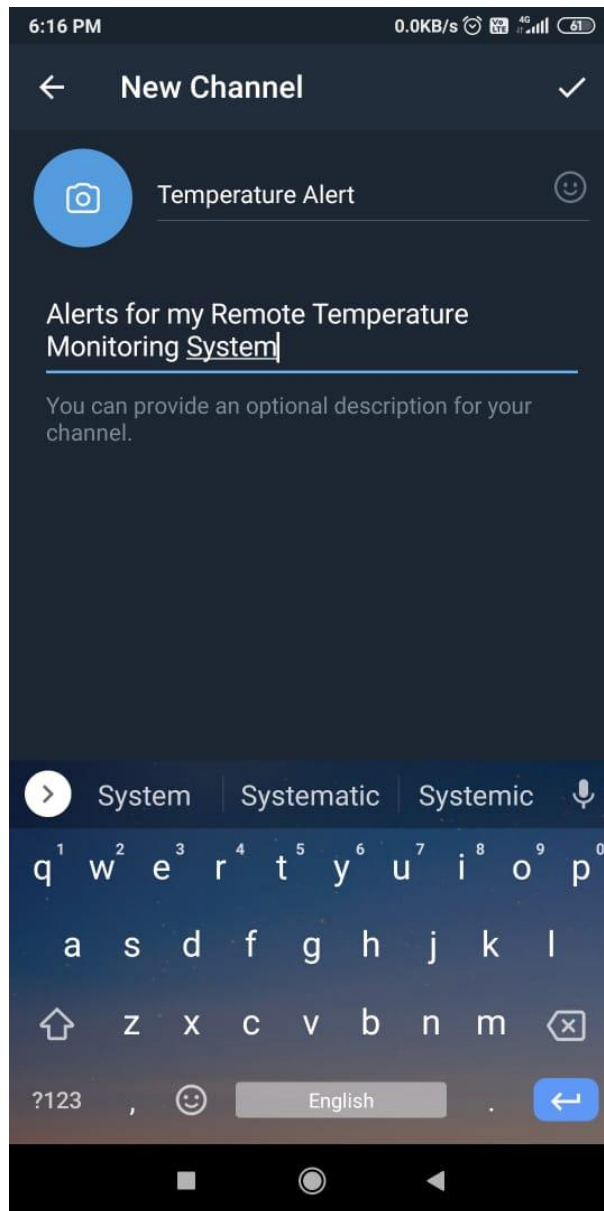
Now, we need to create a channel

❖ **Steps to create a Channel**

1. Go to the home screen of the Telegram app.

2. Swipe from the left side to reveal the menu.
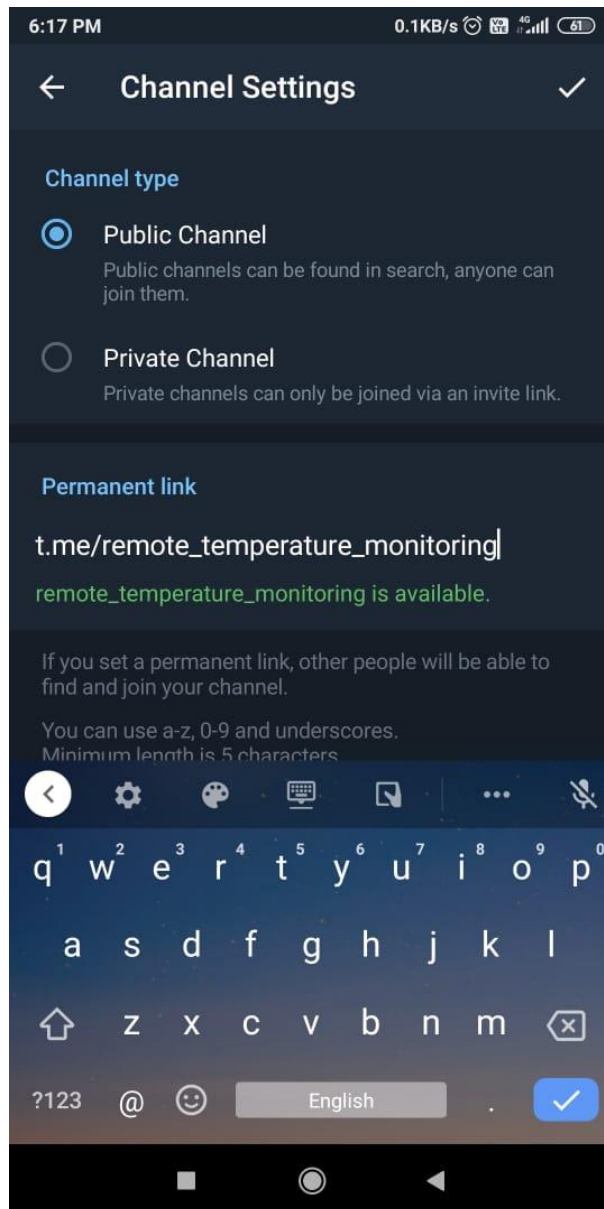
3. Click on "New Channel".

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4. It will ask you for a Name and Description for your channel. Give a suitable name and description. Adding a photo is optional.

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5. In the next screen set the channel as **Public**.

6. On the same screen, it will ask you to enter a permanent link for your channel. You can use lowercase letters and numbers 0-9 to create the channel link.

7. Keep a note of this Channel permanent link name. It will be required later on to send messages to this channel. For example, the channel link name in the screenshot below is "remote_temperature_monitoring".

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8. **Congratulations!** You have created a new channel. You can also view this channel from your app home screen.
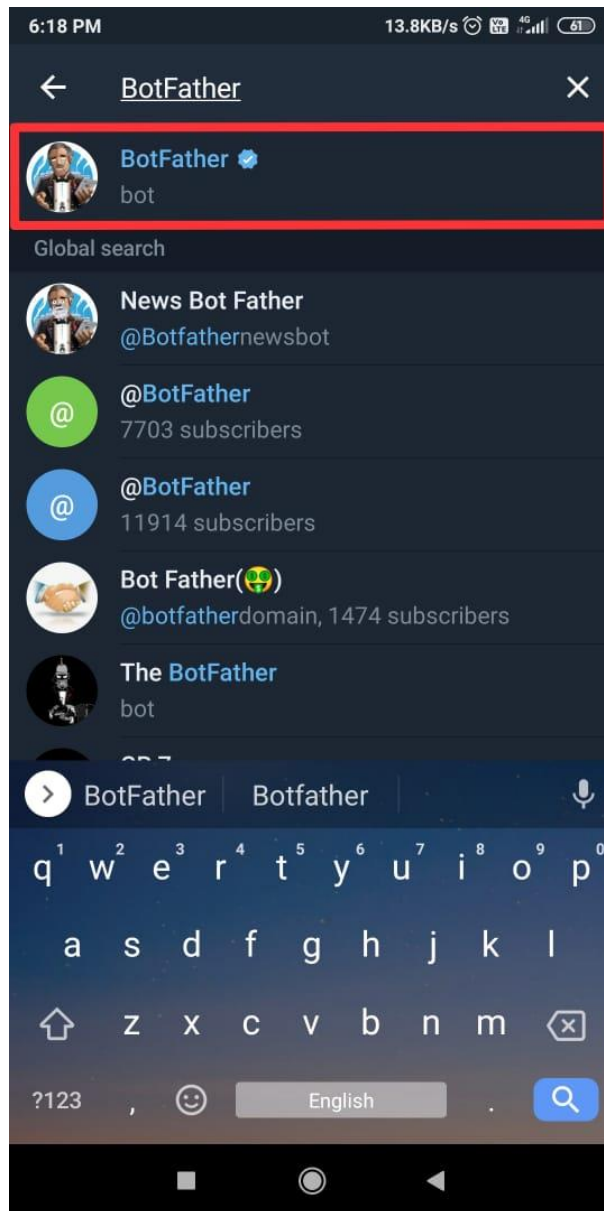
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9. You can click on the channel name at the top to view more details about it.

Now, we will need to create and add a Bot to the channel so that it can post alerts for us on this channel.
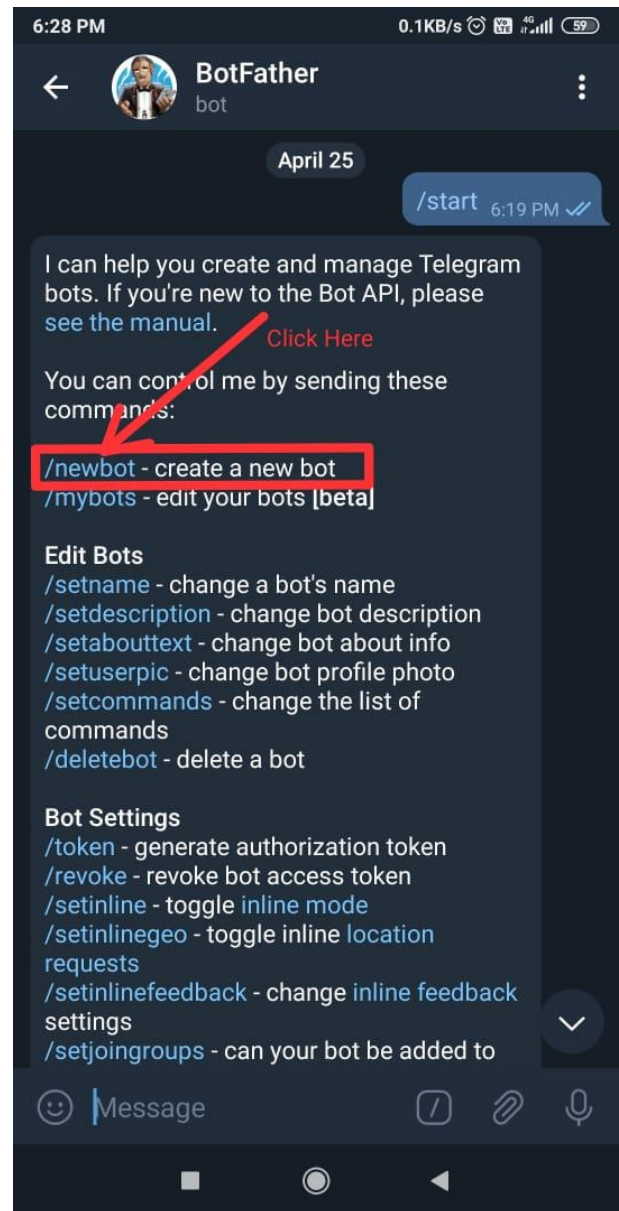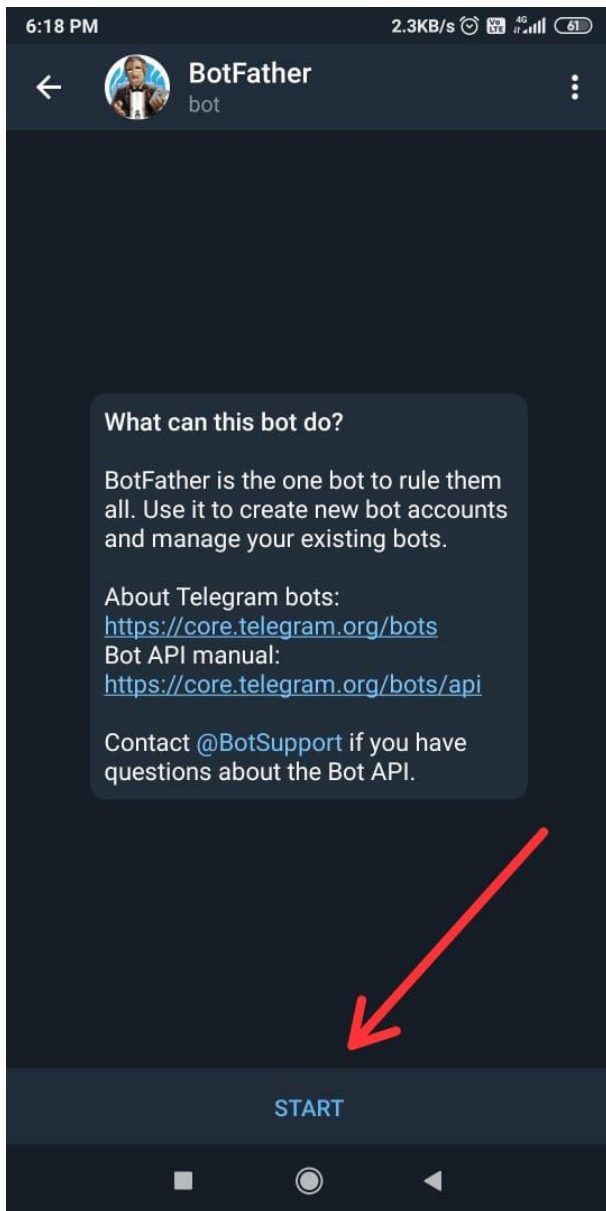
❖ **Create a New Bot**

Telegram allows us to create a new bot with the help of a bot called "BotFather". It is a single bot to create and manage other bots.
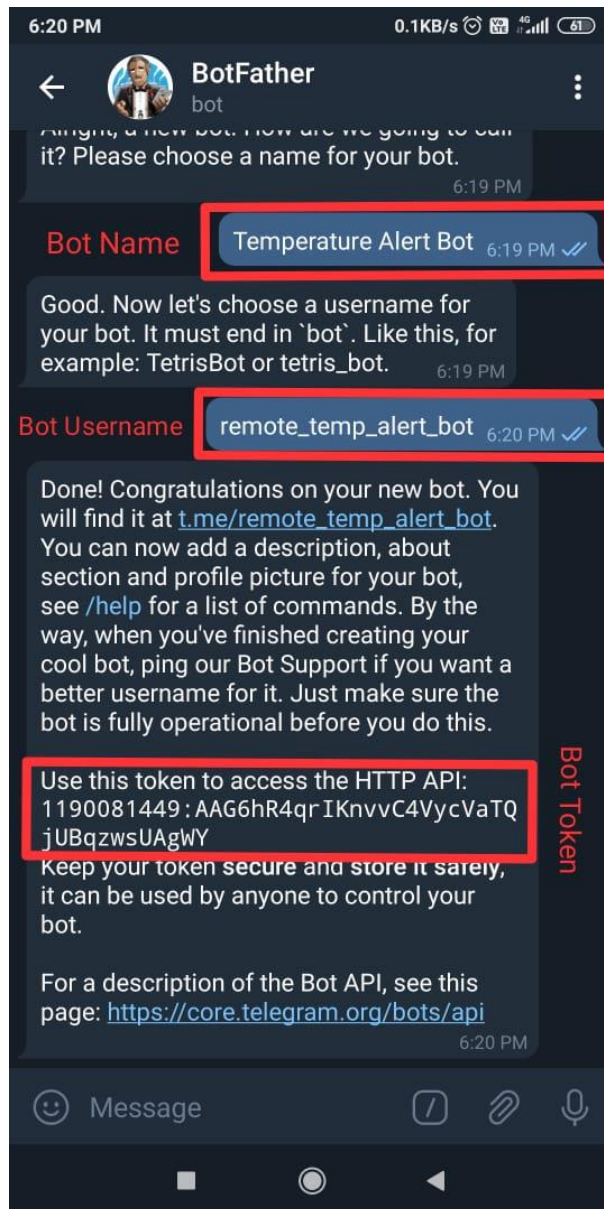
1. On the Home screen of the app, click on the search icon on the top right and type in "BotFather".

2. In the search results, click on the correct result for "BotFather" as shown below. The correct "BotFather" will have a blue tick mark next to its name. This will take you to a chat window with the "BotFather".

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3. The chat will have a few items already and will display you a list of commands to get started.

4. Since we need to create a new Bot, go ahead and select **"/newbot"** in the window.

5. It will ask you to type in a few more details like **Bot name** and **Bot username**.

6. When your bot is created successfully, you will be shown a screen similar to the one below and will contain the Bot Token. This token is used to control your Bot as well as send messages on behalf of it. Please keep this token secure as it will allow anyone to access your Bot.
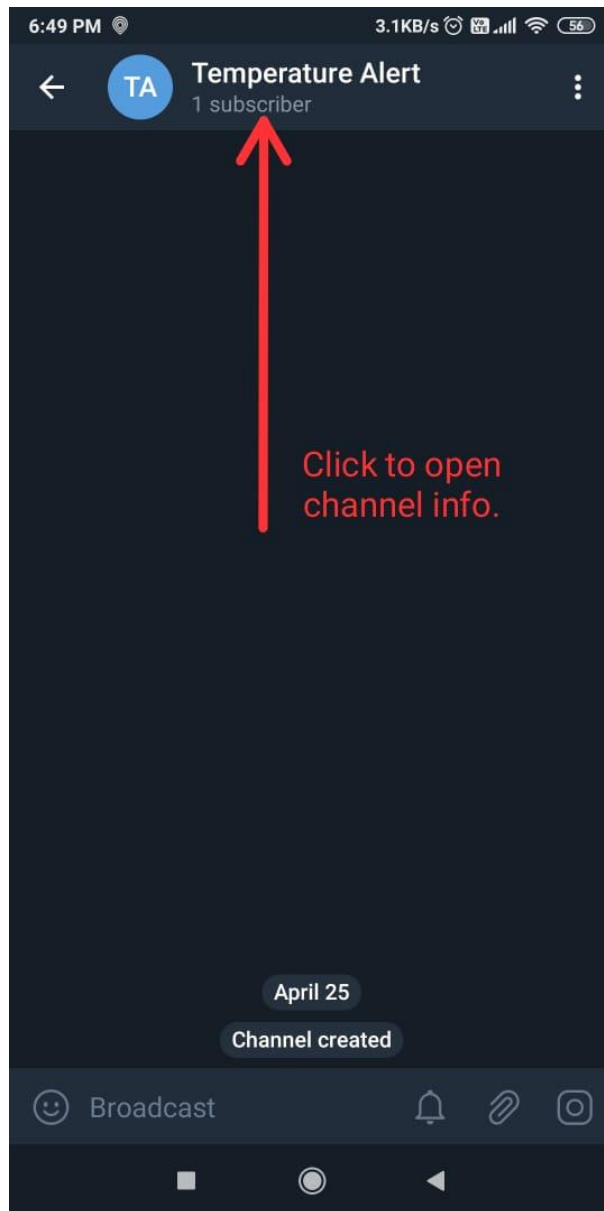
7. The **telegram_bot_id** will be used in the python code to send messages

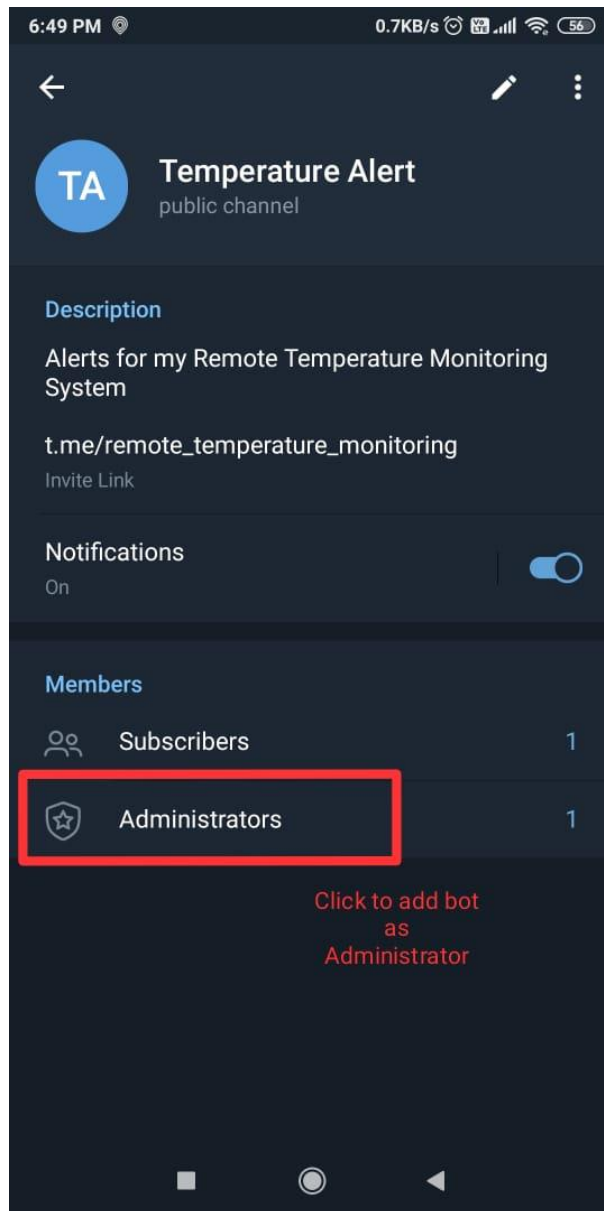8. **Congratulations!** You have created a New Bot.

Now, we will need to add it to the channel we have created previously so that we can send alerts.
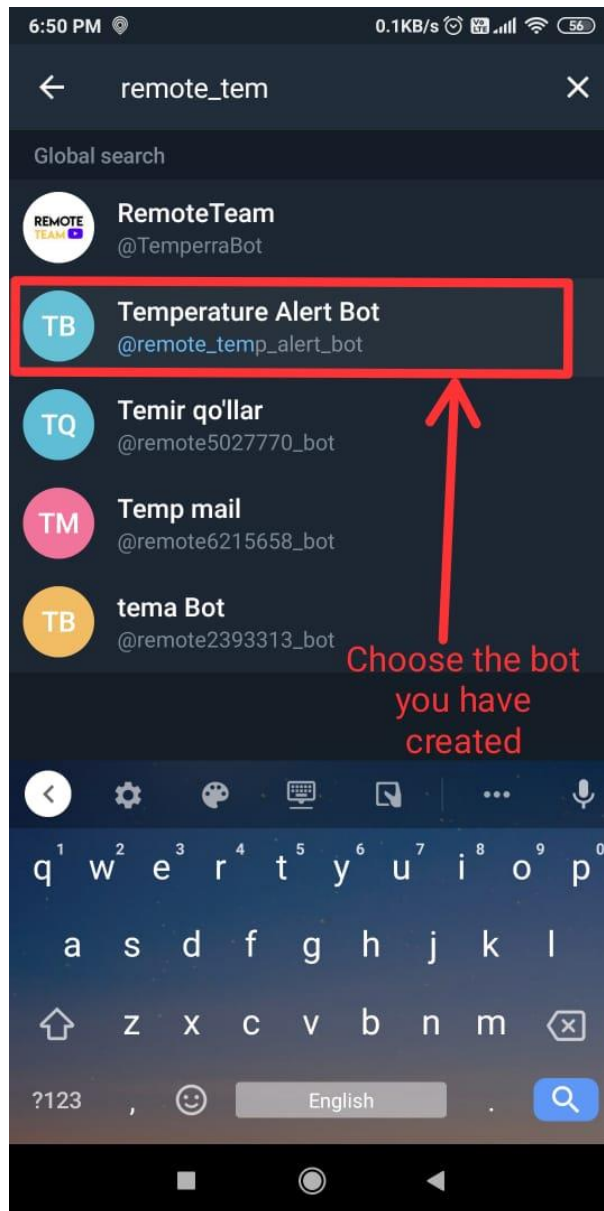
❖ **Adding the Bot to our Channel**

1. From the App home screen, open the channel we have created earlier.

2. In the screen, click on the channel name on the top to open the information for the Channel.
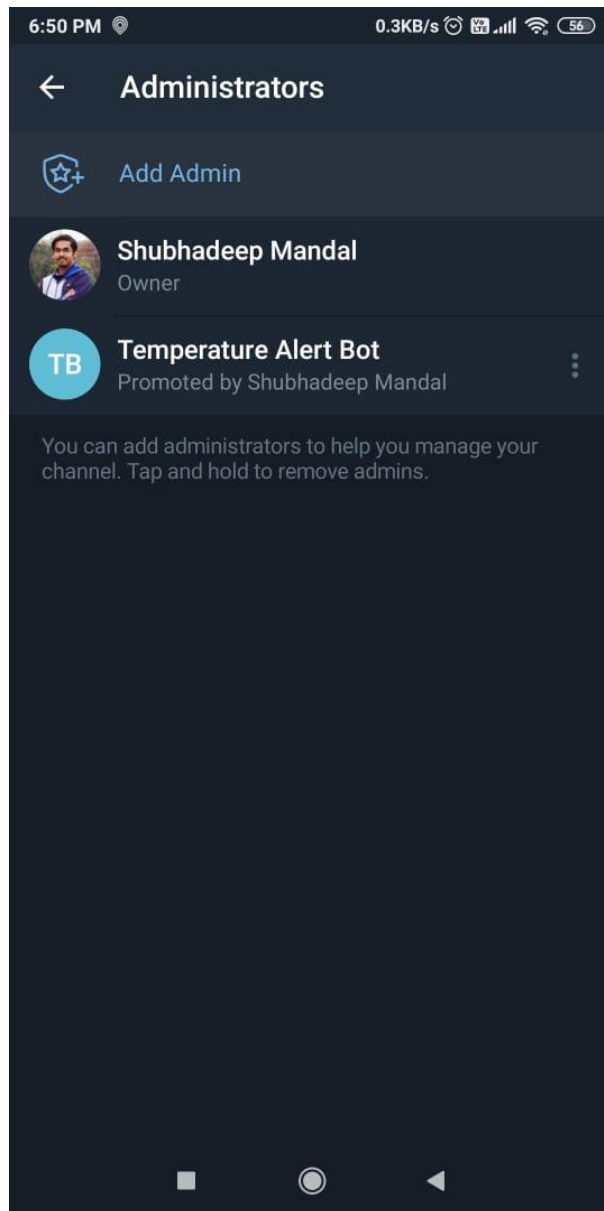
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3. Click on the **Administrators** button so that we can add the newly created bot to the channel.

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4. Search for the bot that we have created using the Bot's username. Once you have found the correct Bot click on it to add it to the channel. Please make sure you have clicked on the Administrators button in the previous step as this will allow our bot to post to the channel.

5. You will be asked to confirm the rights for the bot. Press on the tick mark on the top right to continue adding the bot to the channel. Make sure that the bot has the rights to "Post Messages".

6. You will now see the newly created Bot in the list of administrators for the channel.

7. Now we will code for sending messages to the channel via the Bot.

> **Sending Telegram message when temperature crosses threshold**

❖ **Circuit Connections**

For viewing the circuit connections [click here](.).

❖ **Code**

The code can be basically divided into three major parts. They are,

1. Reading values from the Bolt device

2. Comparing the sensor value with the threshold.

3. Sending a message via Telegram if the threshold has been breached.

The above steps are put in a while loop so that it reads the sensor value every 10 seconds and sends the alert if required.

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We will be building the system functionally as,

1. Reading the sensor value from the device.

2. Sending a Telegram message.

3. Checking if sensor value is valid and sending a message if it exceeds the threshold.

❖ **How this Works**

Telegram is a third-party messaging service which is similar to WhatsApp. It is free of cost and simple to use.

Telegram has a feature called as Bots which are just customized applications which you can build in order to send messages to a particular channel or group.

So, if we want to send a message to a channel, we will need to send a request to Telegram instructing the bot to send a message to a particular group.

That's It.

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