

## Internet of Things

## Interaction with Messengers

# Content

- **What are Messaging Bots?**
- **Telegram API**

# Telegram API

- **Telegrams Bot API allows to create programs that use Telegram messages as an interface**
- **Bots are special accounts that do not require an additional phone number to set up**
- **These accounts serve as an interface for code running somewhere (e.g.  $\mu\text{C}$ )**



# Telegram API

- **Users can interact with bots by sending them messages, commands and inline requests**
- **Simple HTTPS interface**
  - **control bots using HTTPS requests to Telegram's Bot API**

# How Telegram-Bots work

<https://core.telegram.org/bots/api>

- **Telegram Bots are special accounts that do not require an additional phone number to set up**
- **Users can interact with bots in two ways**
  - **Send messages and commands to bots**
    - **by opening a chat with them or by adding them to groups**

# How Telegram-Bots work

<https://core.telegram.org/bots/api>

- **Telegram Bots are special accounts that do not require an additional phone number to set up**
- **Users can interact with bots in two ways**
  - **Send messages and commands to bots**
  - **Send requests directly from the input field by typing the bot's @username and a query**
    - **This allows sending content from inline bots directly into any chat, group or channel.**

## Telegram-Bots

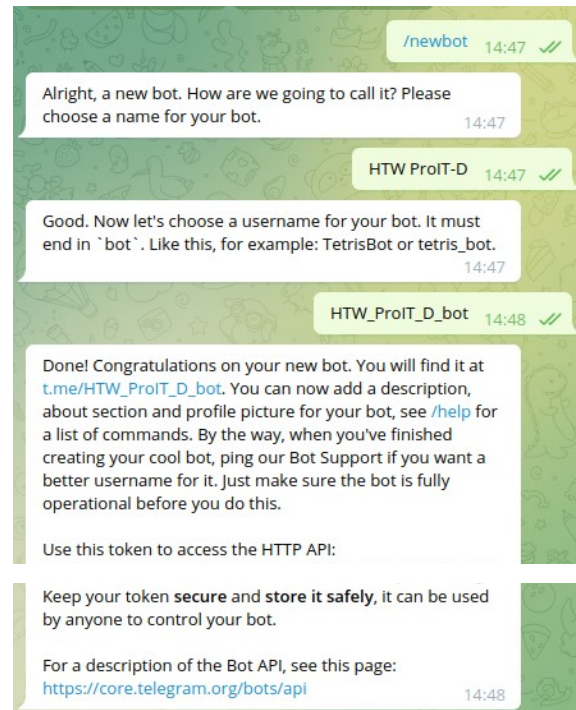
### Inline Keyboards

- **pressing buttons on inline keyboards doesn't result in messages sent to the chat**
  - **Instead, inline keyboards support buttons that work behind the scenes**
    - **callback buttons, URL buttons and switch to inline buttons**

# Creating a Telegram-Bot



- Start a chat with BotFather





# Communicating with Telegram-Bots



- **Queries to the Telegram Bot API must be served over HTTPS**

`https://api.telegram.org/bot<token>/METHOD_NAME`

- **GET and POST HTTP methods are supported**
- **Response contains a JSON object**
- **All methods in the Bot API are case-insensitive**
- **All queries must be made using UTF-8**



# Communicating with Telegram-Bots first contact

- **Open a browser and navigate to**

<https://api.telegram.org/bot<token>/getMe>

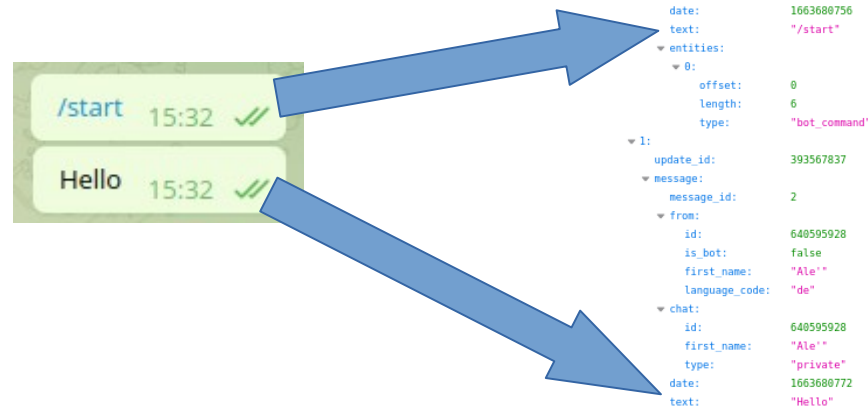
```
ok: true
result:
  id: 5465800249
  is_bot: true
  first_name: "HTW ProIT-D"
  username: "HTW_ProIT_D_bot"
  can_join_groups: true
  can_read_all_group_messages: false
  supports_inline_queries: false
```



# Communicating with Telegram-Bots first contact

- **/getUpdates?** <https://api.telegram.org/bot<token>/getUpdates?>
- **Start chatting with the bot and look at the response to /getUpdates**

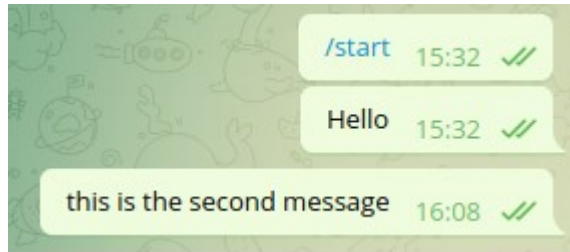
```
ok: true  
result: []
```





# Communicating with Telegram-Bots first contact

- **/getUpdates?offset=-1** <https://api.telegram.org/bot<token>/getUpdates?>
- **To get only the latest updates**



```
ok: true
result:
  0:
    update_id: 393567836
    message:
      message_id: 1
      from:
        id: 648595928
        is_bot: false
        first_name: "Ale"
        language_code: "de"
      chat:
        id: 648595928
        first_name: "Ale"
        type: "private"
        date: 1663680756
        text: "/start"
      entities:
        0:
          offset: 0
          length: 6
          type: "bot_command"
  1:
    update_id: 393567837
    message:
      message_id: 2
      from:
        id: 648595928
        is_bot: false
        first_name: "Ale"
        language_code: "de"
      chat:
        id: 648595928
        first_name: "Ale"
        type: "private"
        date: 1663680772
        text: "Hello"
  2:
    update_id: 393567838
    message:
      message_id: 3
      from:
        id: 648595928
        is_bot: false
        first_name: "Ale"
        language_code: "de"
      chat:
        id: 648595928
        first_name: "Ale"
        type: "private"
        date: 1663682912
        text: "this is the second message"
```

## getUpdates

Use this method to receive incoming updates using long polling ([wiki](#)). Returns an Array of [Update](#) objects.

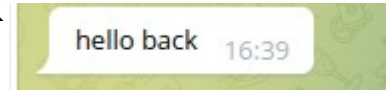
Parameter	Type	Required	Description
offset	Integer	Optional	Identifier of the first update to be returned. Must be greater by one than the highest among the identifiers of previously received updates. By default, updates starting with the earliest unconfirmed update are returned. An update is considered confirmed as soon as <code>getUpdates</code> is called with an <code>offset</code> higher than its <code>update_id</code> . The negative offset can be specified to retrieve updates starting from <code>-offset</code> update from the end of the updates queue. All previous updates will forgotten.
limit	Integer	Optional	Limits the number of updates to be retrieved. Values between 1-100 are accepted. Defaults to 100.
timeout	Integer	Optional	Timeout in seconds for long polling. Defaults to 0, i.e. usual short polling. Should be positive, short polling should be used for testing purposes only.
allowed_updates	Array of String	Optional	A JSON-serialized list of the update types you want your bot to receive. For example, specify <code>["message", "edited_channel_post", "callback_query"]</code> to only receive updates of these types. See <a href="#">Update</a> for a complete list of available update types. Specify an empty list to receive all update types except <code>chat_member</code> (default). If not specified, the previous setting will be used.

Please note that this parameter doesn't affect updates created before the call to the `getUpdates`, so unwanted updates may be received for a short period of time.

# Communicating with Telegram-Bots first contact



- **`/sendMessage?chat_id=640595928&text=hello back`**



## sendMessage

Use this method to send text messages. On success, the sent [Message](#) is returned.

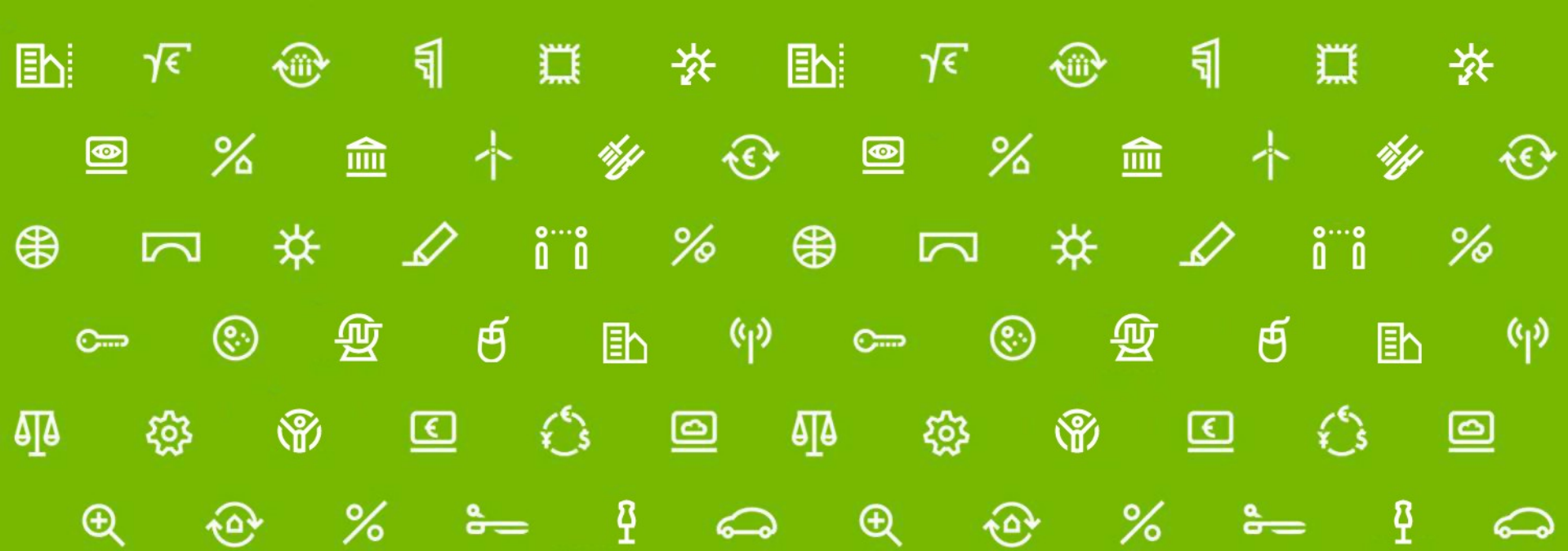
Parameter	Type	Required	Description
chat_id	Integer or String	Yes	Unique identifier for the target chat or username of the target channel (in the format <code>@channelusername</code> )
text	String	Yes	Text of the message to be sent, 1-4096 characters after entities parsing
parse_mode	String	Optional	Mode for parsing entities in the message text. See <a href="#">formatting options</a> for more details.
entities	Array of <a href="#">MessageEntity</a>	Optional	A JSON-serialized list of special entities that appear in message text, which can be specified instead of <code>parse_mode</code>
disable_web_page_preview	Boolean	Optional	Disables link previews for links in this message
disable_notification	Boolean	Optional	Sends the message <a href="#">silently</a> . Users will receive a notification with no sound.
protect_content	Boolean	Optional	Protects the contents of the sent message from forwarding and saving
reply_to_message_id	Integer	Optional	If the message is a reply, ID of the original message
allow_sending_without_reply	Boolean	Optional	Pass <code>True</code> if the message should be sent even if the specified replied-to message is not found
reply_markup	<a href="#">InlineKeyboardMarkup</a> or <a href="#">ReplyKeyboardMarkup</a> or <a href="#">ReplyKeyboardRemove</a> or <a href="#">ForceReply</a>	Optional	Additional interface options. A JSON-serialized object for an <a href="#">inline keyboard</a> , <a href="#">custom reply keyboard</a> , instructions to remove reply keyboard or to force a reply from the user.

# programming a Telegram-Bot

- **Telegram API responses contain a JSON object**
  - **Java Script Object Notation**
- **Text-based format for Data interchange**

```
{"name": "Alex", "hobbies": ["music", "programming", "sports"]}
```

- **JSON is used to send and receive Data when querying API's**



Hochschule für Technik  
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**Vielen Dank für Ihre  
Aufmerksamkeit!**