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EADC Practical 5

Aim : A multinational company, GlobalCom, is exploring the integration of Watson REST APIs into its customer service platform to enhance user experience and improve language support. As part of the testing phase, the development team is tasked with performing various tasks using the Watson APIs.

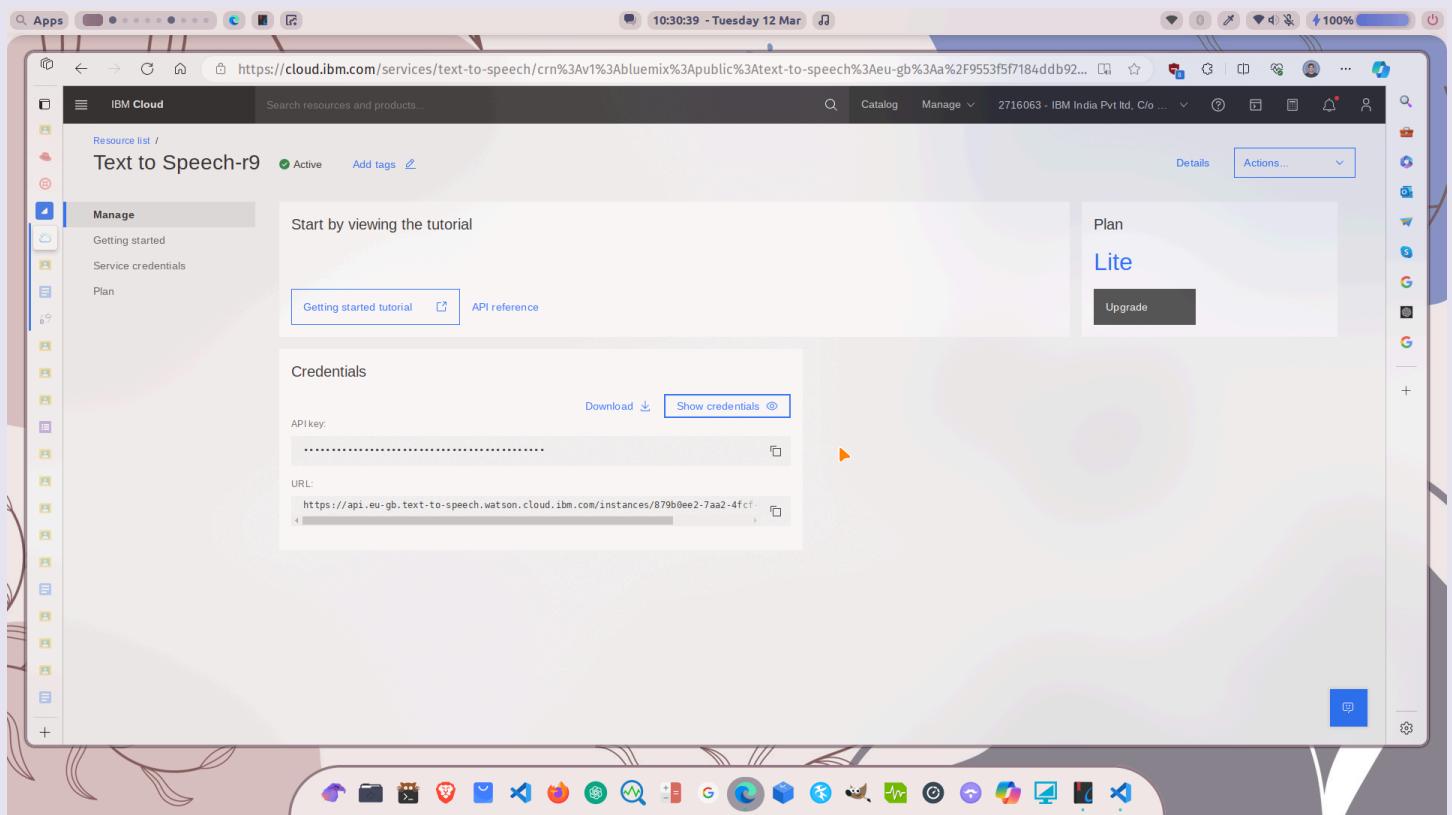
Task 1 : Imagine you are a developer at GlobalCom. Your first task is to synthesize US English input to audio using Watson's Text-to-Speech API.

1. Create the Text to Speech service in IBM Cloud and select preferred name and region

The screenshot shows the IBM Cloud Catalog interface. The URL in the address bar is <https://cloud.ibm.com/catalog/services/text-to-speech>. The page title is "Text to Speech". The "Create" tab is selected. On the left, there is a sidebar with service details: Type (Service), Provider (IBM), Last updated (01/17/2024), Category (AI / Machine Learning), Compliance (EU Supported, HIPAA Enabled, IAM-enabled), Location (Sydney, Frankfurt, London, Tokyo, Washington DC, Dallas), and Related links (API docs, Docs, Terms). The main content area shows a "Select a location" dropdown set to "London (eu-gb)". Below it, a "Select a pricing plan" section indicates "Displayed prices do not include tax. Monthly prices shown are for country or location: India". It lists three plans: "Lite" (10,000 Characters per Month, Free), "Standard" (Standard Characters, ₹1.6594 INR/THOUSAND CHAR), and "Premium" (Everything in Standard plus..., ₹414,850.00 INR/INSTANCE, ₹1,6594 INR/THOUSAND CHAR). A summary on the right shows the service is "Free", located in London, with a service name of "Text to Speech-r9" and a resource group of "default". A checkbox for accepting license agreements is checked, and there are "Create" and "Add to estimate" buttons at the bottom.

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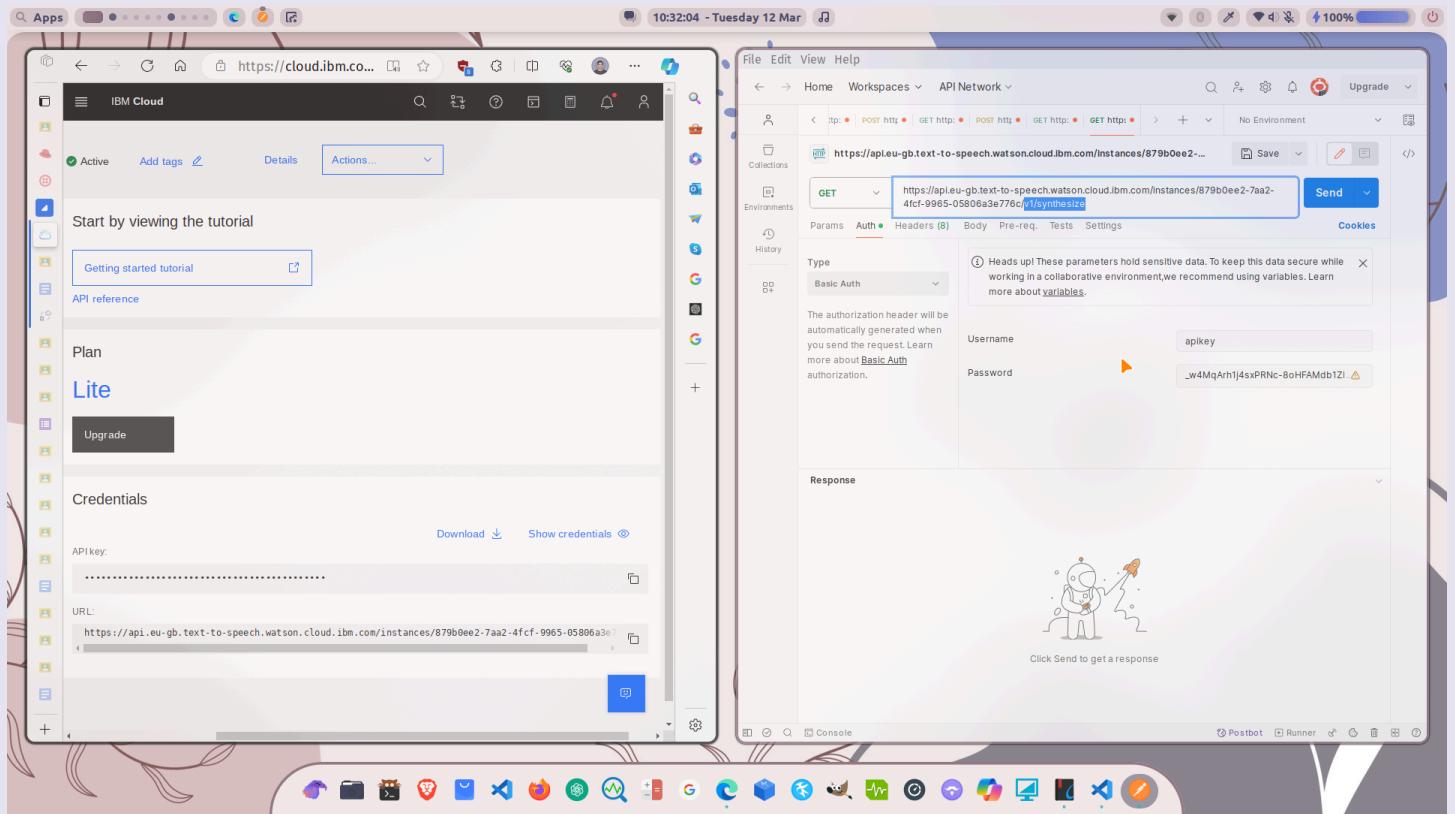
2. In Manage Tab, copy the credentials for using it afterwards



The screenshot shows the IBM Cloud Management interface for the 'Text to Speech-r9' service. The left sidebar has a 'Manage' section with 'Getting started' and 'Service credentials' options. The main area displays a 'Start by viewing the tutorial' section with 'Getting started tutorial' and 'API reference' buttons. On the right, there's a 'Plan' section showing 'Lite' and an 'Upgrade' button. Below these, the 'Credentials' section contains fields for 'API key' (with a redacted value) and 'URL' (showing <https://api.eu-gb.text-to-speech.watson.cloud.ibm.com/instances/879b0ee2-7aa2-4fcf>). There are 'Download' and 'Show credentials' buttons. The bottom of the screen shows a dock with various application icons.

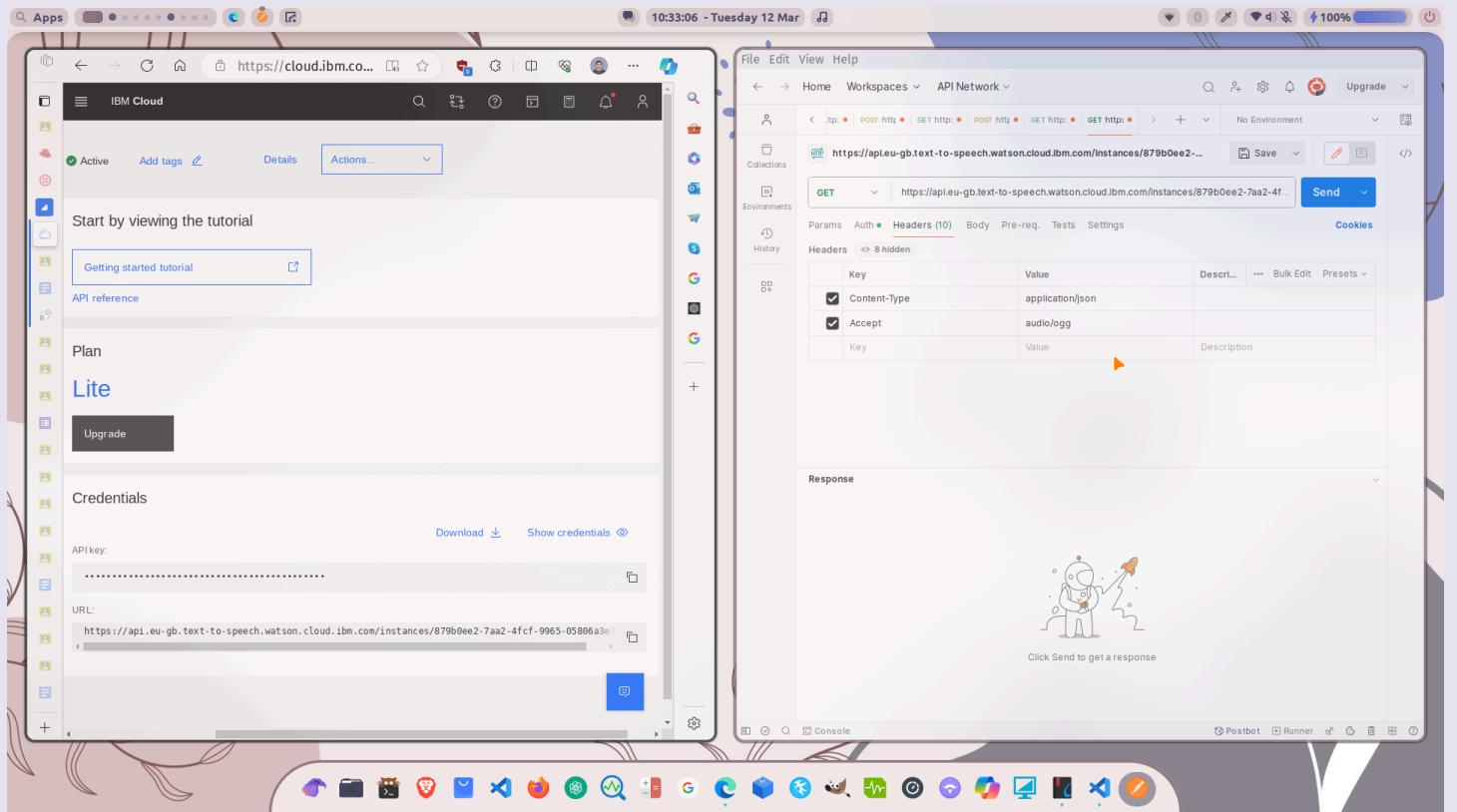
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3. Now, in Postman, enter the format : {URL}/v1/synthesize and add credentials as 'apikey' value for user and the key as password in Basic Auth type



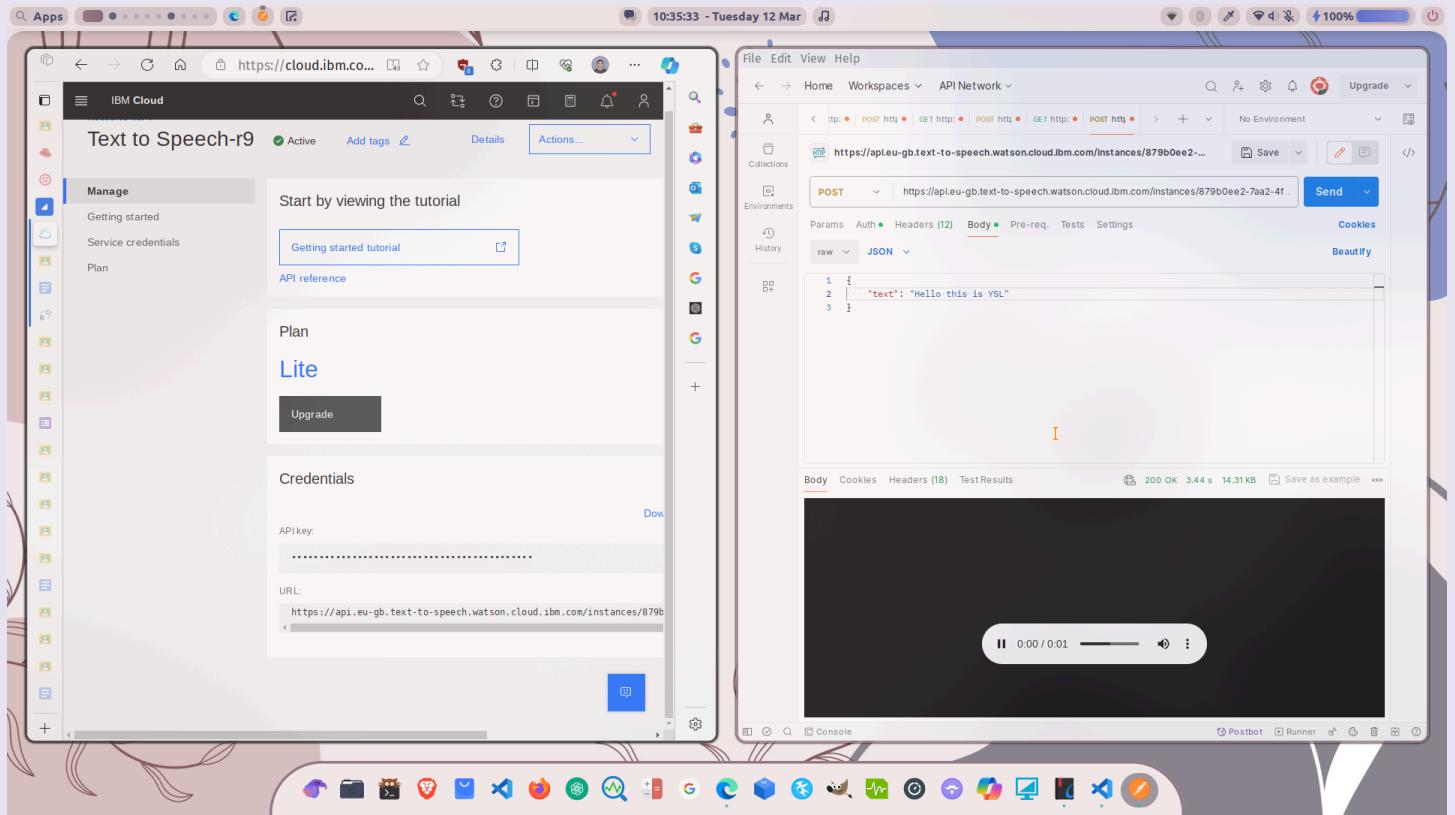
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4. Before sending the request, specify Content-Type as application/json and Accept as audio/ogg format in headers



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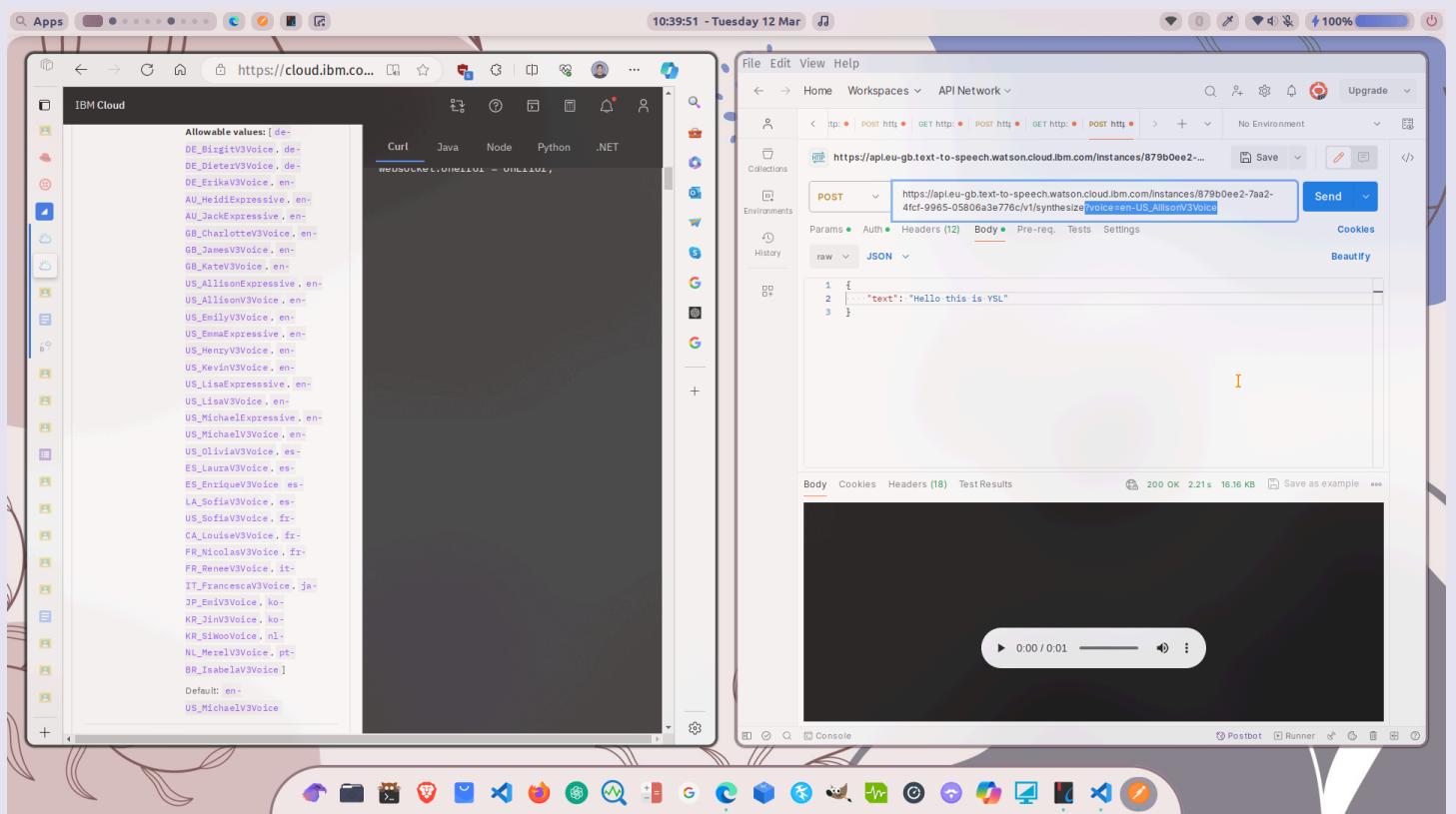
5. Now send the POST request and the audio in ogg format will be returned



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Task 2 : Continuing with the development process, the team is required to synthesize the same US English input to audio, but this time using the voice en-US_AllisonV3Voice and explicitly requesting audio in the default Ogg format.

- Visit the API docs of IBM service to list all voices available and in postman enter the URN of that voice after the URL in format : {URL}/v1/synthesize?{voice}



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Task 3 : In further testing, the team needs to synthesize Spanish input to an audio file.

- Use the format in docs to implement the same using POST request

The screenshot shows a Mac desktop with two windows open. On the left is a browser window titled 'Experiment-5' from 'Classroom'. It displays a task about synthesizing Spanish input to an audio file. On the right is a Postman API client window showing a POST request to the Watson Text-to-Speech API. The request URL is `https://api.eu-gb.text-to-speech.watson.cloud.ibm.com/instances/879b0ee2-4fcf-9965-05806a3e76c/v1/synthesize`. The JSON body of the request is:

```
1 {  
2   "text": "Hello this is YSL"  
3 }
```

The Postman interface also shows the response status as 200 OK with a duration of 1623 ms and a size of 89.73 KB. Below the Postman window is a dock containing various application icons.

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b. To implement the same using curl command, enter the command :

```
curl -X POST -u "apikey:_w4MqArh1j4sxPRNc-8oHFAMdb1ZDXgmBBOsvtSOKgbP"
--header "Content-Type: application/json" --header "Accept: audio/wav" --data
"\"text\":\"hello world\""} --output hello_world.wav
https://api.eu-gb.text-to-speech.watson.cloud.ibm.com/instances/879b0ee2-7aa2-4fcf-9965-05806a3e776c/v1/synthesize
```

The screenshot shows a Linux desktop environment with a terminal window open in the foreground and a VLC media player window in the background.

The terminal window displays the following command and its output:

```
yash ~ 07:52 curl -X POST -u "apikey:_w4MqArh1j4sxPRNc-8oHFAMdb1ZDXgmBBOsvtSOKgbP"
--header "Content-Type: application/json" --header "Accept: audio/wav" --data
"\"text\":\"hello world\""} --output hello_world.wav https://api.eu-gb.text-to-speech.watson.cloud.ibm.com/instances/879b0ee2-7aa2-4fcf-9965-05806a3e776c/v1/synthesize
yash ~ 07:52 ls | grep 'hello_world.wav'
.RW-r--r-- 54k yash 13 Mar 19:52 hello_world.wav
yash ~ 07:52 xdg-open hello_world.wav
No applications found for mimetype: audio/vnd.wave
./usr/bin/xdg-open: line 1045: firedragon: command not found
./usr/bin/xdg-open: line 1045: firedragon: command not found
xdg-open: no method available for opening 'hello_world.wav'
yash ~ 07:52 vlc hello_world.wav
VLC media player 4.0.0-dev Otto Chriek (revision 4.0.0-dev-28069-ga4b5c96472)
[00007ffe4936bd18] main generic error: cannot load plug-in /usr/lib/vlc/plugins/accessory
[00007ffe4936bd18] main generic error: cannot load plug-in /usr/lib/vlc/plugins/codecs
[00007ffe4936bd18] main generic error: cannot load plug-in /usr/lib/vlc/plugins/stream_directory
[00007ffe4936bd18] main generic error: cannot load plug-in /usr/lib/vlc/plugins/visualizer
[00007ffe4936bd18] main generic error: cannot load plug-in /usr/lib/vlc/plugins/visualizer
[000061698fe87a00] main libvlc: Running vlc with the default interface. Use 'cvlc' to
[0000616990047c30] [qt] qt generic: not running an X11 platform
[000073cd20c020c0] wav demux error: 'data' chunk not found
QObject::~QObject: Timers cannot be stopped from another thread
yash ~ 07:53 vlc hello_world.wav
VLC media player 4.0.0-dev Otto Chriek (revision 4.0.0-dev-28069-ga4b5c96472)
[00007fff3996c858] main generic error: cannot load plug-in /usr/lib/vlc/plugins/accessory
[00007fff3996c858] main generic error: cannot load plug-in /usr/lib/vlc/plugins/codecs
```

The VLC media player window shows a waveform and playback controls. The file 'hello_world.wav' is playing at 37 ms / 0:01.

Here, ls is used to list and its output is piped to grep which greps the line containing the text specified and vlc is used to open the audio file

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Task 4 : The team is now tasked with translating a phrase, "Hello, How are you?" from English to Hindi using Watson's Language Translator API.

a. Create Language Translator service similarly in IBM Cloud

The screenshot shows the IBM Cloud catalog interface for creating a Language Translator service. The left sidebar lists regions: Frankfurt, London, Dallas, Tokyo, and Washington DC. The main content area displays three service plans: Standard, Advanced, and Premium. The Standard plan is selected, showing details like 'Everything in Lite plus...' and a price of ₹1.6594 INR/THOUSAND CHAR. The right panel shows a summary for a 'Language Translator' service with a 'Lite' plan, located in London, named 'Language Translator-8g', and assigned to a 'default' resource group. At the bottom, a checkbox for accepting license agreements is checked, and a large blue 'Create' button is highlighted with a cursor. Below it is a 'Add to estimate' button.

The page URL is <https://cloud.ibm.com/catalog/services/language-translator>.

Standard

- Everything in Lite plus...**
Removal of monthly 1M character translation limit
First 250,000 characters are free
Document Translation - Maximum file size: 20 Mb
- ₹1.6594 INR/THOUSAND CHAR

Advanced

- Everything in Standard plus...**
Build Domain Specific Custom Models (Pro-Rated Daily)
Service Endpoints
- ₹1.6594 INR/THOUSAND CHAR
₹6.6376 INR/THOUSAND CHAR
₹1.244.55 INR/INSTANCE MONTH

Premium

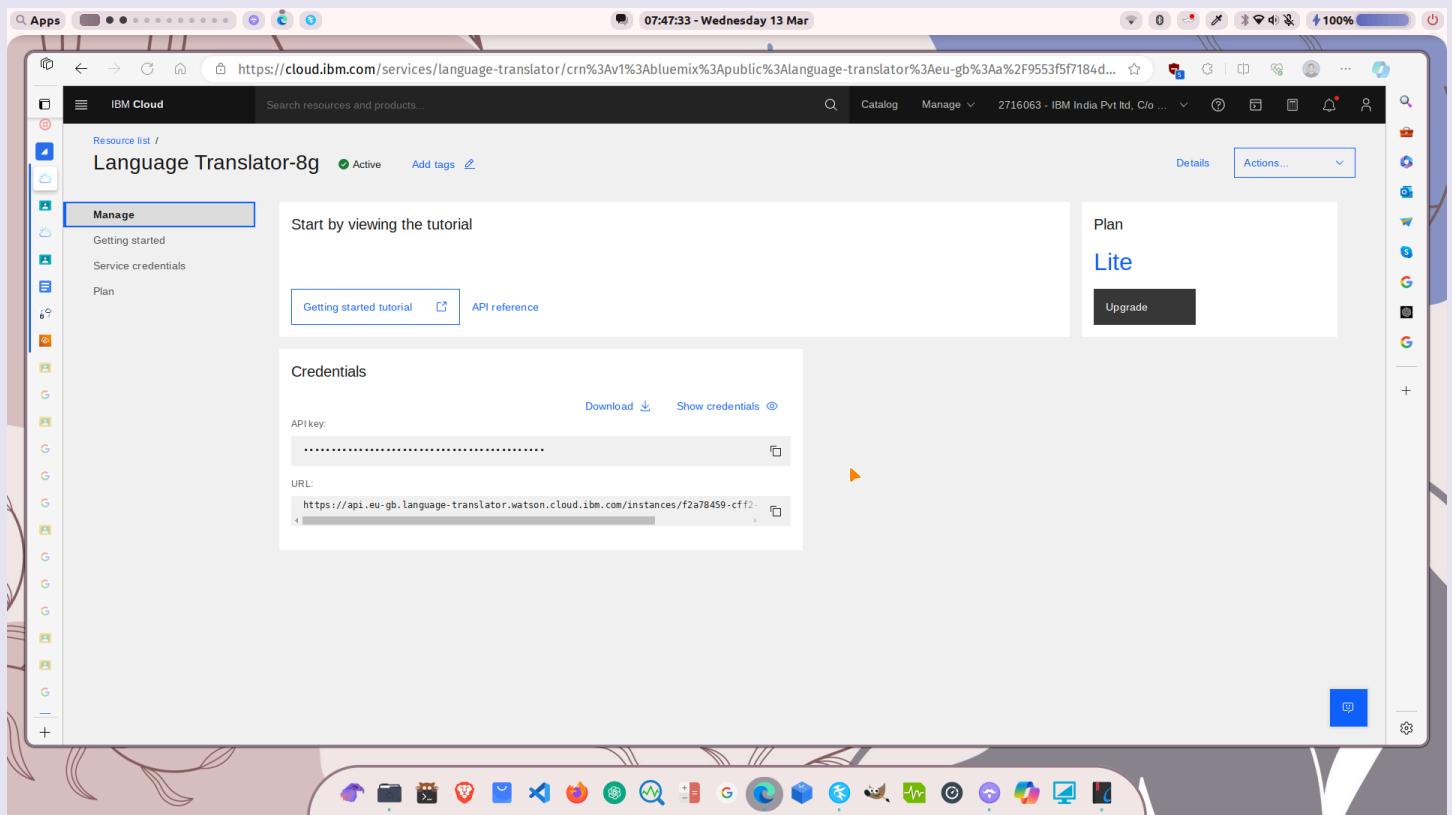
- Everything in Advanced plus...**
Usage and Logging Data is Private + Stored in an Isolated Single Tenant Environment
Regional Availability and Service Level Uptime Guarantee
IBM Cloud Service Endpoints
HPPA Enabled in Washington DC (US-East) & Dallas (US-South)
EU Supported available in Frankfurt (EU-DE)
- ₹954,155.00 INR/INSTANCE
₹1.6594 INR/THOUSAND CHAR
₹6.6376 INR/THOUSAND CHAR

Configure your resource

Service name: Language Translator-8g
Select a resource group: default
Tags: Examples: env.dev, version-1
I have read and agree to the following license agreements:
Create
Add to estimate

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b. From Manage tab, copy the credentials



The screenshot shows the IBM Cloud interface for managing a Language Translator service instance named "Language Translator-8g". The "Manage" tab is selected in the sidebar. On the right, there's a "Plan" section showing "Lite" and a "Upgrade" button. Below it, the "Credentials" section displays an API key (represented by a redacted string) and a URL (https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2...). There are "Download" and "Show credentials" buttons next to the credentials.

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c. Now, enter credentials and headers as earlier in postman and make a POST request to the format : {URL}/v3/translate?version=2018-05-01

The screenshot displays two windows side-by-side. On the left is the IBM Cloud interface, showing a 'Lite' plan and an API key. On the right is the Postman application, which has made a POST request to the Language Translator API. The response body shows a JSON object with translations, word count, and character count.

IBM Cloud Screenshot:

- Plan: Lite
- Credentials:
 - API key: KAE35j7GT3eOFQkNjrNZsWuLg4ilXYbshCSwgVrgUc4m
 - URL: https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-ctff-4426-8564-39045dda701b/v3/translate?version=2018-05-01

Postman Screenshot:

- Method: POST
- URL: https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-ctff-4426-8564-39045dda701b/v3/translate?version=2018-05-01
- Headers:
 - Accept
- Body (Pretty):

```
1 {  
2   "translations": [  
3     {  
4       "translation": "नमस्ते जय कैने है?"  
5     }  
6   ],  
7   "word_count": 5,  
8   "character_count": 18  
9 }
```
- Response status: 200 OK, 967 ms, 820 B

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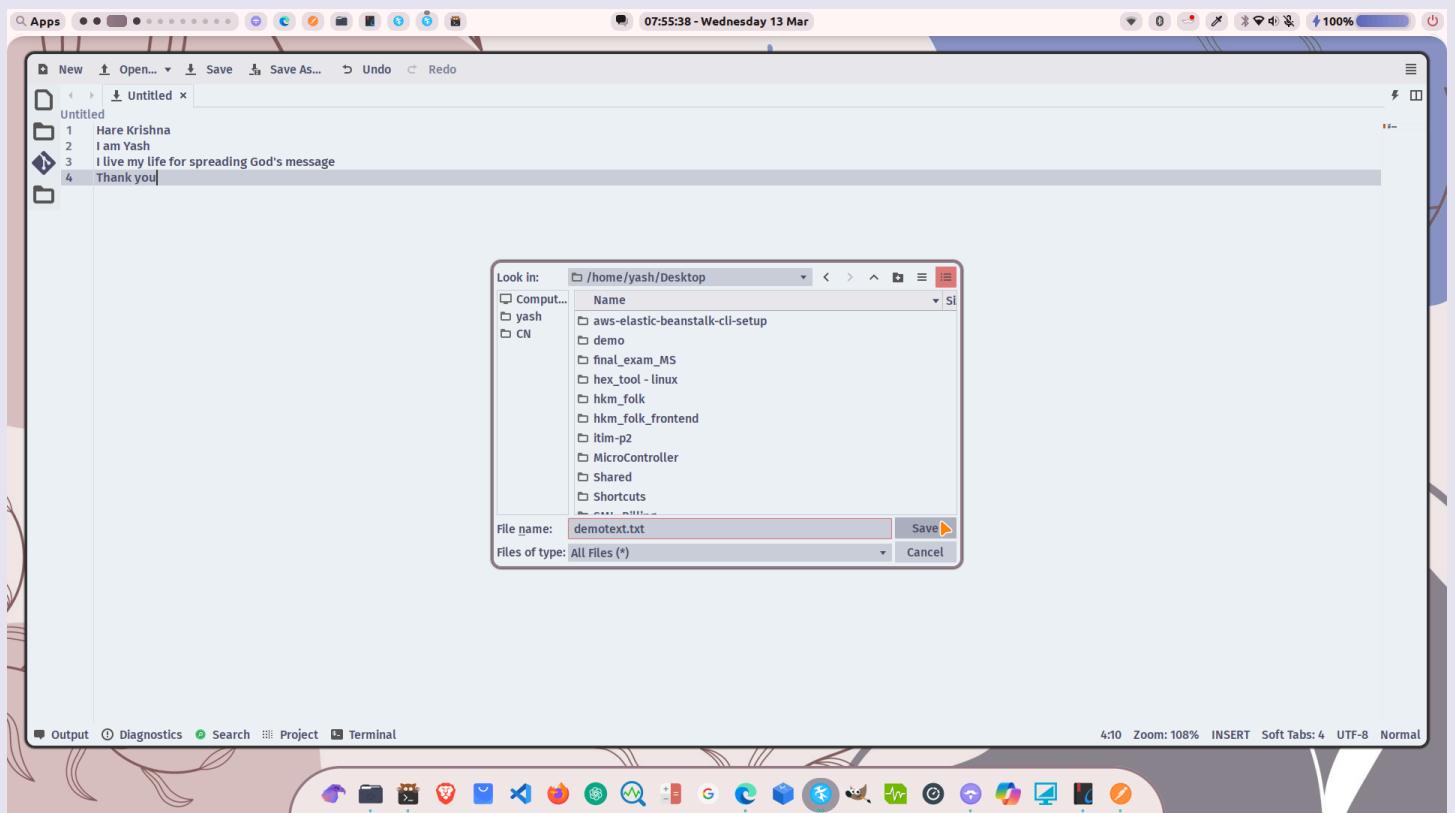
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Task 5 : Continuing with language support, the team aims to demonstrate document translation capabilities. Develop a scenario where a user uploads a text file containing information in English, and the system translates the entire document into another language, excluding English.

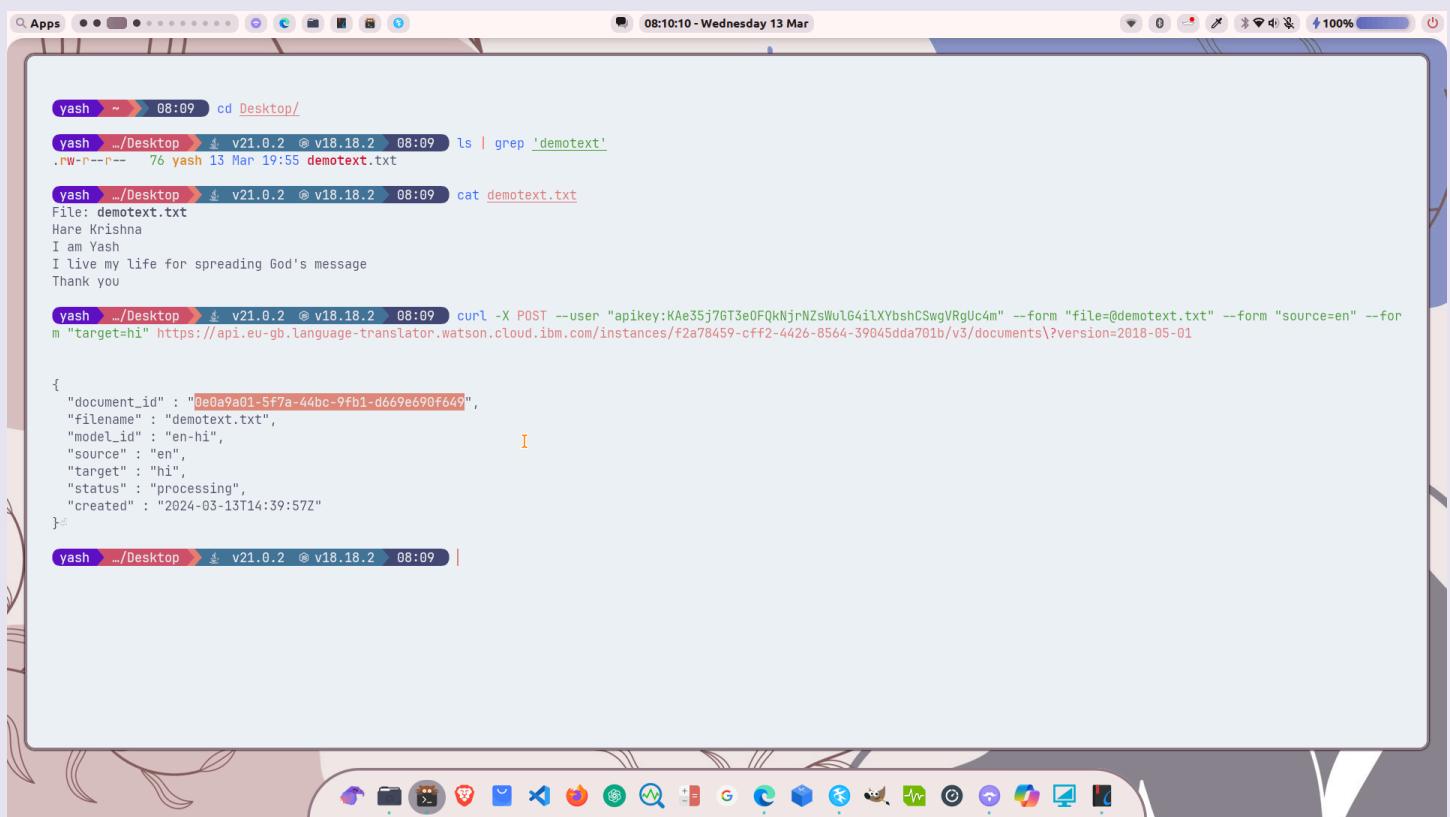
- Create a text file with some text to translate in other language



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b. Now, make a POST request using curl with the command :

```
curl -X POST --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m"
--form "file=@demotext.txt" --form "source=en" --form "target=hi"
https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents?version=2018-05-01
```



A screenshot of a Linux desktop environment showing a terminal window. The terminal window has a light blue background and displays a command-line session. The session starts with the user navigating to their Desktop directory, then listing files and grepping for 'demotext'. It then reads the contents of 'demotext.txt' and prints it. Finally, it runs a curl command to post the file to a Watson Language Translator API endpoint, showing the JSON response which includes a document ID and processing status.

```
yash ~ 08:09 cd Desktop/
yash .../Desktop v21.0.2 @ v18.18.2 08:09 ls | grep 'demotext'
.yw-r--r-- 76 yash 13 Mar 19:55 demotext.txt
yash .../Desktop v21.0.2 @ v18.18.2 08:09 cat demotext.txt
File: demotext.txt
Hare Krishna
I am Yash
I live my life for spreading God's message
Thank you
yash .../Desktop v21.0.2 @ v18.18.2 08:09 curl -X POST --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m" --form "file=@demotext.txt" --form "source=en" --form "target=hi" https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents?version=2018-05-01
{
  "document_id": "0e0a9a01-5f7a-44bc-9fb1-d669e690f649",
  "filename": "demotext.txt",
  "model_id": "en-hi",
  "source": "en",
  "target": "hi",
  "status": "processing",
  "created": "2024-03-13T14:39:57Z"
}
```

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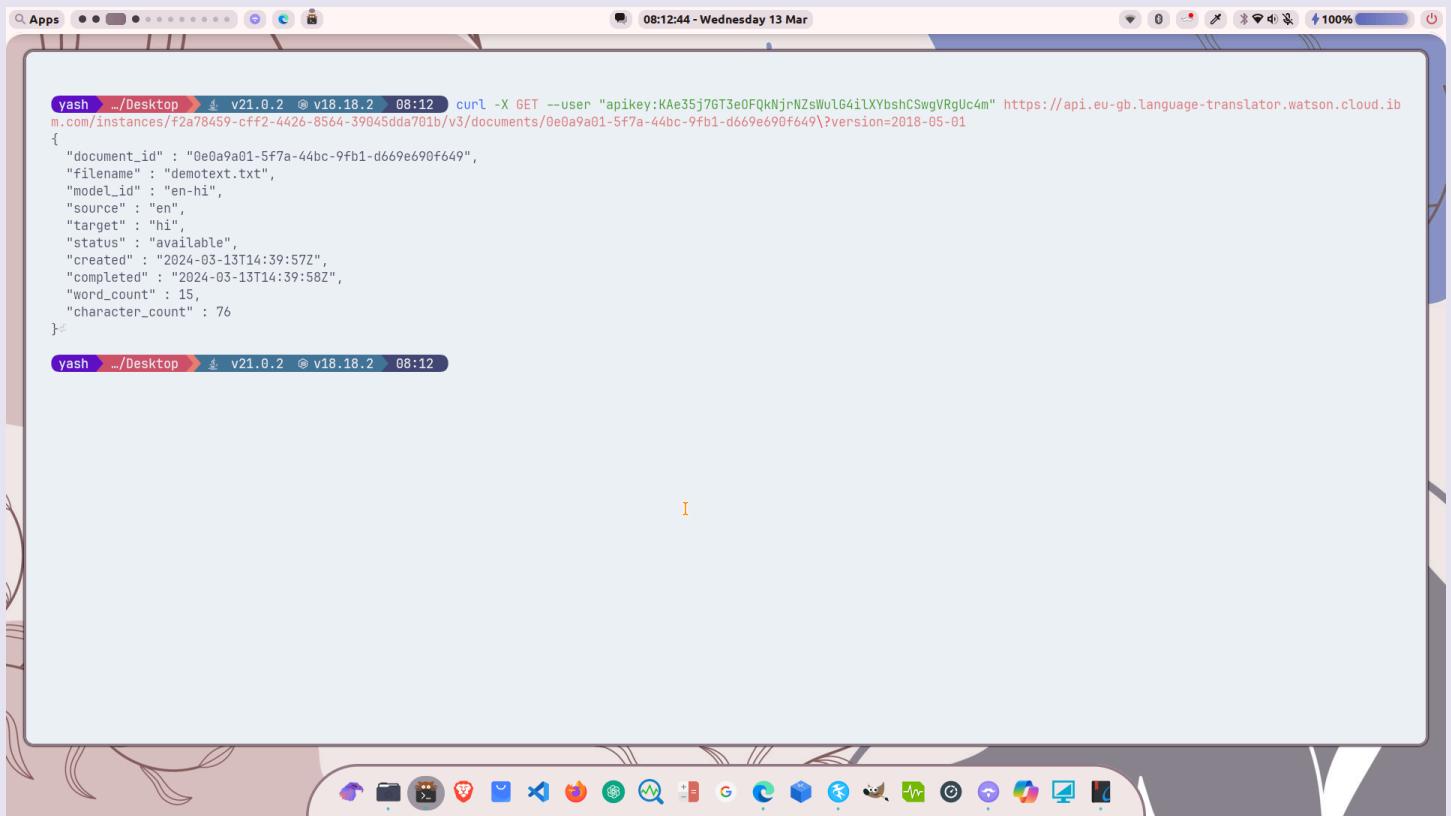
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- c. Copy the document ID and enter it in the curl command to get the details of the document, the command :

```
curl -X GET --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m"  
https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649?version=2018-05-01
```



A screenshot of a Linux desktop environment. At the top, there's a standard window title bar with icons for search, apps, and system status. The main area shows a terminal window with a light gray background. The terminal output is as follows:

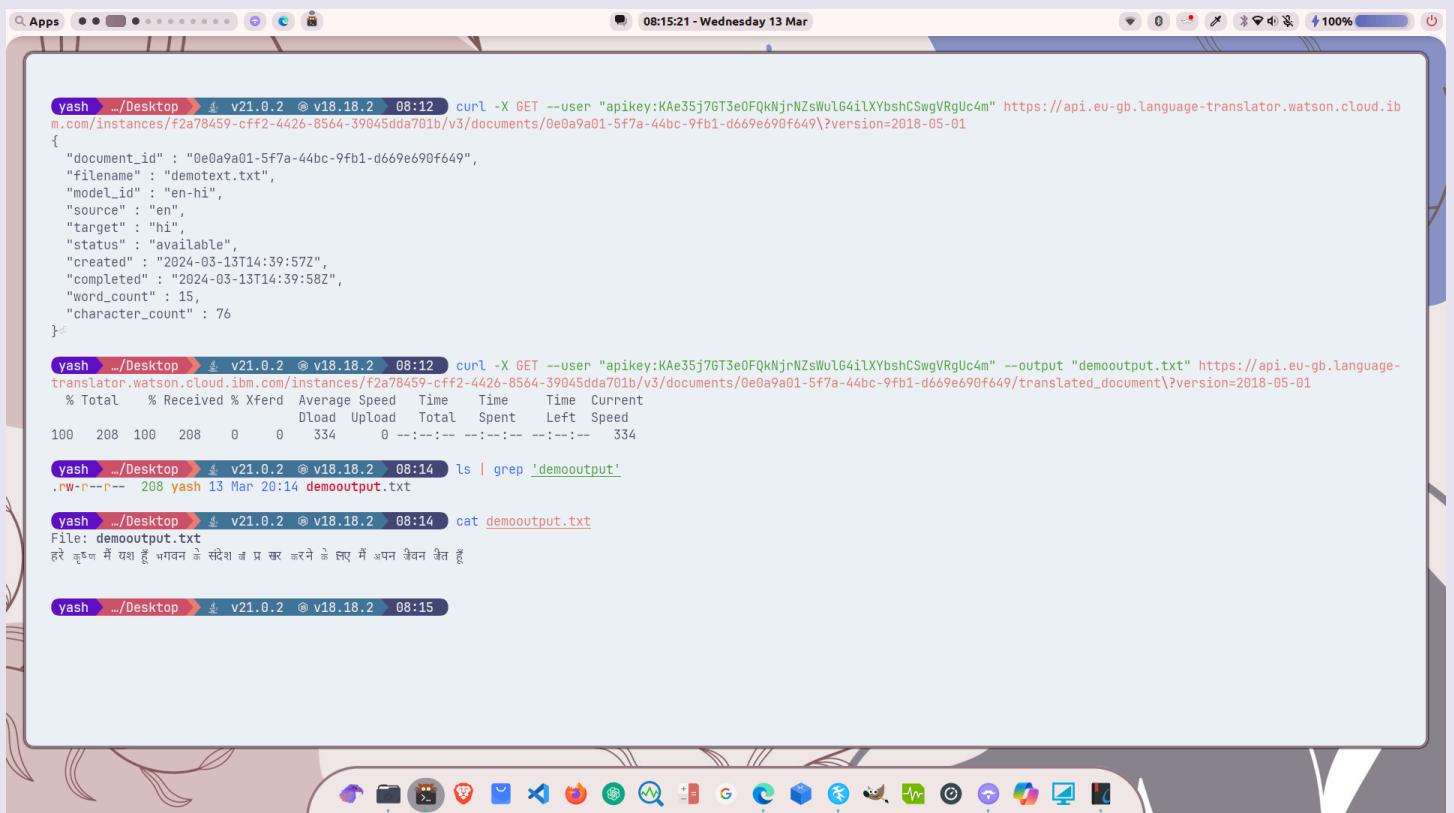
```
yash .../Desktop ➜ v21.0.2 @ v18.18.2 08:12 curl -X GET --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m" https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649?version=2018-05-01  
{  
  "document_id" : "0e0a9a01-5f7a-44bc-9fb1-d669e690f649",  
  "filename" : "demotext.txt",  
  "model_id" : "en-hi",  
  "source" : "en",  
  "target" : "hi",  
  "status" : "available",  
  "created" : "2024-03-13T14:39:57Z",  
  "completed" : "2024-03-13T14:39:58Z",  
  "word_count" : 15,  
  "character_count" : 76  
}  
yash .../Desktop ➜ v21.0.2 @ v18.18.2 08:12
```

The desktop interface includes a dock at the bottom with various application icons.

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d. Now, for getting the translated output again use the curl command :

```
curl -X GET --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m"  
--output "demooutput.txt"  
https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649/translated\_document?version=2018-05-01
```



```
yash .../Desktop ➜ v21.0.2 @ v18.18.2 08:12 curl -X GET --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m" https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649?version=2018-05-01  
{  
  "document_id" : "0e0a9a01-5f7a-44bc-9fb1-d669e690f649",  
  "filename" : "demotext.txt",  
  "model_id" : "en-hi",  
  "source" : "en",  
  "target" : "hi",  
  "status" : "available",  
  "created" : "2024-03-13T14:39:57Z",  
  "completed" : "2024-03-13T14:39:58Z",  
  "word_count" : 15,  
  "character_count" : 76  
}  
yash .../Desktop ➜ v21.0.2 @ v18.18.2 08:12 curl -X GET --user "apikey:KAe35j7GT3eOFQkNjrNZsWulG4ilXYbshCSwgVRgUc4m" --output "demooutput.txt" https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649/translated_document?version=2018-05-01  
% Total    % Received % Xferd  Average Speed   Time   Time  Current  
          DLoad  Upload  Total Spent   Left  Speed  
100  208 100  208  0     0  334  0  --:--:--  --:--:--  --:--:-- 334  
yash .../Desktop ➜ v21.0.2 @ v18.18.2 08:14 ls | grep 'demooutput'  
.rw-r--r-- 208 yash 13 Mar 20:14 demooutput.txt  
yash .../Desktop ➜ v21.0.2 @ v18.18.2 08:14 cat demooutput.txt  
File: demooutput.txt  
हरे लूटन मैं यश हूँ भगवन के सदेश के प्र चर करने के लए मैं अपन जीवन बैत हूँ
```

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e. Now, the output text file will contain the translated text

The screenshot shows a Linux desktop environment with two windows open. On the left is a terminal window titled '08:15:46 - Wednesday 13 Mar'. It displays the following command and its output:

```
curl -X GET --user "apikey:KAe35j7G73e0FQkNjrNZsWuL64ilXYbshCSwgVRgUc4m" https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045dda701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649?version=2018-05-01
```

The terminal then shows the curl command again with the output file specified:

```
curl -X GET --user "apikey:KAe35j7G73e0FQkNjrNZsWuL64ilXYbshCSwgVRgUc4m" --output "demooutput.txt" https://api.eu-gb.language-translator.watson.cloud.ibm.com/instances/f2a78459-cff2-4426-8564-39045da701b/v3/documents/0e0a9a01-5f7a-44bc-9fb1-d669e690f649/translated_document?version=2018-05-01
```

Below this, a netstat command is run to show network traffic:

```
netstat -an | grep 'listening'
```

Finally, several commands are run to verify the translation:

```
ls | grep 'demooutput'  
cat demooutput.txt  
kate demooutput.txt  
kate demooutput.txt
```

On the right is a Kate text editor window. It has a sidebar showing a file tree with a file named 'demooutput.txt' selected. The main pane of the editor contains the translated text in Hindi:

हरे कृष्ण मैं यश हूँ भगवान के सदेश का प्रसार करने के लिए मैं अपना जीवन जीता हूँ

Here, cat command is used to get output of text file on terminal while kate is used to open in the Kate text editor