PYTHON WORKSHOP

Python Fundamentals

Prepared by the Artificial Intelligence Research Center (AIRC), Ajman University, Ajman, UAE

Workshop Outlines

- ~~Workshop Overview~~
- ~~Project Demo~~
- ~~Introduction to Python~~
- ~~Starting with Colab~~
- ~~Comment and Print~~
- ~~Variables and simple data types~~
- ~~String manipulation~~
- ~~If Statements~~
- ~~Loops~~
- ~~Functions~~
- Final Project

Day 5 Outlines

- Exception Handling
- Final Project

1. Exception Handling

How to handle exception and errors during the run of your code

Exception Handling

Basic Syntax:

```
try :
    #sentences 1
except Exception:
    #sentences 2
else:
    #sentences 3
finally:
    #sentences 4
```

Try to run this as a normal part of the program

Execute this when there is an exception

Execute this when there is no exceptions raised

Always execute this

Exception Handling

Simple Examples

```
try:
    x = 1/0
except Exception as e:
    print(e)
```

```
try:
    x=5
    print("value of"+x)
except Exception as e:
    print(e)
```

Exception Handling

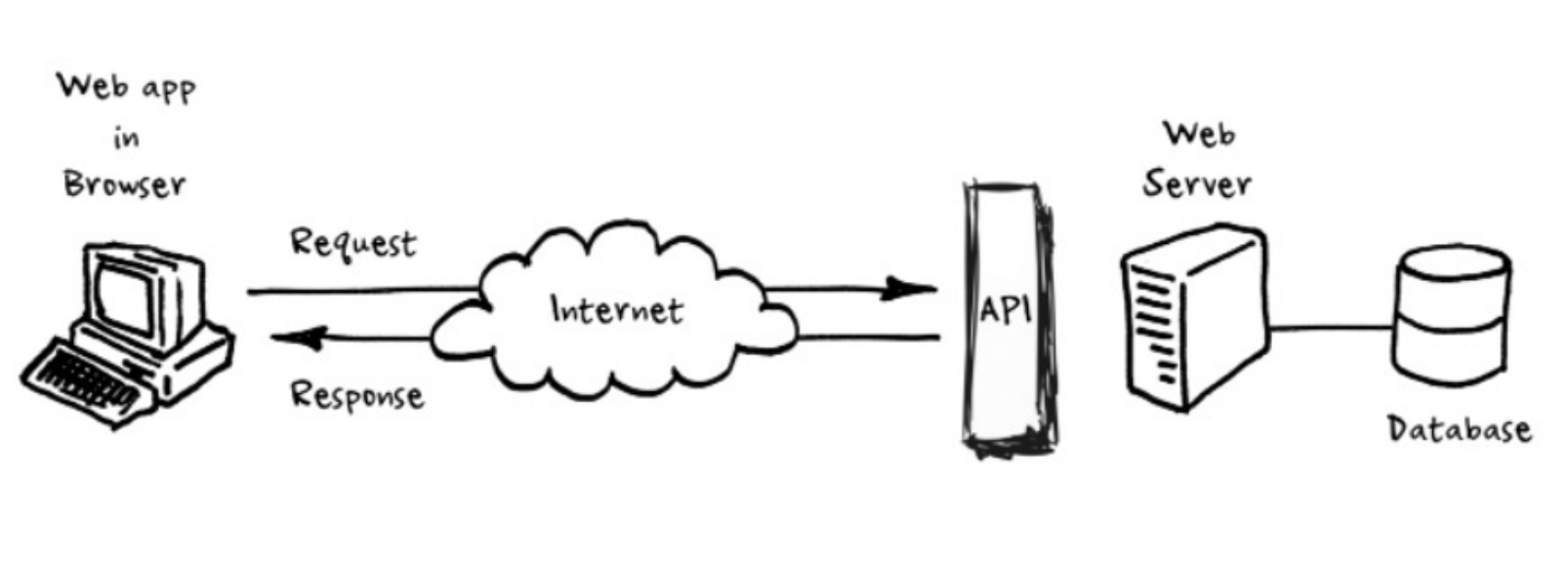
- We can handle all errors together using Exceptions or we can deal with each type of error individually

```
While True:
    Try:
       X = int(input("Please enter44 a number :"))
       Break
    Except ValueError:
       Print("Ops! That was no valid number . Try again....")
```

2. API

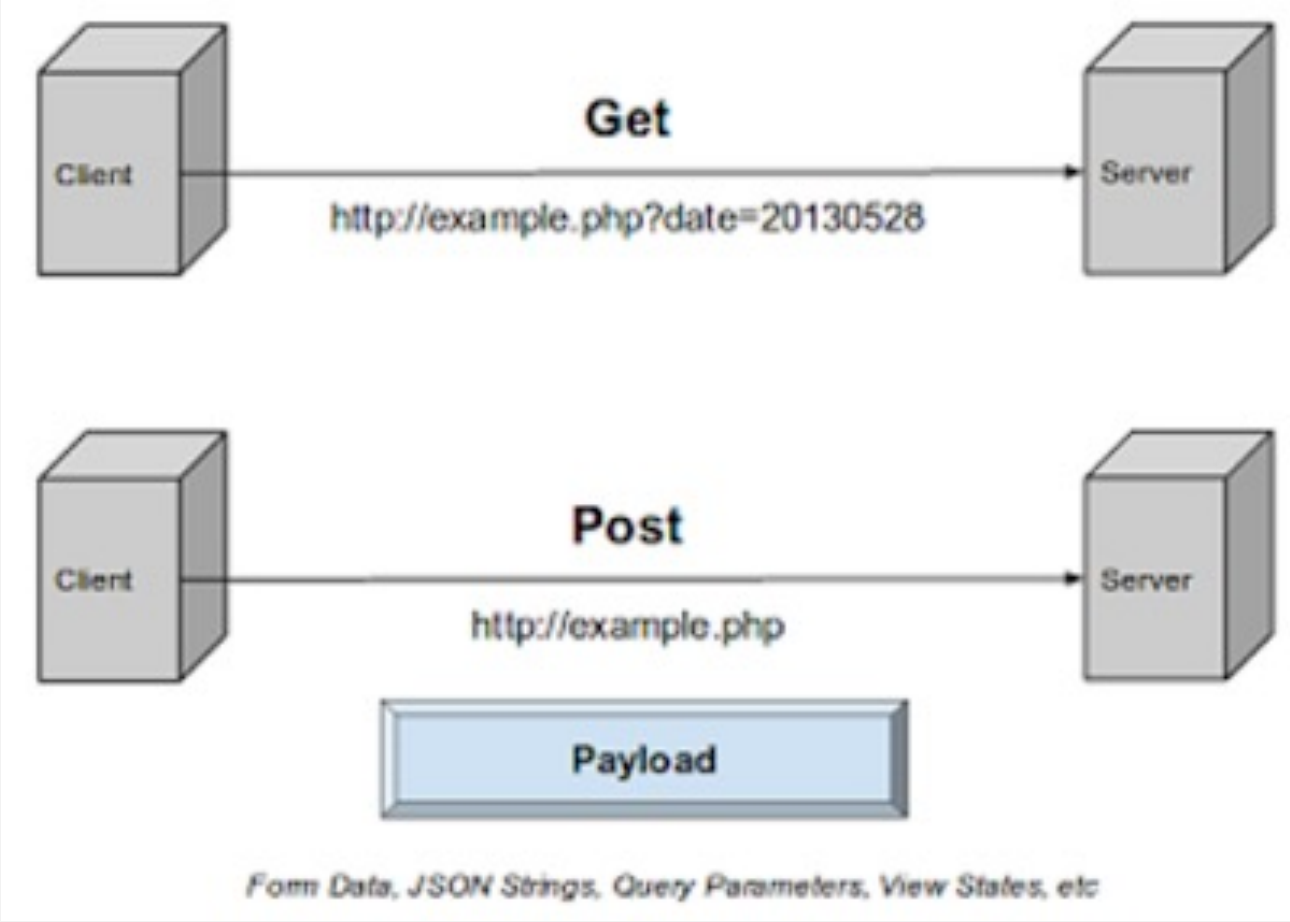
Application Programming Interface

Web API



python

Web API



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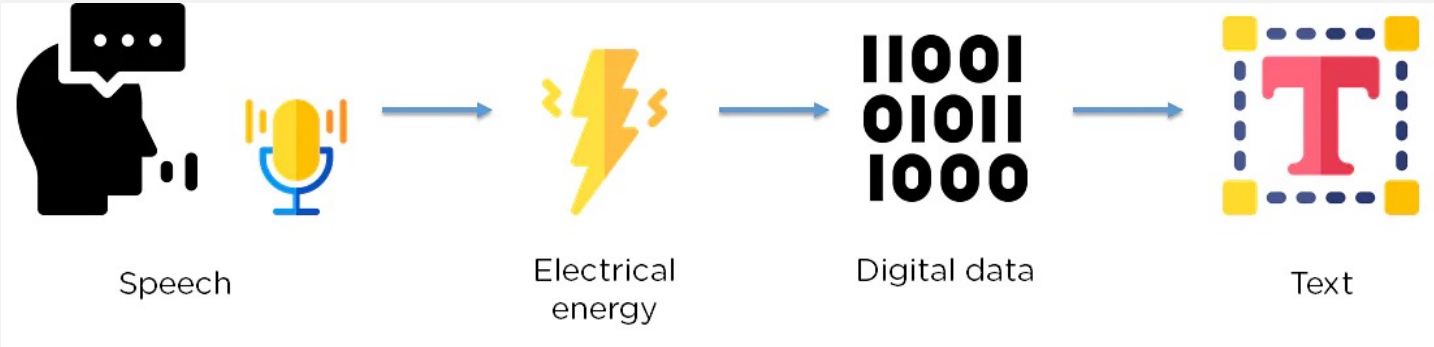
3. Final Project

Final Project

Final Project: Speech Recognition



- Speech recognition starts by taking the **sound energy** produced by the person speaking and converting it into **electrical energy** with the help of a microphone. It then converts this electrical energy from **analog to digital**, and finally to text
- It breaks the audio data down into sounds, and it analyzes the sounds using algorithms to find the most probable word that fits that audio. All of this is done using Natural Language Processing and Neural Networks. Hidden Markov models can be used to find temporal patterns in speech and improve accuracy.

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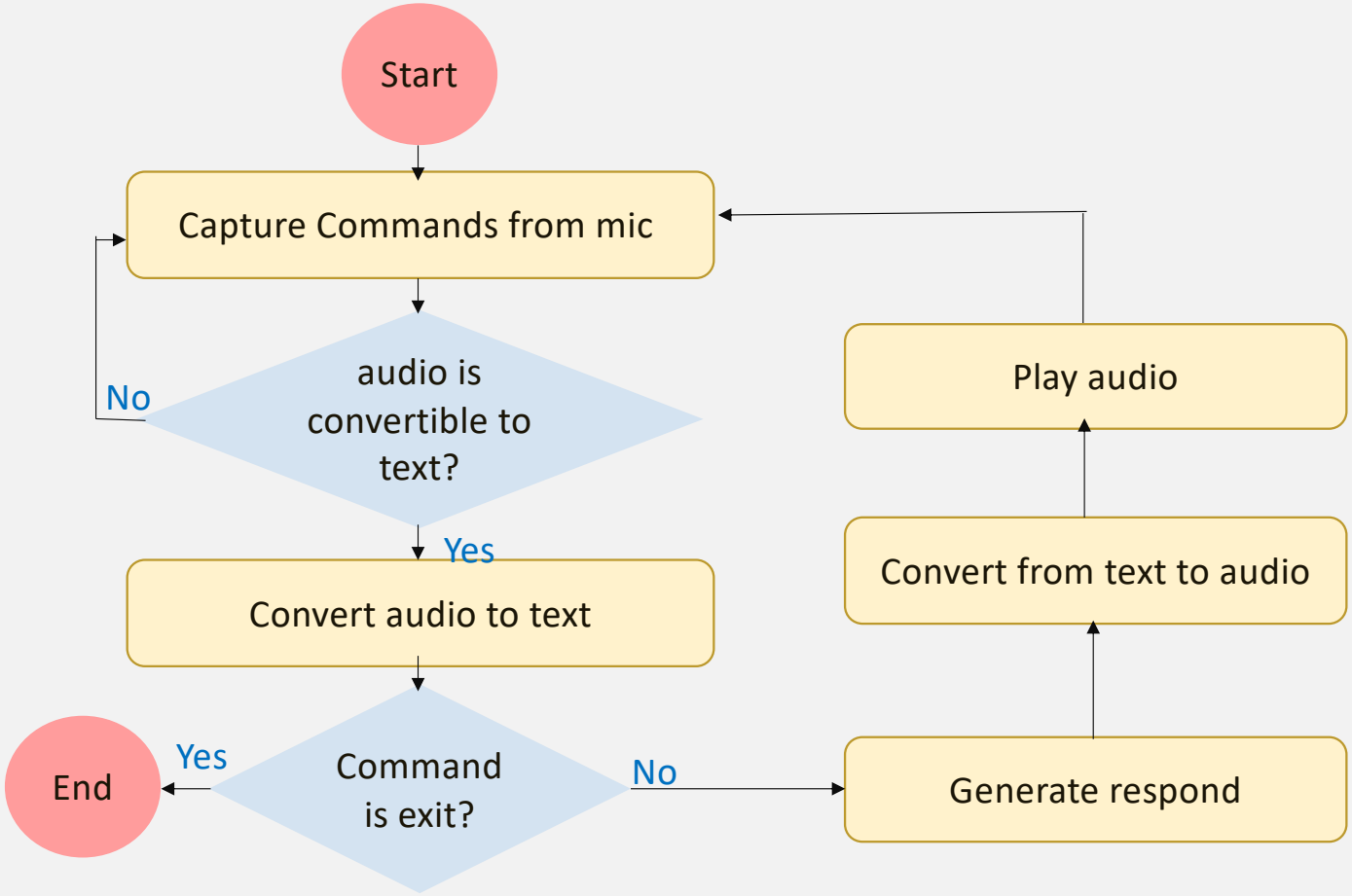
Start
Capture Commands from mic
audio is convertible to text?
No
Yes
Convert audio to text
Command is exit?
Yes
End
No
Generate respond
Convert from text to audio
Play audio

python

Final Project – python libraries

PyAudio

Version : 0.2.11
Purpose : the cross-platform audio input/output stream library
Dependencies :

- Python
- PIP

```
pip install PyAudio
```

https://pypi.org/project/PyAudio/

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Final Project – python libraries

Speech Recognition

Version : 3.8.1
Purpose : Python Library for performing speech recognition
Dependencies :

- Python
- PIP
- PyAudio (library for microphone input)

```
pip install SpeechRecognition
```

https://pypi.org/project/SpeechRecognition/#description

Final Project – python libraries

pyttsx3

Version : 2.9

Purpose : is a text-to-speech conversion library in Python. Unlike alternative libraries, it works offline, and is compatible with both Python 2 and 3

Dependencies :

- Python
- PIP

```
pip install pyttsx3
```

https://pypi.org/project/pyttsx3/