Python JARVIS Speech Recognition

Contents

Time required: 120 minutes

This series of tutorials were inspired by
https://www.freecodecamp.org/news/python-project-how-to-build-your-own-jarvis-using-python/

NOTE: You may need to run this program from the command line or IDLE for it to work.

The JARVIS Project

Please create a JARVIS repository in your GitHub account.

Wikipedia

As part of saving the universe, there are times we need to do research. What type of food do the aliens eat, are they immune to our germs, etc.

The Python Wikipedia library allows us to access information from Wikipedia. This is an older library which still works.

https://pypi.org/project/wikipedia/

1. Go to a command prompt → **pip install wikipedia**

Tutorial Part 1

With all the JARVIS tutorials, we will start from the bare bones, and build to an OOP version. We are going to start with a simple Wikipedia program.

Code

```
"""
    Name: wikipedia_1.py
    Author:
    Created:
    Purpose:
"""

# pip install wikipedia
import wikipedia

# Type in your search term
search_terms = input("Search Wikipedia: ")

# Return a summary result of 3 sentences
summary = wikipedia.summary(search_terms, sentences=3)

# Print result
print(summary)
```

Example run:

User fairly specific search terms, at least two or three words.

```
Search Wikipedia: Python programming
Python is a high-level, general-purpose programming language. Its design philosophy emphasizes
 code readability with the use of significant indentation.Python is dynamically typed and garb
age-collected. It supports multiple programming paradigms, including structured (particularly
procedural), object-oriented and functional programming.
Search Wikipedia: Java programming
Java is a high-level, class-based, object-oriented programming language that is designed to ha
ve as few implementation dependencies as possible. It is a general-purpose programming languag
e intended to let programmers write once, run anywhere (WORA), meaning that compiled Java code
 can run on all platforms that support Java without the need to recompile. Java applications a
re typically compiled to bytecode that can run on any Java virtual machine (JVM) regardless of
 the underlying computer architecture.
Search Wikipedia: C++ Programming
C (pronounced  – like the letter c) is a general-purpose computer programming language. It was
 created in the 1970s by Dennis Ritchie, and remains very widely used and influential. By desi
gn, C's features cleanly reflect the capabilities of the targeted CPUs.
```

Tutorial Part 2

We are going to build a Wikipedia OOP method program that we can integrate with our ongoing JARVIS program. The example run is the same. We can use this as a standalone program, or import is as a module in another program.

Use **wikipedia_oop.py** as your program name. if you use wikipedia, you can get import errors as it is the same name as the wikipedia library.

```python
"""
    Name: wikipedia_oop.py
    Author:
    Created:
    Purpose: OOP method which can be integrated
    into main JARVIS project
"""
# pip install wikipedia
import wikipedia


class WikipediaApp:
    # ---------------------- GET WIKIPEDIA -------------------------------- #
    def get_wikipedia(self, search_term):
        """Search Wikipedia"""
        try:
            # Return a summary result of 3 sentences
            self._summary = wikipedia.summary(search_term, sentences=3)
            return self._summary

        except:
            # If there is an exception, allow the user to try again
            return "Try a different search term."


def main():
    # Create a program object
    wikipedia_app = WikipediaApp()

    # Menu loop
    while True:
        search = input("What would you like to search for on Wikipedia? ")
        answer = wikipedia_app.get_wikipedia(search)
        print(answer)

        menu_choice = input("Do you want to search again? (y/n): ")
        if menu_choice.lower() != 'y':
            break


if __name__ == "__main__":
    main()
```

Example run:

```
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```

Assignment: The JARVIS Project

At this point, the JARVIS Project contains voice recognition and text to speech. The following table shows possible uses of each module. For a robust interface, you may want to print and have JARVIS speak.

Module	Purpose
Text to speech	Announce menu choices Prompt user for input Announce command results
Voice recognition	Make menu choices Provide input

It is now up to you. The world is under attack from creatures from another dimension, we don't know what we are dealing with. We need some help from Wikipedia.

In your JARVIS program:

1. Save your speech recognition program as **jarvis.py** This will be your main program.
2. Import your **wikipedia_oop.py** program into your **jarvis.py** program. Don't use the name wikipedia for the filename.
   from wikipedia_oop import get_wikipedia

3. Use the **get_command()** method to ask Wikipedia a question and display the answer. Your program output does not have to match.
4. You will be using a while loop for your menu just like we have before. The difference is that this menu will use the result of your speech recognition for the decision as to which menu item to take.

Troubleshooting the Microphone

If your speech recognition gets hung on Listening . . .

Copy and paste the following program into a python file and run it. This will give you the index of the device you wish to use.

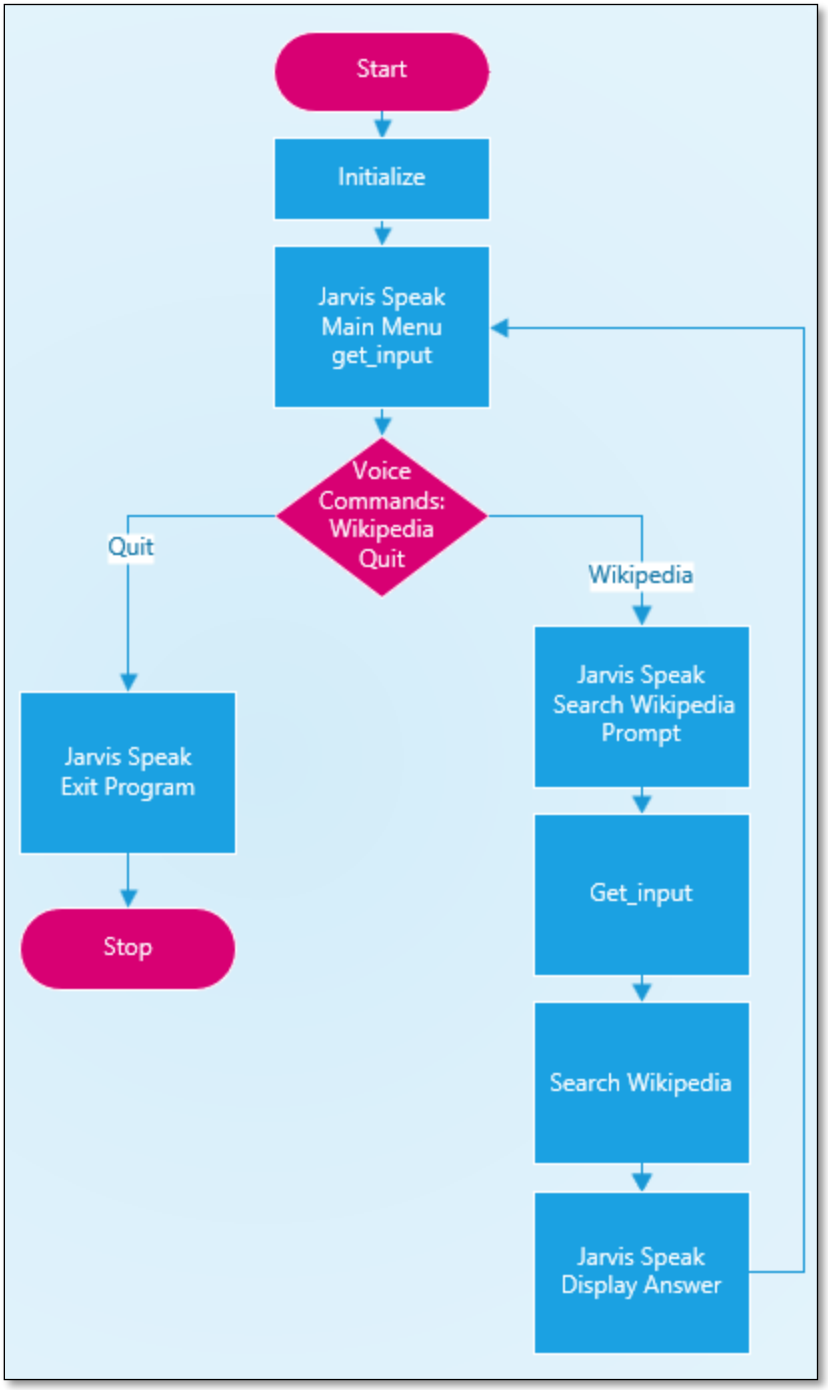
```
# The recognizer hangs on recognizer_instance.listen;
# when it's calling Microphone.MicrophoneStream.read
# Once you do this, change all instances of Microphone() to
# Microphone(device_index=MICROPHONE_INDEX),
# where MICROPHONE_INDEX is the hardware-specific index of the microphone.

# To figure out what the value of MICROPHONE_INDEX should be,
# run the following code:

import speech_recognition as sr
for index, name in enumerate(sr.Microphone.list_microphone_names()):
    print(
        f'Microphone: \"{name}\" found for Microphone(device_index={index})')
```

Flowchart

The following flowchart shows the basic flow of the program.



Example run:

NOTE: Jarvis seems to recognize faster if you run it from the command line, rather than from VSCode.

```
+--------------------+
|  JARVIS Main Menu  |
+--------------------+
Commands: Wikipedia, exit
Talking . . .
Listening . . .
Recognizing . . .
+--------------------+
|  Search Wikipedia  |
+--------------------+
What would you like to search for on Wikipedia?
Listening . . .
Recognizing . . .

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with t
e use of significant indentation.
Python is dynamically type-checked and garbage-collected.
+--------------------+
|  JARVIS Main Menu  |
+--------------------+
Commands: Wikipedia, exit
Listening . . .
Recognizing . . .
Google Speech Recognition could not understand what you said.
Listening . . .
Recognizing . . .
Goodbye!

Have a good day!
```

Assignment Submission

This is an ongoing project you can add to outside of these assignments. We have learned how to have JARVIS recognize speech, talk to us, and run a program. The sky is the limit! This could be a good project to add to your GitHub software engineering resume.

1. Attach a screenshot of your completed GitHub repository.
2. Attach a screenshot of your working program.
3. Insert the URL of your GitHub repository.
4. Attach the pseudocode.
5. Submit in Blackboard.