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#For my application I created
# A basic voice-assisted symptom checker that uses NLP to identify health symptoms and provide basic medical advice.
# By using basic input of the symptom
# My goal is to someday create a voice recognition symptom checker that determines symptoms
# By using voice recognition of the user

# Install necessary packages
!pip install spacy gtts pydub
!python -m spacy download en_core_web_sm

# Import required libraries
import spacy
from gtts import gTTS
from IPython.display import Audio
import os

# Load SpaCy model for NLP
nlp = spacy.load("en_core_web_sm")

# Extensive symptom list with synonyms and variations
symptom_synonyms = {
    "headache": ["headache", "migraine", "head pain"],
    "fever": ["fever", "high temperature", "chills", "hot flashes"],
    "cough": ["cough", "dry cough", "wet cough", "persistent cough"],
    "sore throat": ["sore throat", "throat pain", "scratchy throat"],
    "fatigue": ["fatigue", "tiredness", "exhaustion", "weakness"],
    "nausea": ["nausea", "queasy", "feeling sick"],
    "vomiting": ["vomiting", "throwing up"],
    "diarrhea": ["diarrhea", "loose stool", "frequent bowel movements"],
    "shortness of breath": ["shortness of breath", "difficulty breathing", "breathlessness"],
    "chest pain": ["chest pain", "chest discomfort", "tightness in chest"],
    "dizziness": ["dizziness", "lightheadedness", "feeling faint"],
    "muscle pain": ["muscle pain", "muscle ache", "body ache", "soreness"],
    "joint pain": ["joint pain", "arthritis pain", "stiff joints"],
    "rash": ["rash", "skin irritation", "red spots", "itchy skin"],
    "abdominal pain": ["abdominal pain", "stomach ache", "belly pain", "cramps"],
    "loss of taste": ["loss of taste", "taste disturbance"],
    "loss of smell": ["loss of smell", "smell disturbance"],
    "chills": ["chills", "shivering", "cold sweats"],
    "congestion": ["congestion", "stuffy nose", "nasal blockage"],
    "runny nose": ["runny nose", "nasal discharge", "sniffing"],
    "difficulty breathing": ["difficulty breathing", "labored breathing", "respiratory distress"],
    "insomnia": ["insomnia", "sleeplessness", "trouble sleeping"],
    "anxiety": ["anxiety", "nervousness", "panic attacks"],
    "depression": ["depression", "feeling low", "hopelessness"],
    "memory loss": ["memory loss", "forgetfulness", "confusion"],
    "swollen glands": ["swollen glands", "swollen lymph nodes"],
    "weight loss": ["weight loss", "unintentional weight loss"],
    "weight gain": ["weight gain", "unintentional weight gain"],
    "hair loss": ["hair loss", "thinning hair", "balding"],
    "blurred vision": ["blurred vision", "vision disturbance"],
    "ear pain": ["ear pain", "earache", "ear discomfort"],
    "back pain": ["back pain", "lower back pain", "upper back pain"],
    "leg pain": ["leg pain", "leg cramps", "aching legs"],
    "swelling": ["swelling", "edema", "puffiness"]
}

# Flatten the symptom list for easier matching
all_symptoms = [syn for synonyms in symptom_synonyms.values() for syn in synonyms]

# Function to capture text input
def capture_text_input():
    text = input("What are your symptoms?: ")
    return text

# Function to extract symptoms using NLP
def extract_symptoms(text):
    doc = nlp(text.lower())
    extracted_symptoms = []

    # Check each token and phrase for symptom matches
    for ent in doc.ents:
        if ent.text in all_symptoms:
            extracted_symptoms.append(ent.text)

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# Also check for multi-word phrases using token matching
for symptom, synonyms in symptom_synonyms.items():
    for synonym in synonyms:
        if synonym in text:
            extracted_symptoms.append(symptom)

return list(set(extracted_symptoms)) # Remove duplicates

# Function for enhanced triage and recommendations
def triage(symptoms):
    if not symptoms:
        return "I couldn't identify any symptoms. Please try describing them again."

    # Comprehensive triage rules
    if "chest pain" in symptoms or "difficulty breathing" in symptoms:
        return "Your symptoms are potentially serious. Please seek emergency medical care."
    elif "fever" in symptoms and "cough" in symptoms:
        return "You may have a respiratory infection. Consider seeing a healthcare provider."
    elif "headache" in symptoms and "nausea" in symptoms:
        return "These could be signs of a migraine. Rest and hydration may help, but see a doctor if it persists."
    elif "fatigue" in symptoms and "weight loss" in symptoms:
        return "These could indicate an underlying health issue. Please consult a healthcare provider."
    else:
        return "Based on your symptoms, you might be able to manage at home. If symptoms worsen, seek medical advice."

# Function to convert text to speech and play it in Colab
def speak_text(text):
    tts = gTTS(text=text, lang='en')
    filename = "temp_audio.mp3"
    tts.save(filename)
    display(Audio(filename, autoplay=True))
    os.remove(filename)

# Main function to handle conversation
def main():
    while True:
        user_input = capture_text_input()
        if user_input.lower() in ["exit", "quit"]:
            print("Exiting... Goodbye!")
            speak_text("Goodbye! Take care!")
            break

        symptoms = extract_symptoms(user_input)
        response = triage(symptoms)
        print(f"Bot: {response}")
        speak_text(response)

if __name__ == "__main__":
    main()

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Collecting en-core-web-sm==3.7.1

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Using cached https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-3.7.1/en_core_web_sm-3.7.1-py3-non

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✓ Download and installation successful
You can now load the package via spacy.load('en_core_web_sm')
⚠ Restart to reload dependencies
If you are in a Jupyter or Colab notebook, you may need to restart Python in
order to load all the package's dependencies. You can do this by selecting the
'Restart kernel' or 'Restart runtime' option.
What are your symptoms?: fever
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