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What the Hack: Building a Chatbot | Episode 8 Challenges Solutions

Finish testing your knowledge? Take a look at some solutions to the challenges!

Challenge 1: Be Creative and Improve our Chatbot!

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### We learn how to speak and how to converse by listening, learning and trying
to talk with others, and this can happen with our chatbot too! In this solution,
we will utilize loops and lists that we learned in episode 5 and 6, to give our
chatbot a chance to learn new vocabularies and use them in future conversations!

## First, we store vocabulary in our brains, and we need to have our chatbot
store its vocabulary in some way too! If you remember in our 6th episode, we
learned that Lists are a good way to store information. Let's create two
different lists to store vocabularies for bad and good

#we can create a list by using the square brackets [], and we will save it to a
variable that has a descriptive name

#for the list that will store vocabularies for positive emotions, let's call it
Good. and for the list that will store vocabularies that store negative emotions,
let's call it Bad.
#let's fill in the lists with the vocabulary that our chatbot already knows.
remember that
Good = ['Good']
Bad = ['Bad', 'Not good']
#a couple lines down the code, we can use the 'in' keyword that we learned in the
6th episode to check if our user's response is in our vocabulary lists or not.

#let's utilize a For loop and the range() function that we learned in episode 5,
to give our chatbot 10 times to chat with us and learn new vocabularies
for i in range (1, 11):
#each time the i variable (the iterator) goes through the loop, we will have our
chatbot ask us how we are doing. So in total when the for loop finishes running,
our chatbot will have had 10 conversations with us!
Message = input("How are you doing? : ")
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#next, one of the ways for our chatbot to handle when our users don't type properly in English, is to use the .capitalize() method that we learned in episode 5!
Message = Message.capitalize()
#this way, doesn't matter if our user types in lowercase or uppercase, the responses will have the first letter capitalized and everything else lower case, this will make it easier for our chatbot to check its vocabulary lists
#you can certainly use .upper() or .lower() or other methods, just remember to make adjustments to the words in the vocabulary lists above!

#now that we are done with processing our user's response, let's check if what the user said is already in our chatbot's vocabulary list for positive emotions or not
#we can do this with an if-statement that we learned in episode 3, and the 'in' keyword that we learned about in episode 5!
if Message in Good:
 #if our chatbot sees that the user's response is in the Good list of vocabulary, then it knows that the user is feeling positive! and we can have our chatbot say "Awesome!" back to our user.
 print("Awesome!")

elif Message in Bad:
 #if our chatbot sees that the user's response is in the Bad list of vocabulary, then it knows that the user is feeling negative, and we can show some sympathy by responding "Sorry to hear that..." to our user
 print("Sorry to hear that...")
else:
 #if the user's response isn't in our chatbot's Good or Bad lists of vocabulary, then it means that it's a new vocabulary for the chatbot! Let's help the chatbot learn it!

 #but first of all, our chatbot doesn't know whether this word is positive or negative, so we need to ask the user to help us teach our chatbot. We can do that using the input() function and ask the user again for what they mean. We can save the response into a new variable, and we can call it "unknown"
 unknown = input("I don't know what you mean. Is it good or bad? :")
 #similar to what we did above, it's a good idea to do some string manipulation (episode 4) to process the user's input information
 unknown = unknown.capitalize()
  if unknown == "Good":
  #if our user tells our chatbot that this new vocabulary has a positive meaning, then we can add this new word to our chatbot's Good list of vocabulary!
  #we can append a new element (the new vocabulary) to our Good list by using the .append() method that we learned in episode 6!
  Good.append(Message)
  #and now that we know this new vocabulary means good, then we can say "That's great!" to our user!
  print("That's great!")
  #you can also have a look at our chatbot's vocabulary list by printing the Good list out. You can uncommenting the line of code below to do that
  #print(Good)
 else:
  #if our user didn't tell our chatbot that the new vocabulary is good, then it is probably a vocabulary with a negative meaning...
  #if this is the case, then we can add this new vocabulary to our Bad list of vocabulary using the .append() method
  Bad.append(Message)
  #and now we know that this new vocabulary doesn't mean something positive, but rather something probably negative, then we can show some sympathy to our user by printing out another message here.
  print("Aww...")
  #you can also have a look at our chatbot's vocabulary list by printing the Bad list out. You can uncommenting the line of code below to do that
  #print(Bad)
#we've reached the end of our for loop! which means what our algorithms or code do above will be for one round of conversation, and the loop will start a new conversation right away
#you might have noticed that our Good and Bad vocabulary lists are outside of the for loop. That is because if they are outside of the for loop, then whenever our chatbot learns a new word, the word can be stored in the list. If we had the lists inside the for loop, then the lists will be refreshed or cleared every time a new conversation starts.

#Now that we've added a learning ability to our chatbot, we can teach our chatbot new vocabularies, like the word "Maika'i" in our video. When our chatbot asks and we tell our chatbot that this word means good, then this word will be appended to
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our Good vocabulary list! and in the next conversation, if we
respond "Maika'i", our chatbot will automatically know that Maika'i means Good
because it's already learned this word in the previous conversation!

#you can take a look at the new words for positive and negative emotions that our
chatbot has learned through the multiple conversations that it's had with us!
print(Good)
print(Bad)
```

If you’ve tried different things on your own and made our chatbot improve in different ways, share with us and show us the awesome chatbot with improvements that you’ve made! You can communicate with us through the Science AL!VE - What The Hack website via this link: https://www.sciencealive.ca/what-the-hack. You can show it to us by submitting a question!

Challenge 2: Build Your Own Chatbot!

If you’ve tried different things on your own and built your own chatbots, don’t hesitate to share with us and show us your awesome chatbots!!

If you run into any trouble when you are coding your chatbot, don’t hesitate to connect with us and send us your code, we will get back to you as soon as we can, and help you point out how to fix it and get your program running and have your chatbot chattin’!

You can communicate with us through the Science AL!VE - What The Hack website via this link: https://www.sciencealive.ca/what-the-hack. You can show it to us by submitting a question!