

Exercise 1: Spanish language ELIZA

I. INSTRUCTIONS, PART 1: CODE

You will make a Python function called `eliza`, where you take the following input and return its corresponding output. If you want to do this in a language other than Spanish, please get in touch with me. **I particularly encourage you to work on an Indigenous or non-European language if you're a member of such a community.** You should write **eight (and only eight)** regular expressions to deal with the following types of input:

(1) Initial greeting

You need to generalize for any name	The system should produce this output:
<i>Mi nombre es Rolando.</i> My name is Rolando.	<i>Hola, Rolando. ¿Cómo estás?</i> Hi, Rolando. How are you?
<i>Me llamo Rolando.</i> I am called Rolando.	

(2) State of mind and adverbs (verb *estoy* 'I am' > *estás* 'you are')

These are some examples of user input (you have to generalize for all adjectives)	The system produces this output
<i>Estoy feliz.</i> I am happy.	<i>¿Porqué estás feliz?</i> Why are you happy?
<i>Yo estoy feliz.</i> *I* am happy.	
<i>estoy muy feliz... :)</i> I am very happy.	
<i>No estoy feliz.</i> I am not happy.	<i>¿Porqué no estás feliz?</i> Why aren't you happy?
<i>No estoy muy feliz.</i> I am not very happy.	
<i>Yo no estoy muy feliz.</i> *I* am not very happy.	
<i>Estoy triste.</i> I am sad.	<i>¿Porqué estás triste?</i> Why are you sad?
<i>Estoy un poco triste.</i> I'm a little bit sad.	
<i>Yo estoy un poco triste.</i> I am a little bit sad.	
<i>Estoy bastante triste.</i> I'm quite sad.	
<i>Estoy más o menos triste.</i> I'm sort of sad.	

(3) Characteristics of a person (verb *soy* 'I am'). Notice that the sentence can be preceded by a phrase and then the word *que* "that".

These are some examples of user input (you have to generalize for other characteristics)	The system produces this output
<i>Soy desordenado.</i> I am untidy.	<i>¿Porqué eres desordenado?</i> Why are you untidy?
<i>Es que yo soy bastante desordenado.</i> It's just that I'm fairly untidy.	<i>¿Porqué eres bastante desordenado?</i> Why are you fairly untidy?
<i>Yo soy una persona desordenada.</i> I am an untidy person.	<i>¿Porqué eres una persona desordenada?</i> Why are you an untidy person?
<i>Yo no soy una persona ordenada.</i> I am not a tidy person.	<i>¿Porqué no eres una persona ordenada?</i> Why aren't you a tidy person?

<i>Soy una estudiante de Dartmouth.</i>	I am a student _[F] at Dartmouth.	<i>¿Porqué eres una estudiante de Dartmouth?</i>	Why are you a Dartmouth student?
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(4) About your family

These are some examples of user input		The system produces this output	
<i>A mi mamá le gustan las orquídeas.</i>	My mom likes orchids.	<i>Cuéntame más de tu mamá.</i>	Tell me more about your mom.
<i>A mi papá no le gustan los cactus.</i>	My dad doesn't like cacti.	<i>Cuéntame más de tu papá.</i>	Tell me more about your dad.
<i>Porque mi mamá es muy buena con las plantas.</i>	Because my mother is very good with plants.	<i>Cuéntame más de tu mamá.</i>	Tell me more about your mother.
<i>Porque mi papá prefiere los árboles.</i>	Because my father prefers trees.	<i>Cuéntame más de tu papá.</i>	Tell me more about your father.

(5) Handling modal verbs (e.g. *poder* 'can': *pued+o* 'I can' > *pued+es* 'you can') and clitics (V+me>V+te). Notice that the sentence can be preceded by a phrase and then the word *que* "that".

You need to handle the verbs <i>quiero</i> 'I want', <i>debo</i> 'I must' and <i>puedo</i> 'I can'		The system produces this output	
<i>Quiero aprender a programar.</i>	I want to learn how to program.	<i>¿Porqué quieres aprender a programar?</i>	Why do you want to learn how to program?
<i>No quiero aprender a programar.</i>	I don't want to learn how to program.	<i>¿Porqué no quieres aprender a programar?</i>	Why don't you want to learn how to program?
<i>Yo quiero irme de viaje.</i>	I want to go on a trip.	<i>¿Porqué quieres irte de viaje?</i>	Why do you want to go on a trip?
<i>No quiero irme de viaje.</i>	I don't want to go on a trip.	<i>¿Porqué no quieres irte de viaje?</i>	Why don't you want to go on a trip?
<i>Debo ir al cine.</i>	I must go to the movies.	<i>¿Porqué debes ir al cine?</i>	Why must you go to the movies?
<i>Debo mudarme de casa.</i>	I must move to a different house.	<i>¿Porqué debes mudarte de casa?</i>	Why must you move to a different house?
<i>Yo puedo caminar en la nieve.</i>	I can walk in the snow.	<i>¿Porqué puedes caminar en la nieve?</i>	Why can you walk in the snow?
<i>Puedo comerme diez galletas.</i>	I can eat ten cookies.	<i>¿Porqué puedes comerte diez galletas?</i>	Why can you eat ten cookies?
<i>Mi amiga dice que yo puedo comer galletas.</i>	My friend says that I can eat cookies.	<i>¿Porqué puedes comer galletas?</i>	Why can you eat cookies?

(6) Thoughts and hopes (e.g. *pensar* 'I think': *piens+o* 'I think' > *piens+as* 'you think')

You need to handle the verbs <i>pienso</i> 'I think' and <i>espero</i> 'I hope'		The system produces this output	
<i>Pienso que mis amigos también hacían eso.</i>	I think my friends did that too.	<i>¿Porqué piensas eso?</i>	Why do you think that?
<i>Yo espero graduarme el año próximo.</i>	I hope to graduate next year.	<i>¿Porqué esperas eso?</i>	Why do you suppose that?

(7) Asking for specific examples

These are some examples of user input (you need to control for the word “always”)		The system produces this output	
<i>Él siempre dice lo mismo.</i>	He always says the same thing.	<i>¿Puedes darme un ejemplo específico?</i>	Can you give me a specific example?
<i>Mi hermano siempre se come las galletas.</i>	My brother always eats the cookies.		

(8) Handling insults

These are some examples of user input (you have to catch at least those two insults)		The system produces this output	
<i>No, ¡estúpida!</i>	No, stupid!	<i>¡Hey, sin insultos! Calmate y cuéntame más.</i>	<i>Hey, no insults! Calm down and tell me more.</i>
<i>Eres una idiota.</i>	You’re an idiot.		

(9) All other statements

These are some examples of user input (you have to generalize for other characteristics)		The system produces this output	
<i>Me gusta leer.</i>	I like reading.	<i>Cuéntame más.</i>	Tell me more.
<i>Veo mucha televisión.</i>	I watch too much TV.		

II. INSTRUCTIONS, PART 2: WRITTEN PART

This program is obviously very limited. After making the program, please answer the following question in the form of a comment at the end of the code: ***What changes would you make to the program so that it can carry out a more human-like conversation?*** Please make three suggestions for how to improve the program and find a section of the Jurafsky and Martin textbook that can help you implement those changes. Mention those sections explicitly. The answer should be at least 200 words long.

III. ADDITIONAL INSTRUCTIONS

You can use the files `hello_eliza.py` and `hello_eliza.ipynb` as a starting point for your own program. You can use documentation similar to the one in the files. **Be sure to name the function `eliza`.** Otherwise we won’t be able to grade it.

You do not need to use special characters in this exercise. If you wish to get rid of the accents (e.g. *mas* instead of *más*), you can do that. You can also ignore the initial question and exclamation marks (*¿,!*).

Spanish is a pro-drop language. In some of the regular expressions (`#1,#2,#3,#5`) you need to make sure that the regular expression accepts the sentence with or without the subject pronoun *yo* ‘I’.

In some regular expressions (`#2,#3,#5`), you need to process both the positive and the negative versions of the sentence. The negative ones include the word *no* in front of the verb.

IV. AN EXTENDED EXAMPLE

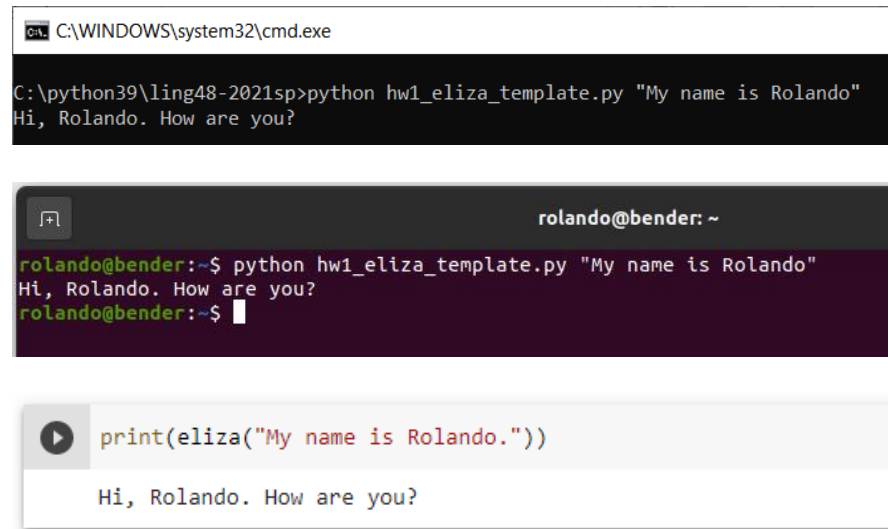
The following is an example of a conversation between a user and your program. You can use them to check your regular expressions. “I” stands for “input” and “O” stands for “output”.

Spanish example input (from the user) and output (produced by your program)	Translation.
I1: <i>Me llamo Rolando.</i> O1: <i>Hola, Rolando. ¿Cómo estás?</i>	I: My name is Rolando. O: Hi, Rolando. How are you?
I2: <i>Estoy un poco triste.</i> O2: <i>¿Porqué estás triste?</i>	I: I'm a little bit sad. O: Why are you sad?
I3: <i>Porque mi mamá quiere que yo me vaya de la casa.</i> O3: <i>Cuéntame más de tu mamá.</i>	I: Because my mom wants me to leave the house. O: Tell me more about your mom.
I4: <i>Ella dice que debo ordenar el cuarto.</i> O4: <i>¿Porqué debes ordenar el cuarto?</i>	I: She says I have to clean my room. O: Why do you have to clean your room?
I5: <i>Es que yo soy bastante desordenado.</i> O5: <i>Porqué eres desordenado?</i>	I: It's just that I am very untidy. O: Why are you untidy?
I6: <i>¡Porque me da la gana!</i> O6: <i>Cuéntame más.</i>	I: Because I feel like it! O: Tell me more.
I7: <i>No, estúpida.</i> O7: <i>¡Hey, sin insultos! Cálmate y cuéntame más.</i>	I: No, you idiot! O: Hey, no insults! Calm down and tell me more.
I8: <i>Bueno. No sé. Me cuesta mucho. No puedo ser ordenado.</i> O8: <i>¿Porque no puedes ser ordenado?</i>	I: Well, I don't know. It's difficult. I can't be tidy. O: Why can't you be tidy?
I9: <i>Porque cuando era niño siempre me gustaba jugar en la naturaleza, donde todo es libre.</i> O9: <i>¿Puedes darme un ejemplo específico?</i>	I: Because when I was a kid I always liked playing in nature, where things are free. O: <i>Can you give me a specific example?</i>
I10: <i>Pienso que todo empezó cuando fui a la playa por primera vez.</i> O10: <i>¿Porqué piensas eso?</i>	I: I think it started when I went to the beach for the first time. O: Why do you think that?

V. EVALUATION

Please deliver a Python script (.py) or Jupyter/Colab Notebook (.ipynb) file with your code and your written assignment (as a comment at the end of the code). The program needs to have basic documentation. This includes a summary of what the program does (who made it and when, its input and output), and some annotation for each of the code sections so that your code is easy to understand by others.

Do not use dashes for your filename. The output in the Python file should look something like this (but in Spanish or the language you choose):



The first screenshot shows a Windows Command Prompt window with the title 'C:\WINDOWS\system32\cmd.exe'. The command 'C:\python39\ling48-2021sp>python hw1_eliza_template.py "My name is Rolando"' is entered, and the output is 'Hi, Rolando. How are you?'. The second screenshot shows a Linux terminal window with the title 'rolando@bender: ~'. The command 'rolando@bender:~\$ python hw1_eliza_template.py "My name is Rolando"' is entered, and the output is 'Hi, Rolando. How are you?'. The third screenshot shows a Jupyter Notebook cell with the code 'print(eliza("My name is Rolando."))' and the output 'Hi, Rolando. How are you?'.

```
C:\WINDOWS\system32\cmd.exe

C:\python39\ling48-2021sp>python hw1_eliza_template.py "My name is Rolando"
Hi, Rolando. How are you?

rolando@bender: ~
rolando@bender:~$ python hw1_eliza_template.py "My name is Rolando"
Hi, Rolando. How are you?
rolando@bender:~$

print(eliza("My name is Rolando."))

Hi, Rolando. How are you?
```

The exercise needs to be turned in before 11:59 pm EDT of Sunday, April 9th. Check the rubric on Canvas to see how the assignment will be graded.