edX

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Exercise 2

Finger Exercises due Aug 5, 2020 20:30 -03   *Completo*

Exercise 2

3/3 points (graded)
ESTIMATED TIME TO COMPLETE: 10 minutes

Consider the following code:

```
x = 25
epsilon = 0.01
step = 0.1
guess = 0.0

while guess <= x:
    if abs(guess**2 -x) < epsilon:
        break
    else:
        guess += step

if abs(guess**2 - x) >= epsilon:
    print('failed')
else:
    print('succeeded: ' + str(guess))
```

If this code is executed, it will print `succeeded: 4.9999999999998` (or `succeeded: 5.0`).
Remember floating point errors?

Now suppose we try the following:

✏

```
x = 25
epsilon = 0.01
step = 0.1
guess = 0.0

while guess <= x:
    if abs(guess**2 -x) >= epsilon:
        guess += step

if abs(guess**2 - x) >= epsilon:
    print('failed')
else:
    print('succeeded: ' + str(guess))
```

Select the answer that best describes what occurs when the above code is executed:

○ Script successfully completes, and prints out `succeeded: 4.9999999999998` (or `succeeded: 5.0`)

○ Script successfully completes, but prints out `failed`

○ Script successfully completes, but prints out `succeeded:` followed by some number not really close to 5.0

◉ Script enters an infinite loop and never terminates

✔

Now suppose we try

```
x = 25
epsilon = 0.01
step = 0.1
guess = 0.0

while abs(guess**2-x) >= epsilon:
    if guess <= x:
        guess += step
    else:
        break

if abs(guess**2 - x) >= epsilon:
    print('failed')
else:
    print('succeeded: ' + str(guess))
```

Select the answer that best describes what occurs when the above code is executed:

○ Script successfully completes, and prints out `succeeded: 4.9999999999998` (or `succeeded: 5.0`)

○ Script successfully completes, but prints out `failed`

○ Script successfully completes, but prints out `succeeded:` followed by some number not really close to 5.0

○ Script enters an infinite loop and never terminates

✔

Finally, let's use the same code as immediately above, but change the first line to `x = 23` . Note that the square root of 23 is roughly 4.7958.
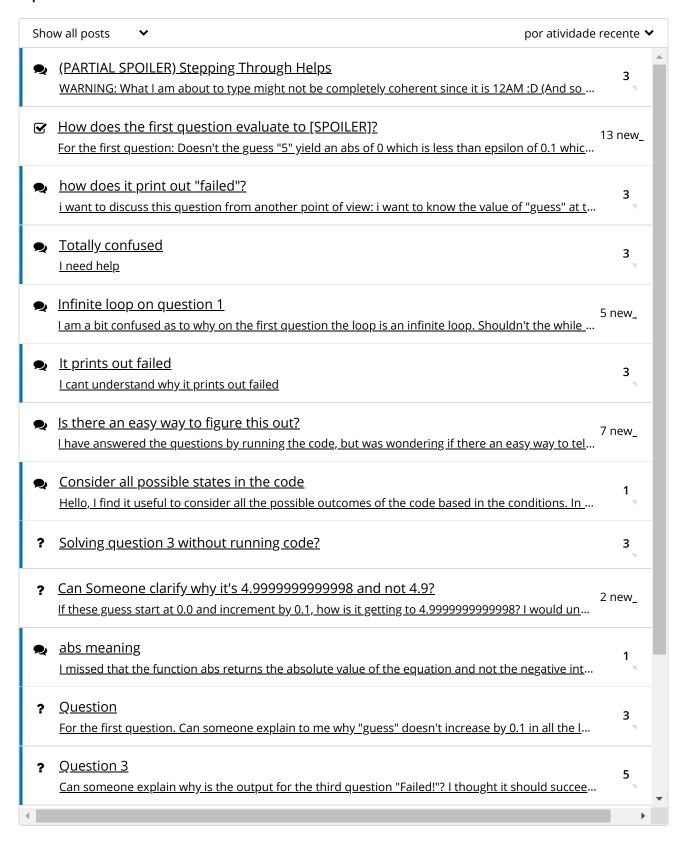
Select the answer that best describes what occurs when the modified code is executed:

○ Script successfully completes, and prints out `succeeded: 4.9999999999998` (or `succeeded: 5.0`)

● Script successfully completes, but prints out `failed`

○ Script successfully completes, but prints out `succeeded:` followed by some number not really close to 5.0

○ Script enters an infinite loop and never terminates

✔

Hint: If any of the above answers confuse you, try running the code on your own machine and inserting print statements to print out intermediate values of variables so you can examine what happens to certain variables - for example, `guess` - as the program is executed.

[Enviar]

ℹ   Answers are displayed within the problem

✎

Exercise 2

Topic: Lecture 3 / Exercise 2

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Ocultar discussão

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💬 **(PARTIAL SPOILER) Stepping Through Helps**   **3**
WARNING: What I am about to type might not be completely coherent since it is 12AM :D (And so ...

☑ **How does the first question evaluate to [SPOILER]?**   **13 new**
For the first question: Doesn't the guess "5" yield an abs of 0 which is less than epsilon of 0.1 whic...

💬 **how does it print out "failed"?**   **3**
i want to discuss this question from another point of view: i want to know the value of "guess" at t...

💬 **Totally confused**   **3**
I need help

💬 **Infinite loop on question 1**   **5 new**
I am a bit confused as to why on the first question the loop is an infinite loop. Shouldn't the while ...

💬 **It prints out failed**   **3**
I cant understand why it prints out failed

💬 **Is there an easy way to figure this out?**   **7 new**
I have answered the questions by running the code, but was wondering if there an easy way to tel...

💬 **Consider all possible states in the code**   **1**
Hello, I find it useful to consider all the possible outcomes of the code based in the conditions. In ...

? **Solving question 3 without running code?**   **3**

? **Can Someone clarify why it's 4.9999999999998 and not 4.9?**   **2 new**
If these guess start at 0.0 and increment by 0.1, how is it getting to 4.9999999999998? I would un...

💬 **abs meaning**   **1**
I missed that the function abs returns the absolute value of the equation and not the negative int...

? **Question**   **3**
For the first question. Can someone explain to me why "guess" doesn't increase by 0.1 in all the l...

? **Question 3**   **5**
Can someone explain why is the output for the third question "Failed!"? I thought it should succee...