Assignment-5 (for the class on 02/12)

Q1. Fishing cargo (Monday)
(This assignment should be completed before the end of Monday. Please make a video and shared it in the wechat FLL group.)

Copy the code of the 'fishing cargo' project on your python editor, and test its functions using the wall and small cargos. You should make a video to show at least three key functions, such as detecting the wall, turning around after detecting the wall, successfully detecting a small cargo, successfully moving the cargo.

Hint: I attached the slides used in the class about the description to the "fishing cargo" project.
Hint: I have given the code sheet to the students in class. I want the students to type the code by themselves following the code sheet, in order to understand the how to write functions and so on.
Hint: The driving base needs to be promoted (e.g., relocating the distance sensor to the bottom-front and expand the lifter/arm).
Hint: Please check Mr. Lin Ke's video shared in the wechat for more details if needed.

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The following questions are expected to be done in the rest of the week. Note that in order to do the question 4, you probably need to disassemble the driving base 2. So, don't forgot to make the video for the question 1 before reassembling it.

Q2. make_a_sound
Write a function (name: make_a_sound), which can have the following behaviour.
There is one parameter called 'type'.
So, the synopsis of the function is:
def make_a_sound(type):

In the function, if type == 1, the hub will make a beep sound;
Otherwise (i.e., type!=1), the hub will make a bird sound.

Q3. More practices on writing a recursive function

Write a recursive function to calculate: $\frac{1}{5}+(\frac{1}{5})^2+(\frac{1}{5})^3+(\frac{1}{5})^4+\ldots+(\frac{1}{5})^8$

Hint 1:

Assume $f(N)=\frac{1}{5}+(\frac{1}{5})^2+(\frac{1}{5})^3+(\frac{1}{5})^4+\ldots+(\frac{1}{5})^N$
Then, what is relationship between f(N) and f(N-1).
That is, f(N)= ?? + f(N-1)

Hint 2: In python, ** means "power of". For example, to calculate a^n, you can write a ** n.

Q4. Fork lift
Please watch this video: https://www.youtube.com/watch?v=wSWcMTuv3gY to construct a fork lift. Then, write a python code to do the following work:
Move the driving base 5 cm to be in front of the cargo, then lift it, and turn around and move forward for 5 cm, and finally put the cargo on the ground.
Note: In the video, the single motor was positioned incorrectly initially. Don't worry. Just follow the video strictly and you'll find the issue in the end and know how to fix it.
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