Workshop 2: Flying into Python Hands-on Activities

Total points 6/28

There are two types of quiz questions - Standard and PLUS. PLUS are more challenging questions for team to explore on their own, and are optional. PLUS question is marked with ++(PLUS).

STANDARD questions are mandatory and must complete before attempting PLUS questions.

The respondent's email (**nassnytc@gmail.com**) was recorded on submission of this form.

Using Visual Studio Code to Code

0 of 1 points

✗ What is the output from running first_code.py? * 0/1

- ○ Hello, Python! display in TERMINAL
- ○ Nothing change
- ◉ Hello, Python! display in OUTPUT ✗

Correct answer

- ◉ Hello, Python! display in TERMINAL

Feedback

When running a python file, it is run in TERMINAL. Therefore the output would be shown in TERMINAL.

Defining and Calling a Function

2 of 2 points

✓ Download define_a_function.py from Workshop 2 Google Drive Folder and run it. 1/1

- (●) Defining a function SyntaxError is displayed in TERMINAL ✓
- ( ) Hello, Python! Welcome to coding with drones. displayed in TERMINAL

Feedback

Line 1 of the code "Defining a function" is not a python syntax and was not commented out by adding # before "Defining a function". # added to a line is used to tell python not to interpret or run that line.,

✓ Add# to the first line of code in define_a_function.py and run the code. Does it run now and display 'Hello, Python! Welcome to coding with drones? *1/1

- ( ) Yes
- (●) No ✓

Feedback

greet2() is not defined and was called. Therefore Namerror: name 'greet2' is not defined is displayed in TERMINAL. Fix the bug by changing greet2() to greet() and run again.,

Python Libraries 2 of 8 points

✓ Download first_drone_code.py into your laptop and run the code using visual studio code. What is the height at which the drone hover after it takeoff? *1/1

- ○ approximately 30cm
- ◉ approximately 100cm ✓
- ○ approximately 60cm

Feedback

Correct! it is about 100cm

✗ Modify first_drone_code.py to have the drone takeoff, fly forward 50cm, rotate 90degree clockwise, fly forward 50, rotate 90degree clockwise and land. Show it to the instructor and copy and paste your code into this text field *···/2

```
import pyhula

api = pyhula.UserApi()

if not api.connect():
   print("Connection Error")
else:
   print("Connection to station by Wifi")

   api.single_fly_takeoff()
   api.single_fly_forward(50)
   api.single_fly_turnright(90)
   api.single_fly_forward(50)
   api.single_fly_turnright(90)
   api.single_fly_touchdown()
```

Feedback

```
import pyhula

# Create an instance of the UserApi class from the pyhula library
api = pyhula.UserApi()

# Connect to the drone's wifi network
if not api.connect():
print("Connection error")
else:
print('Connection to station by WiFi')

api.single_fly_takeoff()
api.single_fly_forward(50)
api.single_fly_turnright(90)
api.single_fly_forward(50)
api.single_fly_turnright(90)
api.single_fly_touchdown()
```

✗ ++ (PLUS) Modify the first_drone_code.py to have the drone perform circular flight of a radius 50cm for two rounds. Each round the drone shows a different led color. ···/4

```
import pyhula

api = pyhula.UserApi()

if not api.connect():
   print("Connection Error")
else:
   print("Connection to station by Wifi")

   api.single_fly_takeoff()
   api.single_fly_radius_around(50, {'r': 255, 'g': 255, 'b': 0, 'mode': 1})
   api.single_fly_radius_around(50, {'r': 0, 'g': 255, 'b': 255, 'mode': 1})
   api.single_fly_touchdown()
```

✓ What is the name of library to import and name of the function that halts the execution of code for a specified number of seconds? HINT: time. GOOGLE to find out. 1/1

- ○ day library and sleep()
- ○ pause
- ◉ time library and time.sleep() ✓

Feedback

time.sleep() is the correct answer

✓ What is the name of the function in Hula api that set the color of LED on the drone that is independent of drone motion? *1/1

- (●) single_fly_lamplight ✓
- ( ) single_fly_getColor

Feedback

Yes, correct. single_fly_getColor function detects the color in front of the drone using the drone's camera. single_fly_lamplight sets color of led.

✗ Write a python code to make drone led turns red for 5 seconds when the drone battery is less than 50 percent. *···/2

When done and tested working, demo to the instructor and the instructor will enter Yes into your answer text before you submit.

```
import pyhula

api = pyhula.UserApi()

if not api.connect():
   print("Connection Error")
else:
   print("Connection to station by Wifi")

   bat = api.get_battery()
   print(bat)

   if bat < 50:
      api.single_fly_lamplight(0, 0, 255, 5, 1)
```

Feedback

Refer to code screenshot for sample code

Code

What is the name of the function in Hula api that returns the distance of object below the drone using Time-Of-Flight sensor? *1/1

- Plane_getBarrier()
- get_coordinate()
- get_plane_distance() ✓

Feedback

Correct! it is get_plane_distance(). Plane_getBarrier returns if there is obstacle at in front or behind or left or right of the drone. get_coordinate() returns x, y coordinate with respect to the drone's takeoff position

✕ Write a python code that to takeoff the drone, fly forward 50 cm, then measures and print the distance to the ground, and then land. *···/2

When done and tested working, demo to the instructor and the instructor will type yes in the text field before you submit.

```
import pyhula

api = pyhula.UserApi()

if not api.connect():
    print("Connection Error")
else:
    print("Connection to station by Wifi")

    api.single_fly_takeoff()
    api.single_fly_forward(50)

    print(api.get_plane_distance())

    api.single_fly_touchdown()
```

Feedback

refer to screenshot code for sample code

code

✕ Get a cube and place a cube about 50cm from the drone. Write a python code to takeoff drone, fly to the cube and above the cube. Hover above the cube. Use TOF sensor to determine and print the height of the cube. HINT: measure distance to ground immediately upon takeoff and store it in a variable. When at the cube, take another TOF measurement and store in another variable.

*···/2

When done and tested working, demo the instructor and the instructor will enter yes in the text field before you submit.

```
import pyhula

api = pyhula.UserApi()

if not api.connect():
    print("Connection Error")
else:
    print("Connection to station by Wifi")

    api.single_fly_takeoff()

    init_dist = api.get_plane_distance()
    print(init_dist)

    api.single_fly_forward(50)

    api.single_fly_Qrcode_align(0, 0)

    cube_dist = api.get_plane_distance()
    print(cube_dist)

    api.single_fly_touchdown()
```

Feedback

Refer to screenshot for code reference

code

✗ What is the name of Hula api function and the input parameter to use optical flow to recognize QR code number 1? *0/1

- ○ single_fly_recognition_QrCode(mode=0, qr_id=1)
- ○ single_fly_Qralign(mode=0,qr_id=1)
- ◉ single_fly_recognition_QrCode(mode=1, qr_id=1) ✗

Correct answer

- ◉ single_fly_Qralign(mode=0,qr_id=1)

Feedback

single_fly_recognition_Qrcode is the function name. mode = 0 means to use optical flow qr_id = 1 means to detect for qr code 1.

✗ What is the name of Hula api function and the input parameter to use optical flow to make the drone to align to QR code number 1? *0/1

- ○ single_fly_recognition_Qrcode(mode=2,qr_id=1)
- ◉ single_fly_Qrcode_align(mode=0,qr_id=1) ✗
- ○ single_fly_Qrcode_align(mode=0,qr_id=2)

Correct answer

- ◉ single_fly_recognition_Qrcode(mode=2,qr_id=1)

Feedback

single_fly_Qrcode_align is the name of the function. mode = 0 means to use optical flow mode = 1 means to use front facing camera, qr_id = 1 means to detect qr code 1

✗ Place a QR code 0 50cm from the drone. Write a python code to takeoff drone, fly towards the QR code, detect the code. If QR code is detect, flash led red color and align to the QR code using the align function. Lastly land. *···/2

When done and tested working, demo the instructor and the instructor will enter yes in the text field before you submit.

```
import pyhula

api = pyhula.UserApi()

if not api.connect():
    print("Connection Error")
else:
    print("Connection to station by Wifi")

    api.single_fly_takeoff()

    api.single_fly_forward(50)

    if api.single_fly_recognition_Qrcode(0, 0)["result"]:
        api.single_fly_lamplight(0, 0, 255, 5, 32)

        api.single_fly_Qrcode_align(0, 0)

    api.single_fly_touchdown()
```

Feedback

Refer to screenshot for reference code.

code

✗ ++ Write a python code to make the drone to track QR code 0. The code cannot use hula api qrcode track and not use qrcode align function. This means you are to use result from the qr code detect function and use fly function to correct the difference in distance from the qr code. ···/5