

Assessment 3: Python group project

Demonstration and online submission; week 23; 10% - group project

Students will be working in pairs to write code related to a Python project. The final version of their software will be demonstrated to the instructors at week 23.

Students will have to write Python code for creating an original light animation using a minimum of 6 LEDs simulated on the computer.

- interfacing library `opc.py` which allows wireless access to the LED device
- simulator software which allows to test the code locally before connecting to the LED device
- example scripts showing how to use the library and produce some basic animations

Originality in the design and implementation of animations is strongly encouraged, as is the use of programming tools beyond those explained in class. Additional grades are awarded for complexity regarding the animations.

Final assessment will be done in the class in week 23. You will be allocated a 10-minute slot on that day to demonstrate and talk through your code during the class. We will mark your presentation and code to award you a grade on the Middlesex 20 point scale. No presence in a given time slot will result in fail mark.

Summarising, project 3 will be assessed based on quality of final submission, and knowledge demonstrated during the live presentation, according to the rubric below.

Project 3 evaluation rubric

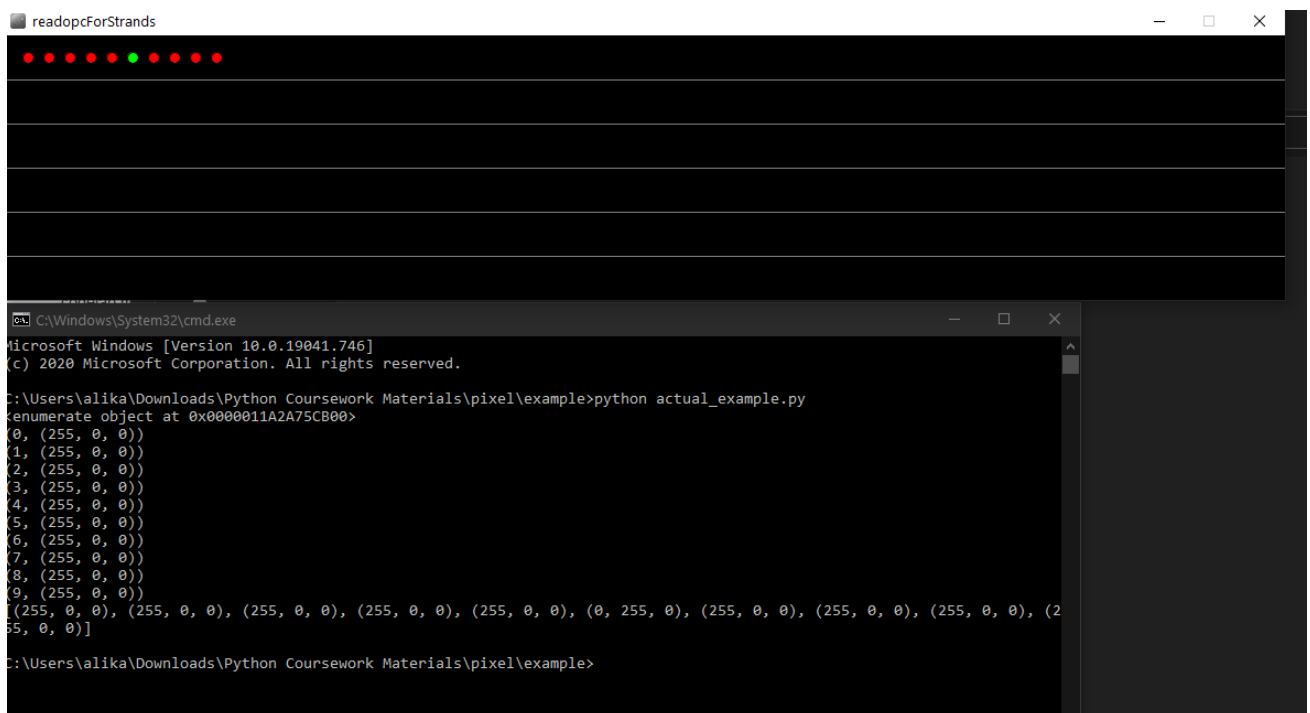
Item	1-4	5-8	9-12	13-16	Fail (17-20)
Code 35 %	High quality code exhibiting deep knowledge and creativity	Code shows structure, understanding of programming tools and personal initiative	Code shows some personal initiative and good understanding of basic concepts	Code works, but is mostly based on given examples with little personal contribution	Code does not work, and shows little understanding of language/algorithms
Documentation 10 %	Advanced comments and documentation	Satisfactory comments and documentation	Basic but correct documentation and comments	Poor documentation and comments	Missing or minimal comments or documentation
Animations 25 %	Highly creative and varied animations using a range of techniques	A range of novel animations with clear personal ideas	Some new ideas incorporated into simple animations	Mostly variations on given examples, with few personal ideas	Same as in examples, with no demonstration of any personal contribution
User interface 15 %	Use of sensors for getting user input and changing animations	Keyboard interface with some options, but no use of external sensors	Basic (e.g. mouse movement, multiple keypresses)	Very basic (e.g. single keypress)	No interface
Presentation 15 %	Very good and organised demonstration	Careful demonstration of code and user guide	Demonstration is clear but not very organised	Basic explanation of code and animations	No clear explanation, lack of understanding

Technical information

A minimum of 6 lines of LEDs must be constructed to produce an animation, whether or not this animation is a game or merely a cycle animation is up to you.

Given our online learning circumstances, you will not be provided with the hardware for this coursework, as such, you will execute your animation using the simulator provided in the python coursework. This coursework is independent, as such, you should take some time to read the criteria and ensure your work meets it.

An example of the use of the simulator –



The screenshot shows a Windows desktop with two windows. The top window, titled 'readopcForStrands', is a simulator with a black background and a horizontal row of 10 colored dots (8 red, 1 green, 1 red) at the top. Below this are several empty horizontal lines. The bottom window is a Command Prompt titled 'C:\Windows\System32\cmd.exe'. It displays the output of running 'python actual_example.py' from the directory 'C:\Users\alika\Downloads\Python Coursework Materials\pixel\example'. The output shows a list of 10 tuples, each containing a number from 0 to 9 and a list of three zeros, followed by a list of 20 tuples, each containing a number from 0 to 9 and a list of three zeros.

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19041.746]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\Users\alika\Downloads\Python Coursework Materials\pixel\example>python actual_example.py
enumerate object at 0x0000011A2A75CB00>
(0, (255, 0, 0))
(1, (255, 0, 0))
(2, (255, 0, 0))
(3, (255, 0, 0))
(4, (255, 0, 0))
(5, (255, 0, 0))
(6, (255, 0, 0))
(7, (255, 0, 0))
(8, (255, 0, 0))
(9, (255, 0, 0))
[(255, 0, 0), (255, 0, 0), (255, 0, 0), (255, 0, 0), (255, 0, 0), (0, 255, 0), (255, 0, 0), (255, 0, 0), (255, 0, 0), (2
55, 0, 0)]

C:\Users\alika\Downloads\Python Coursework Materials\pixel\example>
```