Computer Graphics, Lab Assignment 1

Handed out: March 14, 2024
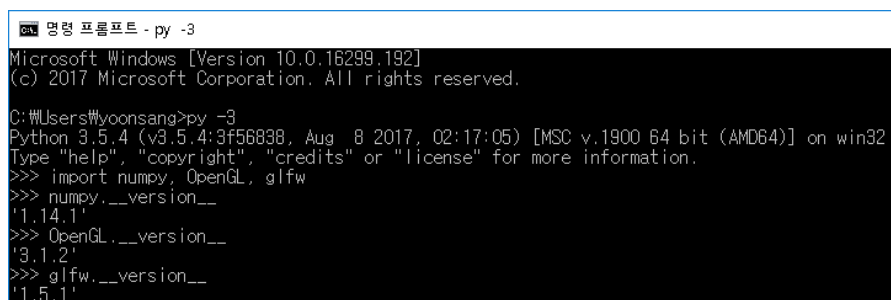
Recommended due: 15:00, March 22, 2024

Hard due: 23:59, March 22, 2024 **(NO SCORE for late submissions!)**

Submit your assignment only through the lecture home at portal.hanyang.ac.kr.

1. This assignment aims to make you set up a Python environment and practice submitting an assignment. To do this,

    A. Install Python, NumPy, PyOpenGL, glfw as instructed in the Lab1-EnvSetting slides.

    B. Start the python interpreter in the interactive mode and import numpy, OpenGL, glfw and print the version of those modules and capture the screenshot. Refer the example screenshot 2022xxxxxx.jpg below.

    C. You can use Windows command prompt or Linux/Mac terminal or something like that to run Python interpreter in interactive mode.

    D. Submit a single image file (#1) and a python file (#2) zipped into a single zip file - **[studentID]-[assignment#]-[prob#].**zip (e.g. **2022123456-1-1**.jpg and **2022123456-1-2**.py)

        1. Example screenshot: 2022xxxxxx.jpg (or .png) (Versions are not important)

2. Write down a Python program to:

    A. Create a 1d array M with values ranging from 2 to 26 and print M.

    B. Reshape M as a 5x5 matrix and print M.

C. Set the value of "inner" elements of the matrix M to 0 and print M.

D. Assign M^2 to the M and print M.

E. Let's call the first row of the matrix M a vector v. Calculate the magnitude of the vector v and print it.

   i.   Hint: $\|x\| = \sqrt{(x_1^2 + x_2^2 + \cdots + x_n^2)}$

   ii.   Hint: Use np.sqrt()

F. Include a single .py file - **[studentID]-[assignment#]-[prob#].py** (e.g. **2022123456-2-1.py**) in the zip file.

Expected output: (Output format doesn't have to an exact match.)

```
[ 2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26]

[[ 2  3  4  5  6]
 [ 7  8  9 10 11]
 [12 13 14 15 16]
 [17 18 19 20 21]
 [22 23 24 25 26]]

[[ 2  3  4  5  6]
 [ 7  0  0  0 11]
 [12  0  0  0 16]
 [17  0  0  0 21]
 [22 23 24 25 26]]

[[ 290  144  152  160  370]
 [ 256  274  292  310  328]
 [ 376  404  432  460  488]
 [ 496  534  572  610  648]
 [1490  664  712  760 1970]]

538.924855615326
```