Computer Graphics, Lab Assignment 9

Handed out: May 13, 2020

Due: 23:59, May 13, 2020 (NO SCORE for late submissions!)

- *Only accept answers submitted via git push to this course project for you at https://hconnect.hanyang.ac.kr (<Year>_<Course no.>_<Class code>/<Year>_<Course no.>_<Student ID>.git).*
- *Place your files under the directory structure <Assignment name>/<Problem no.>/<your file> just like the following example.*

```
+ 2020_ITE0000_2019000001
  + LabAssignment2/
    + 1/
      - 1.py
    + 2/
      - 2.py
    + 3/
      - 3.py
```

- *The submission time is determined not when the commit is made but when the git push is made.*

1. Write down a Python program to visualize ZXZ Euler angles.
   A. This is how ZXZ Euler angles works
      i. Rotate along Z-axis by α
      ii. Rotate along X-axis of the new frame by β
      iii. Rotate along Z-axis of the new frame by γ
   B. Start from 9-Orientation&Rotation practice code, implement ZXZ Euler angles and add code to change α, β, γ values in the following way.
      i. If you press or repeat a key, the value of α, β, γ should be changed as shown in the table:

Key	Transformation
A	Increase α by 10°
Z	Decrease α by 10°
S	Increase β by 10°
X	Decrease β by 10°
D	Increase γ by 10°
C	Decrease γ by 10°
V	Initialize orientation

C. Hint: You do not need to store a composed rotation matrix as a global variable. You can just store α, β, γ as global variables.

D. Set the window title to **your student ID** and the window size to (480,480).

E. Expected result: Uploaded LabAssignment9-1.mp4

F. Files to submit: A Python source file (Name the file whatever you want (in English). Extension should be .py)