



Graphics and Multimedia (COMP3419)



Assignment 1-b Specification

1 Key Information

- The mark of "**COMP3419 Assignment 1-b Building 3D Animation Scene**" will be given on canvas submission. Due time: before 23:59, Saturday of Week 11 (30-Oct-2021).
- This individual assignment is worth **8%** of your final assessment.
- **Submission Deliverables:** Students are asked to create a **zip** file of all deliverables (several image files + 1 .pde file + 1 README.txt). Please be aware of the following submission **restrictions** that (1) this zip file should be named as "SIDxxx_Ass1b.zip" where xxx denotes the student ID (e.g., "SID450003419_Ass1b"). (2) this zip file should contain one single folder named as "SIDxxx_Assignment1b", which includes all other deliverables, and (3) the Processing file should be named as "SIDxxx_Assignment1b.pde" as well. Failing to follow these restrictions or missing of any deliverable would cause a deduction of **4 marks**.
- Students' assignments **will only be marked if** all deliverables can be **accessed** from the Canvas System, and they can be **runnable** following instructions provided in README txt file. Once plagiarism detected by the Canvas system, the student will receive no mark immediately, as well as other related penalties from university.

2 General Marking Policy

Late Submission Policy

For the late submission cases, penalties will be assigned according to the university wide late penalties for assignment Clause 7A of the Assessment Procedures.

Special Consideration and Arrangements

While you are studying, there may be circumstances or essential commitments that impact your academic performance. Our special consideration and special arrangements process is there to support you in these situations. More information on how to lodge the special consideration application, can be found from this webpage.

3 Building 3D Animation Scene (Assignment 1-b)

Before you start to program this assignment, please make sure you understand the basics of 3D graphics from week 8 Lab and finish the orbit simulator.

This assignment requires you to program an interactive 3D animation with the following scenarios:

- When you click mouse at (x, y) on your screen shoot a 3D ball with a random texture (randomly load a texture from your texture pool). The minimum size of the texture pool is 3 and all corresponding image files should be included in canvas submission zip file.
- This ball flies away from the screen along the Z axis with a random direction according to the XY plane. It means this ball does not go straight ahead, but instead is shot away in a random direction. The gravity always effect the movement of this ball as long as it is in the screen.
- While the ball moves away from the screen, it falls down to the ground due to the gravity.
- The space is constrained by 5 walls (left, right, ceiling, floor and a wall far ahead facing the screen). When the ball touches any of the wall, it bounces back and its new direction is computed considering its previous direction. The 6th wall (the wall where the camera is placed) is free to design (either bounce the ball back or make the ball disappear when the ball comes towards this wall).
- You can shoot new balls into the screen while the previous balls are travelling.
- The ball spins while it is travelling. The direction of spinning is determined by its original direction and the bounces.
- When the balls touch each other, they bounce back as well.
- The potential energy (speed and height) of the ball decays according to the travelling time as well as the number of bounces (i.e., any ball should fall on the ground and stop spinning eventually).

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- Hint: It would be easier if you model the balls with a class.
- It is more realistic if you embed some of the Kinematic equations when you calculate the speed and direction of the balls. For equations of motion, please refer to https://en.wikipedia.org/wiki/Equations_of_motion

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