2025-1 Computer Graphics

PA 4

1 Create a scene with 3D models. [3 pt]

1.1 Load **10** or more **different** 3D models with **textures** from OBJ files.

1.2 Select one and duplicate it **10** or more times with **different positions** using the instancing technique.

1.3 Translate and rotate **3** or more objects continuously in the scene.

2 Move a camera (first-person/free) and navigate the scene using user inputs. [2 pt]

2.1 Control the camera movements (forward/backward/left/right) using **arrow (up/down/left/right) keys**.

2.2 Control the viewing direction of the camera using **mouse movements**.
(*Should be able to navigate through the scene and observe all objects in the scene.)

3 Display 2D images. [3 pt]

3.1 Add a **title scene** showing scene title, name of producer, and how to control.

3.2 Display a **background** image and a **billboard** image.

3.3 Show rendering **performance** info.: FPS (frames per second), CPU usage, num. of objects, num. of polygons, and screen resolution.

4 Present a plan and demonstrate the result. [2 pt]

4.1 Present **a plan** (PPT/PDF slides): title, main scene (sketch or reference image), resources
(*The implemented result should be similar to the plan.)

4.2 Final **report** (PDF, ~1 page): how to control, features, implementation issues, any difficulty, etc.

- **Implementation requirements**
  - ✓ Program should be executed in a **x86 (32-bit) Release** mode.
  - ✓ The framework classes can be modified, but can**not** be deleted.
  - ✓ All implemented functions should be executed from the **same** program.

- **Submission instruction**
  - ✓ 프로그램 build에 필요 없는 **폴더(Debug, Release, ipch) 및 파일(*.db)**은 모두 **삭제**.
    (*폴더 보기 → 표시 → 숨김 항목 → .vs 폴더 → ipch 폴더 및 *.db 파일 삭제)
  - ✓ 필요한 설명이 있으면 "**readme.txt**"에 기술.
  - ✓ 프로젝트 폴더 전체를 압축(**ZIP**, 제한: **100MB**) 후 **ClassRoom**에 제출 (*E-mail로 받지 **않음**).

- **Cautions**
  - ✓ **Visual Studio 2022 (DirectX 11)**에서 source code가 build 안되거나, 프로그램 실행이 안되면 **0점** 처리.
  - ✓ Source code의 copy시 원본 제공자와 복사자 모두 **0점** 처리.
  - ✓ 제출 시간 지나면 **0점** 처리.

- **Examples of interactive 3D scenes.**