[GP1 – Milestone Specifications]

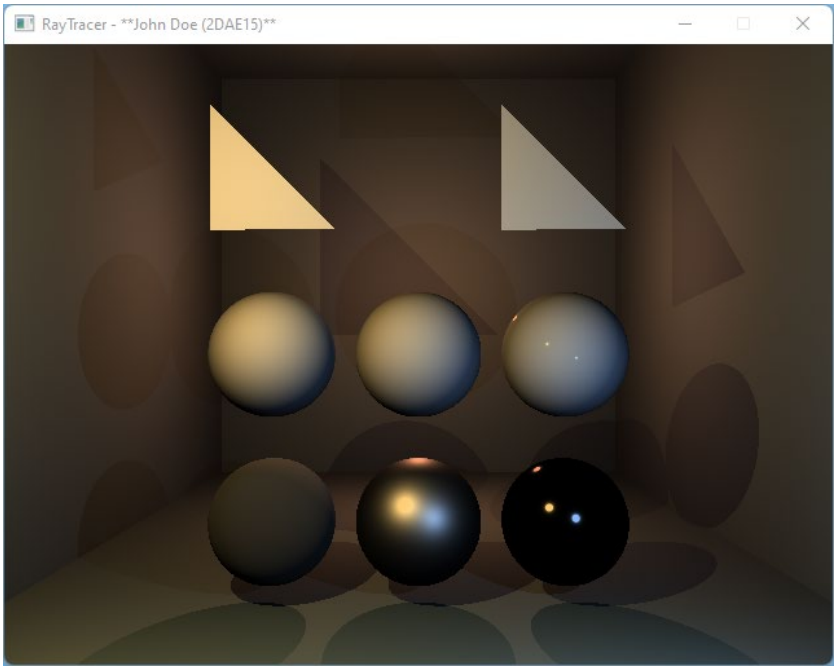
RayTracer

This document contains the hand-in guidelines for the RayTracing milestone (deadline 11 November). The hand-in structure described below is MANDATORY – not following the specifications can affect your grades!

REQUIRED SCENES

Separate builds/exe's (see folder structure information)
Make sure to set the WindowTitle correctly (see main.cpp)

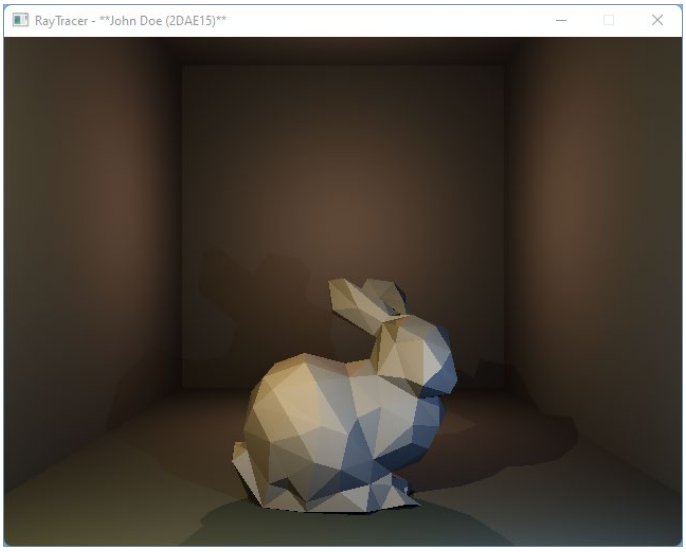
1) Raytracer_REFERENCE
   Check the Lab Files for the correct Scene Setup



2) Raytracer_BUNNY

Check the Lab Files for the correct Scene Setup

Make sure the Bunny rotates along the Y-axis (same rotation logic as Triangles in Reference Scene)



3) Raytracer_EXTRA (**optional!**)

This 'extra' scene is NOT mandatory – but in case you created a nice-looking scene you can add it here as an 'extra' scene. Go nuts! (Extra grades are possible)

Follow the same naming convention & structure like the Reference & Bunny scene when adding an extra scene (Screenshot, Debug & Release build).

REQUIRED INPUT (Key/Mouse Bindings)

We will only test the key-bindings below, so make sure you implement them correctly!

MOUSE:

- (Camera) Rotate Yaw (**RMB + Mouse Move X**)
- (Camera) Rotate Pitch (**RMB + Mouse Move Y**)
- (Camera) Move (local) Forward/Backward (**LMB + Mouse Move Y**)
- (Camera) Rotate Yaw (**LMB + Mouse Move X**)
- (Camera) Move (world) Up/Down (**LMB + RMB + Mouse Move Y**)

KEYBOARD:

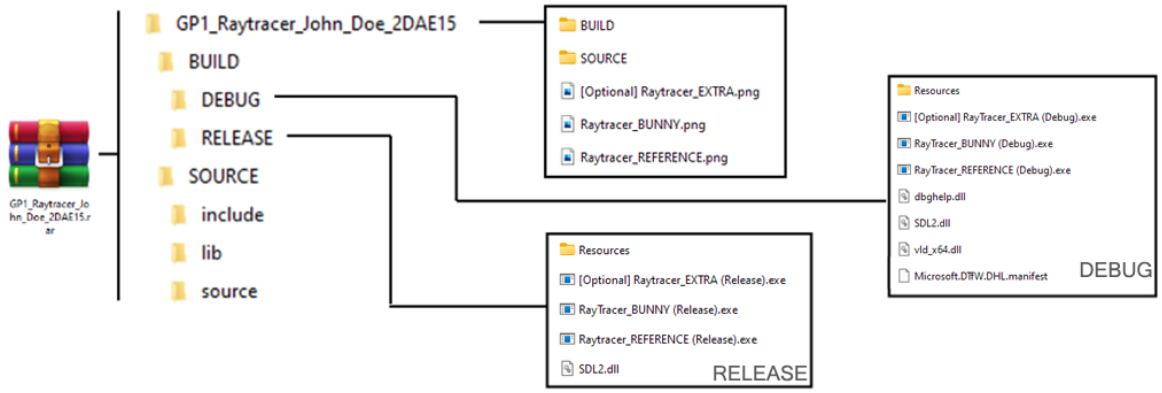
- (Camera) Move (local) Forward (Arrow Up) and ('**W**')
- (Camera) Move (local) Backward (Arrow Down) and ('**S**')
- (Camera) Move (local) Right (Arrow Right) and ('**D**')
- (Camera) Move (local) Left (Arrow Left) and ('**A**')
- (Benchmark) Start Benchmark ('**F6**') (Requires an updated Timer Class → Leho)
- (Rendering) Toggle Shadows ON/OFF ('**F2**')
- (Rendering) Toggle Light-Equation Mode ('**F3**')
    - Toggle Order: Both (default) → Observed Area → Radiance Only → BRDF Only (→ Both → ...)

GRADING

- Implemented Features (Labs)
    - Make sure you correctly implemented the key-bindings described above!
- Coding Standards & Const Correctness
- Code Structure and Cleanliness
- Benchmark
    - Make sure you implement the update Timer class (contains the Benchmark functionality) – fiddling with the FPS logic = 0 for the entire project.
    - The applications (Reference, Bunny) from the Demo package act as a baseline in terms of 'desired' FPS, you can earn extra grades by further optimizing your application – achieving a higher FPS compared to the baseline applications.
    - Additional grades will be distributed based on a linear interpolation between the minimum (average) FPS (baseline) and the highest (average) FPS achieved by a student application.
- Make sure to double check your applications before handing in (Do they still run after moving them to another directory? Did you add all required resources?)
- Additional penalties are given for not following the guidelines described in this document (folder structure, window title, package size, ...), memory leaks or fatal crashes
- The debug version of your applications should have the VLD header enabled!

FOLDER STRUCTURE (hand-in as ZIP/RAR)

Follow the given folder/file structure below, also makes sure to test the different executables and Visual Studio project after moving them to their appropriate folders! Redundant files/folder must be removed to reduce the file size as much as possible (as a reference, the file size of the RAR below is less than 5mb)



- (folder) **ROOT** → GP1_Raytracer_[firstname]_[lastname]_[class]
  - (folder) **BUILD**
    - (folder) **DEBUG** → Debug versions of requested scenes **(+ required libs/resources)**
      VLD should be active in this version (so check for memory leaks)!!
      - Raytracer_REFERENCE.exe
      - Raytracer_BUNNY.exe
      - Raytracer_EXTRA.exe (optional)
      - … (see screenshot)
    - (folder) **RELEASE** → Release versions of requested scenes **(+ required libs/resources)**
      - Raytracer_REFERENCE.exe
      - Raytracer_BUNNY.exe
      - Raytracer_EXTRA.exe (optional)
      - … (see screenshot)
  - (folder) **SOURCE** → Source code used to create above builds **(+ remove redundant folders → TempFiles/.vs/bin/…)**
    Double check if project opens and builds correctly AFTER moving it to your hand-in folder!!
    (We are not going to fix any linking issues to get your project running)
    - **include** → Include files of external libraries
    - **lib** → external libraries
    - **source** → your source code (Visual Studio Project)
  - (file) Raytracer_BUNNY.png → Screen capture including WindowTitle
  - (file) Raytracer_REFERENCE.png → Screen capture including WindowTitle
  - ([Optional) file] Raytracer_EXTRA.png → Screen capture including WindowTitle

GOOD LUCK!

Questions or Remarks?

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