REYNEP's Vulkan "Adventure Guide"

Where, you adventure on your own ☺, I only 'guide', showing you the roadmap

Chapter 0: Prerequisites

🕮 Suggested Reading (before embarking on this journey)

1. ***Brendan Galea's Vulkan C++ [Youtube Series]***
   - https://www.youtube.com/watch?v=Y9U9IE0gVHA&list=PL8327DO66nu9qYVKLDmdLW_84-yE4auCR
   - *For now, just watch the first* `3:40minute` *video*
     - *I don't recommend going down the playlist, right now, tho.*
2. ***Alternatively:-*** ***https://paminerva.github.io/docs/LearnVulkan/01.A-Hello-Window***
   - *Read the* `1 - Introduction` *part from here only* ☺ *[untill* `1.2. Why Vulkan?` *end]*
   - ☺ *00-Introduction-and-prerequisites.pdf*
   - 😜 *01.A-Hello-Window.pdf*
3. ***Alternatively:- you can give this page a try too:-***
   - *https://vkdoc.net/chapters/fundamentals*
   - *that is, if you are into "official formal-documentation" [i sure am not....]*

🤦♀ The 5 Questions

- ***1️⃣What is*** `Vulkan` ***?*** ***....🤔....*** ***Why*** `Vulkan` ***?***
  - *Suggested Reading 2:-* `p.a.minerva`
- ***2️⃣Why should 'you' learn/use*** `Vulkan` ***?***
  i. *5-10% Faster*
  ii. *More Control*
  iii. *Lower Level API*
  iv. *You can ask and know* ***'what actuaaallyyy happens under the hood of the gpu?'***
- ***3️⃣Why is this Important?***
  - *Well if you are planning on becoming a game dev, then yeah, this kinda is important!*
  - ***otherwise****, if you are just here for* **CreatingShaders**:- `OpenGL` *is fine enough*
    a. `Shader Enthusiast:-` *https://www.shadertoy.com/*
       a. *https://www.youtube.com/playlist?list=PL9Zb80ovNLWGRFZVL4LcckTWnEGN73dFS*
       b. *https://www.youtube.com/playlist?list=PLGmrMu-IwbguU_nY2egTFmlg691DN7uE5*
       c. *https://www.youtube.com/playlist?list=PLCAFZV4XJzP-jGbTke6Bd3PNDpP1AbIKo*
       d. *https://www.youtube.com/playlist?list=PLGmrMu-IwbgtMxMiV3x4IrHPlPmg7FD-P*
       e. *https://www.youtube.com/watch?v=5J-0sy2pu_8&t=357s&pp=ygUVc2hhZGVyVG95IHJheW1hcmNoaW5n*
       f. *https://www.youtube.com/watch?v=khblXafu7iA&pp=ygUJc2hhZGVyVG95*
    b. `Making an App/UI :-` *doing everything with* `OpenGL` *-> would be just fine*
       a. *TheCherno OpenGL Playlist [YT]*
       b. *TheCherno Game Engine Playlist [YT]*
- ***4️⃣When will 'you' need*** `vulkan` ***?***
  - *kinda never -> unless you have grown tired of OpenGL*
  - *kinda yes -> when you wanna understand "How the heck does the GPU Work?"*
    - *but yes, Big AAA games would need* `vulkan` *for even that last 5-10% performance*
- ***5️⃣How does*** `vulkan` ***work?***
  - *Rest of this entire guide is dedicated to answer this question* ☺

1. 🔰 grab `vulkan-sdk` , `cmake` , `amGHOST`

1. *if you don't have* `vscode` *&* `C++ Compiler`

- ➡️🔗 *4.guide.CH0.vscode.md*

2. 🖐️ *https://vulkan.lunarg.com/sdk/home*

- *make sure* `VULKAN_SDK` *&* `VK_SDK_PATH` *environment variables are set*
- *restart vscode after installing*

3. 🖐️ *https://cmake.org/download/*

- 🎓 `Intro/Tutorials`
  - *https://enccs.github.io/intro-cmake/hello-cmake/*
  - `OR` *: Watch 6/7 videos from this playlist:-*
    - *https://www.youtube.com/playlist?list=PLK6MXr8gasrGmIiSuVQXpfFuE1uPT615s*
- *restart vscode after installing*
- 📜 `REY_DOCs`
  - *This is how it usually looks. Read through it* 🧑‍🎓.
  - *The app that we will make using* `amGHOST` *, will need to have these commands*

```
cmake_minimum_required(VERSION 3.25 FATAL_ERROR)

project("idk_PROJECT" VERSION 0.1)

    set(CMAKE_CXX_STANDARD 23)
    set(CMAKE_CXX_STANDARD_REQUIRED ON)

# --------------------
    set(SRC
        "main.cpp"
    )

    set(INC
        ${CMAKE_CURRENT_SOURCE_DIR}
    )
# --------------------

# --------------------
# set_source_files_properties(main.cpp PROPERTIES COMPILE_FLAGS "/P /C")
# Output Preprocessed File
            add_executable (idk ${SRC})
target_include_directories (idk PUBLIC ${INC})

# ------amGHOST-------
         add_subdirectory  (amGHOST)
    target_link_libraries  (idk PUBLIC amGHOST)

# ------install-------
    install(TARGETS idk
        DESTINATION ${CMAKE_CURRENT_SOURCE_DIR})
```

4. `amGHOST`

- *amateur's Generic Handy Operating System Toolkit*
  - *[secretly inspired by* `blender's GHOST` *xP* 😜*]*
- `git clone -b win32-intro https://github.com/REYNEP/amGHOST`
- *Open it with VSCode*
- `F1` --> `CMake: Configure`
- `F1` --> `CMake: Build`
- `F1` --> `CMake: Install` --> `.insall` *dir*
- *check's* ***amGHOST's Usage Example*** *inside* `amGHOST/README.md`

- `Option 1` :- use `cmake` for your project too.... using `add_subdirectory(amGHOST)`
- `Option 2` :- use `libamGHOST.lib` after installing & `#include amGHOST/<header>`

- just copy paste ***amGHOST's Usage Example*** into a `main.cpp` for your program

```cpp
#include "amGHOST/amGHOST_System.hh"

int main(int argumentCount, char* argumentVector[])
{
    amGHOST_System::create_system();    // initializes amG_HEART

    amGHOST_Window* W = amG_HEART->new_window_interface();
    W->create(L"Whatever", 0, 0, 500, 600);

    REY::cin.get();     // wait for terminal input
    W->destroy();
}
```

  - *[shorter than `readme ex. 1`]*
  - *now you shall have a OS-Window* 😊

5. *Viewing these readmes in a Nice Way*

- *https://github.com/REYNEP/amGHOST/blob/main/amVK_Guide/P1/bkup/style-bkup.less*
- `vscode extension` :- *shd101wyy.markdown-preview-enhanced*
- `scoop install princexml`
- `vscode F1` :- *Markdown Preview Enhanced:- Customize CSS (Global)*
- *Paste my* `style-bkup.less`
- `vscode F1` :- *Markdown Preview Enhanced:- Open Preview* 👩‍🎨