# KTX2 Viewer

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# Contents

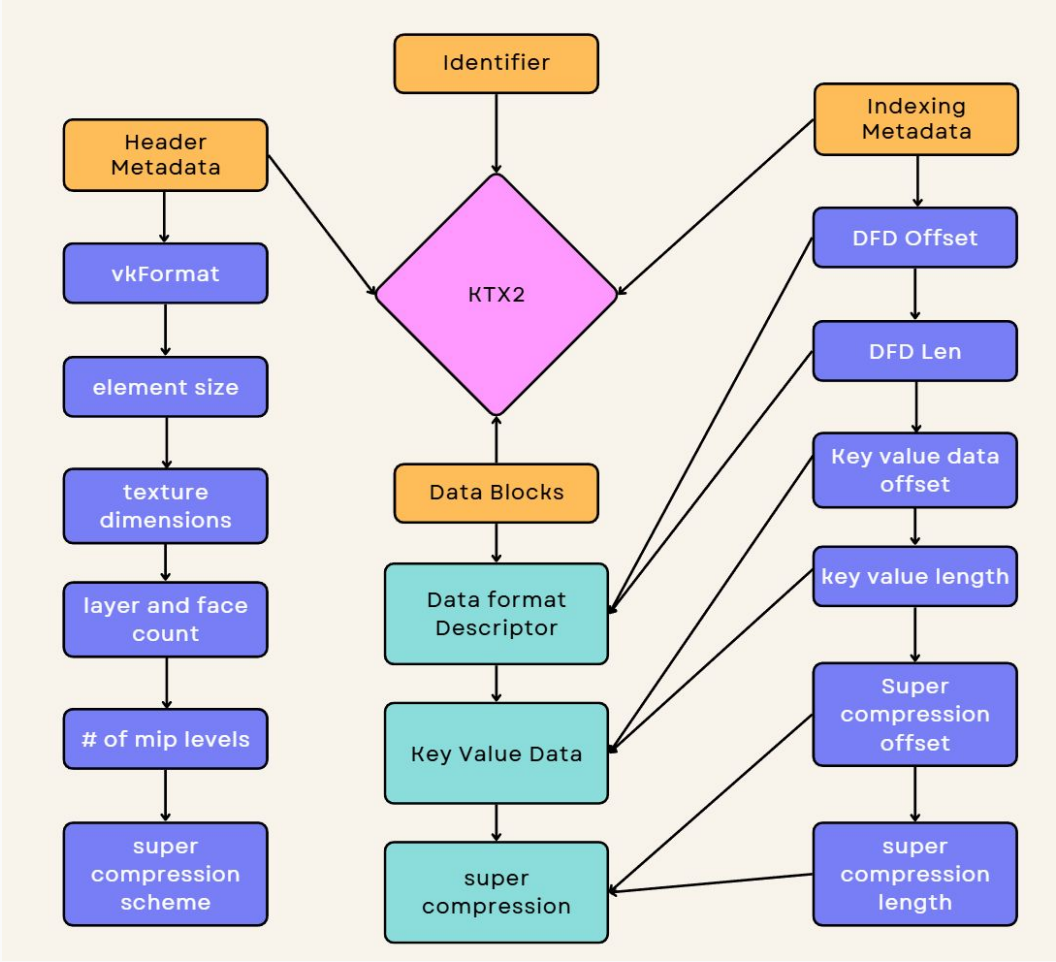
# Overview

- Goals:
  - Provide a tool for developers and artists to preview and edit KTX2 files
  - Enable accurate previewing of HDR, Super Compression, and other KTX2 supported features
- Develop VSCode Tool and Renderdoc support for KTX2 previewing
- Milestone 1 Goals:
  - Develop rendering pipelines for Renderdoc and VSCode
  - Enable previewing of basic BC1-7 textures (excluding BC6H for HDR)

# Parsing KTX2

1) * Identifier
   - Header
   - Index
2) * Level Index
3) * Data Format Descriptor
4) Key/Value Data
5) Super Compression Data
6) * Mip Level Array

* : required for basic rendering



# Compression Type

Currently supports:

BC1,2,3,4,5,7

Use vkFormat from header metadata to determine vulkan enum texture type

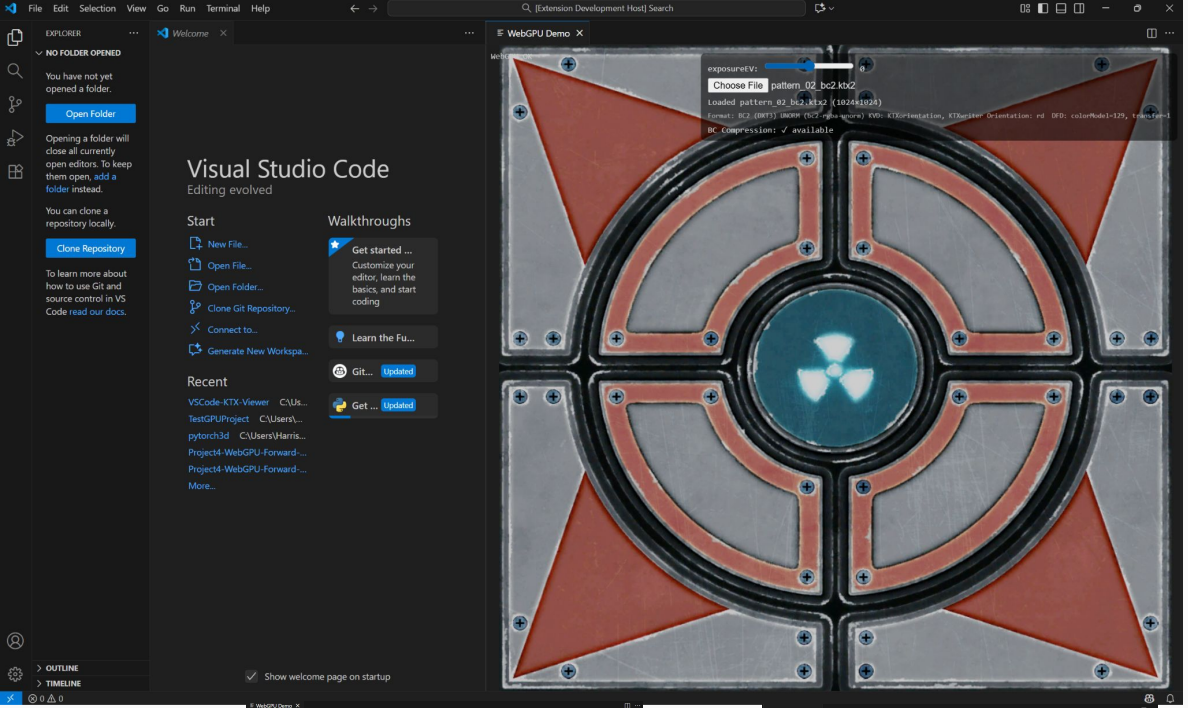
Goal:

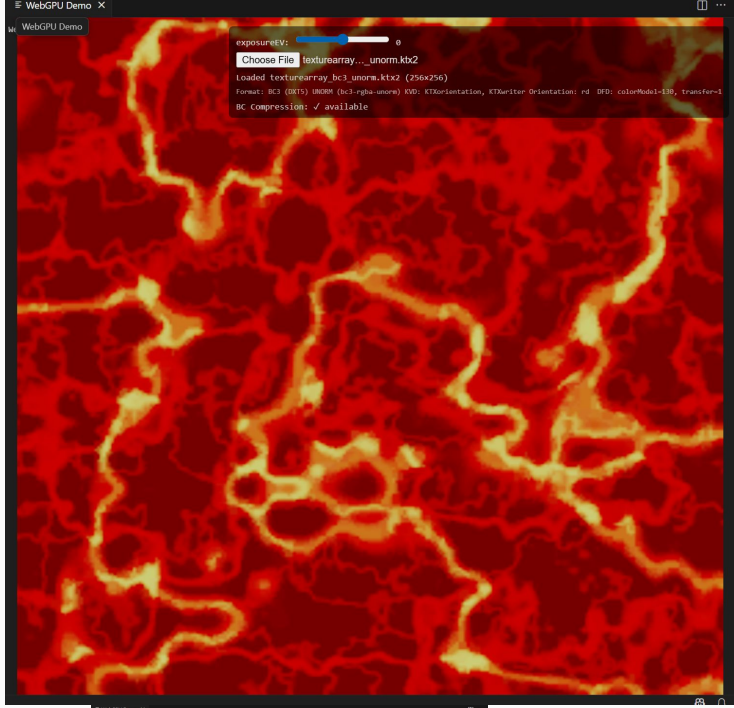
BC6H (HDR)
ETC1S
ETC2
UASTC

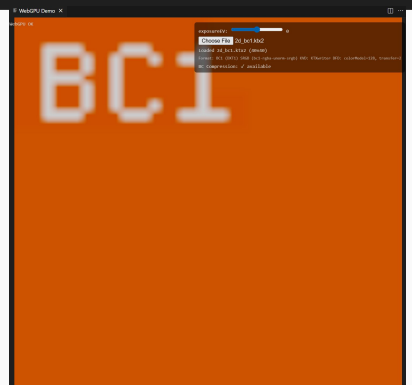
Mobile formats require additional processing that we didn't encounter for desktop types

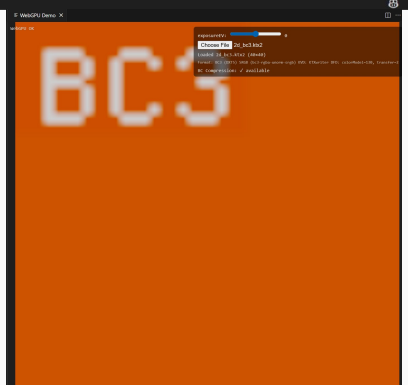
| img | vkFormat | colorspaces |
|---|---|---|
| ASTC 4x4 | ASTC_4x4_SRGB_BLOCK | "srgb" |
| ETC1 | ETC2_R8G8B8_SRGB_BLOCK | "srgb" |
| ETC2 | ETC2_R8G8B8A8_SRGB_BLOCK | "srgb" |
| BC1 | BC1_RGB_SRGB_BLOCK | "srgb" |
| BC3 | BC3_SRGB_BLOCK | "srgb" |
| BC5 | BC5_UNORM_BLOCK | "srgb" |
| BC7 | BC7_SRGB_BLOCK | "srgb" |

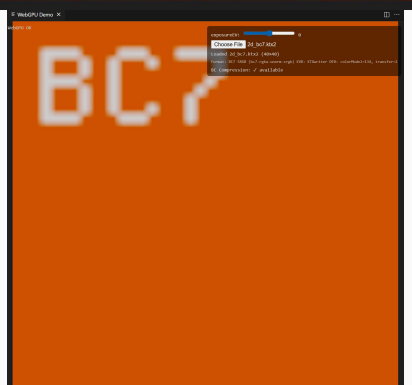
From Don Mccurdy's KTX2 Samples repo


File Edit Selection View Go Run Terminal Help
[Extension Development Host] Search
EXPLORER
NO FOLDER OPENED
You have not yet opened a folder.
Open Folder
Opening a folder will close all currently open editors. To keep them open, add a folder instead.
You can clone a repository locally.
Clone Repository
To learn more about how to use Git and source control in VS Code read our docs.
Welcome
Visual Studio Code
Editing evolved
Start
New File...
Open File...
Open Folder...
Clone Git Repository...
Connect to...
Generate New Workspa...
Walkthroughs
Get started ...
Customize your editor, learn the basics, and start coding
Learn the Fu...
Git... Updated
Get ... Updated
Recent
VSCode-KTX-Viewer C:\Us...
TestGPUProject C:\Users\...
pytorch3d C:\Users\Harris...
Project4-WebGPU-Forward-...
Project4-WebGPU-Forward-...
More...
Show welcome page on startup
OUTLINE
TIMELINE
WebGPU Demo
exposureEV:
Choose File
pattern_02_bc2.ktx2
Loaded pattern_02_bc2.ktx2 (1024x1024)
BC Compression: ✓ available

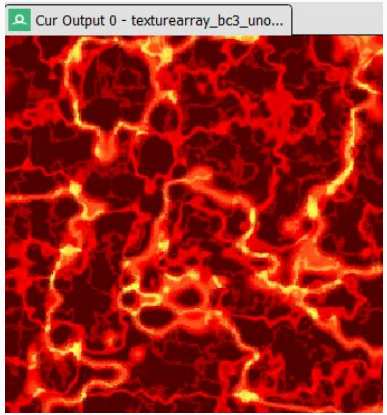

WebGPU Demo
exposureEV:
Choose File
texturearray..._unorm.ktx2
Loaded texturearray_bc3_unorm.ktx2 (256x256)
BC Compression: ✓ available

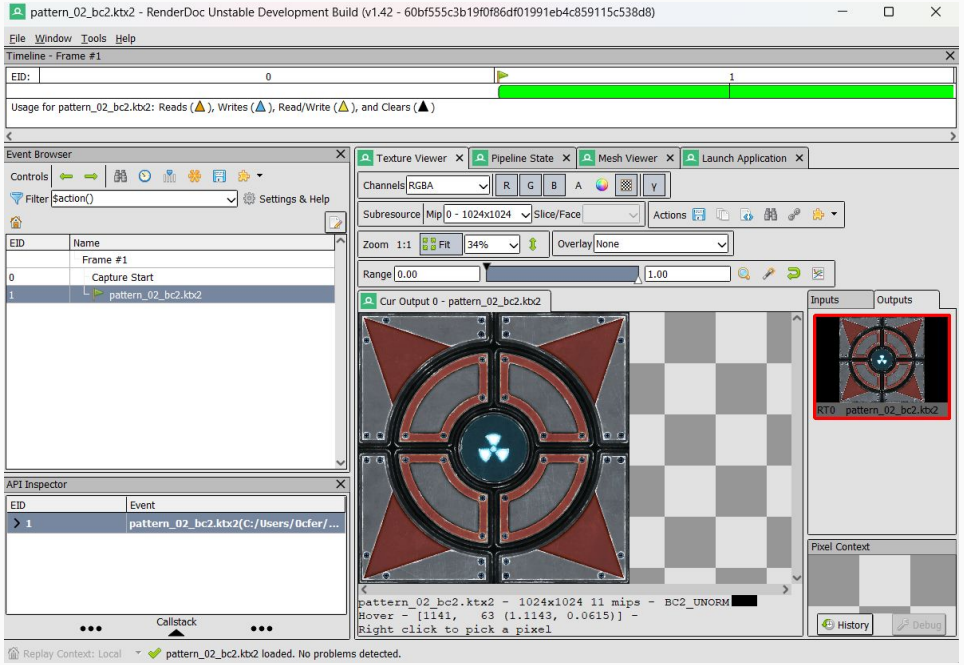

BC1

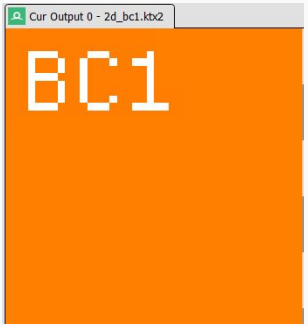

BC3

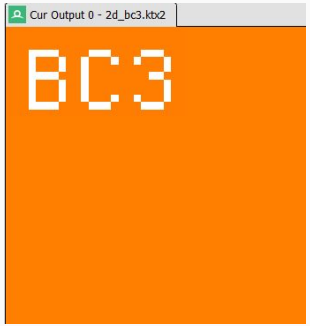

BC7

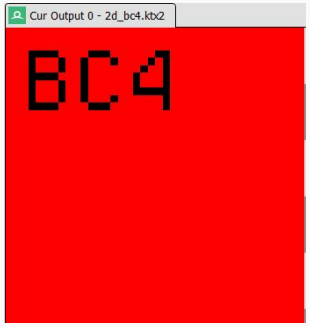
# RENDERDOC

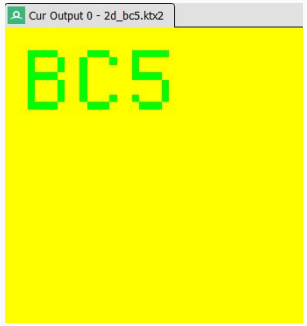

Cur Output 0 - texturearray_bc3_uno...

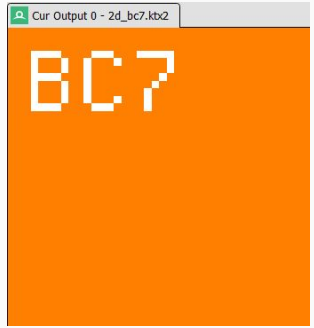

pattern_02_bc2.ktx2 - RenderDoc Unstable Development Build (v1.42 - 60bf555c3b19f0f86df01991eb4c859115c538d8)
File Window Tools Help
Timeline - Frame #1
EID:
Usage for pattern_02_bc2.ktx2: Reads ( ), Writes ( ), Read/Write ( ), and Clears ( )
Event Browser
Controls
Filter $action()
Settings & Help
EID
Name
Frame #1
0
Capture Start
1
pattern_02_bc2.ktx2
API Inspector
EID
Event
1
pattern_02_bc2.ktx2(C:/Users/0cfer/...
Callstack
Texture Viewer
Pipeline State
Mesh Viewer
Launch Application
Channels RGBA
Subresource Mip 0 - 1024x1024 Slice/Face
Actions
Zoom 1:1 Fit 34%
Overlay None
Range 0.00 1.00
Cur Output 0 - pattern_02_bc2.ktx2
Inputs
Outputs
RT0 pattern_02_bc2.ktx2
Pixel Context
pattern_02_bc2.ktx2 - 1024x1024 11 mips - BC2_UNORM
Hover - [1141, 63 (1.1143, 0.0615)] -
Right click to pick a pixel
History
Debug
Replay Context: Local
pattern_02_bc2.ktx2 loaded. No problems detected.


Cur Output 0 - 2d_bc1.ktx2
BC1


Cur Output 0 - 2d_bc3.ktx2
BC3

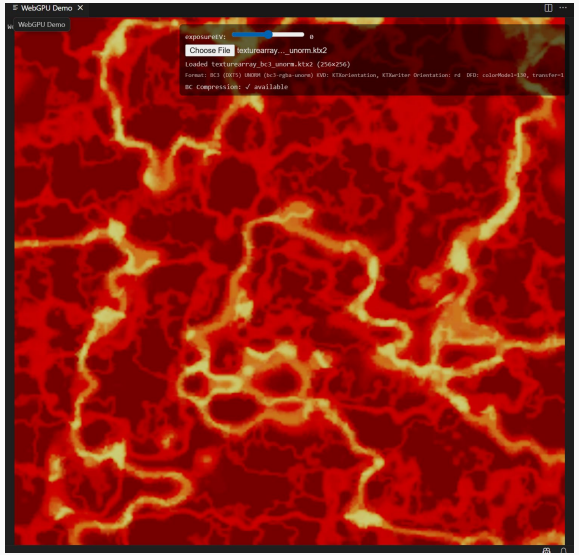

Cur Output 0 - 2d_bc4.ktx2
BC4


Cur Output 0 - 2d_bc5.ktx2
BC5

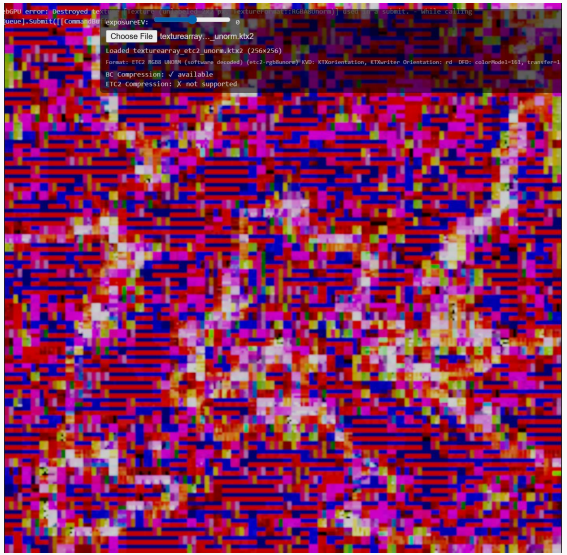

Cur Output 0 - 2d_bc7.ktx2
BC7

# Next Steps & Final Thoughts

- Compression Formats progress
  - Decode ETC/ASTC
  - CPU/GPU implementation
- Windows HDR support
- Industry Professionals Correspondence
  - Binomial
  - GLTF plugin
  - Renderdoc
- Super compression handling
- Mipmap level sampling




BC2




ETC2 Decoded (WIP)