

TEXTURE MEMORY & CONSTANT MEMORY

TEXTURE MEMORY

- **Texture Memory**, also known as **Graphics Card Memory** or **Video Memory**.
- It is a specialized type of memory found in modern graphics processing units (GPUs).
- It plays a crucial role in rendering graphics and images on a computer screen, especially in video games and other graphics-intensive applications.

TEXTURE MEMORY

- When a GPU renders graphics, it needs to store textures, frame buffers, shaders, and other data required for visual rendering are stored in GPU texture memory.
- It is significantly faster than the system RAM (main memory) of the computer.
- Accessing data from GPU texture memory is much quicker, allowing for faster rendering and improved performance in graphics-intensive tasks.

TEXTURE MEMORY

- The texture memory is divided into several components such as:
- **Frame Buffer**: This is used to store the image that is currently being displayed on the screen. The size of the frame buffer is typically related to the resolution of the display.
- **Textures**: Textures are 2D or 3D images used to cover the surfaces of 3D objects in a scene. They provide details, colors, and patterns to enhance visual realism.
- **Shaders**: These are small programs that run on the GPU to control the rendering pipeline and manipulate the data stored in texture memory to create visual effects.

CONSTANT MEMORY

- Constant memory is a form of virtual addressing of global memory.
- There is no special reserved constant memory block.
- Constant memory has two special properties :
 - it is cached
 - it supports broadcasting a single value to all the elements within a warp.
- Constant memory, as its name suggests, is for read-only memory.
- It is either declared at compile time or defined at runtime as read only by host
- To declare a section of memory as constant at compile time, you simply use the `__constant__`
- keyword. For example:
- `__constant__ float my_array[1024] = { 0.0F, 1.0F, 1.34F, . };`

CONSTANT MEMORY

- constant memory" refers to a type of memory available on NVIDIA GPUs that offers special properties for read-only data.
- Limited Size: Constant memory is limited in size and typically ranges from tens of kilobytes to a few hundred kilobytes, depending on the specific GPU architecture.
- High Bandwidth: Constant memory has high bandwidth compared to regular global memory on the GPU.
- Initialization: The constant memory is initialized from the host (CPU) before launching the GPU kernel.