
Basic Buffer and Accessor Usage

Objective: Learn how to create and use buffers and accessors in SYCL.

Task:

1. Create a 1D buffer of integers with a size of 512.
2. Initialize the buffer with values from 0 to 511.
3. Write a kernel using `parallel_for` to increment each value by 1.
4. Print the updated buffer values on the host.

Unified Shared Memory (USM) Basics

Objective: Understand how to use Unified Shared Memory (USM) in SYCL.

Task:

1. Allocate shared memory for an array of floats of size 256.
2. Initialize the array with random values on the host.
3. Write a kernel using `parallel_for` to multiply each value by 2.
4. Print the updated array values on the host.

A complete SYCL problem

Objective: Implement matrix operations in SYCL.

Task:

1. Create two 2D matrices (size 256x256).
2. Initialize Matrix A with random integers (1 to 100) and Matrix B with ones.
3. Perform matrix addition using a kernel and store the result in a third matrix.
4. Perform element wise multiplication on Matrix C and store the result back in Matrix C.
5. Print the resulting matrix on the host.