# Indexing Mechanism

The Tensor class stores the multi-dimensional array data as a flat array. Let’s develop a robust indexing mechanism.

Note: For now, we are dealing with 2D matrices only.

**Access & Modify:**

aTensor(i, j) -> Access as a 1x1 Tensor AND modify this location in the 'aTensor'

aTensor(i, :) -> Access as a row vector Tensor AND modify this row in the 'aTensor'

aTensor(:, j) -> Access as a column vector Tensor AND modify this column in the 'aTensor'

aTensor(i1:i2, j1:j2) -> Access specific sub matrix AND modify this sub matrix in the 'aTensor'

# Parallel programming

**OpenCL setup using Intel OneAPI toolkit on Windows 11**

<https://community.intel.com/t5/Intel-DevCloud/ocl-icd-opencl-dev-package/td-p/1291224>

“Thank you for reaching out. Please try editing the CMAKE file by adding the path to openCL headers and libraries. OpenCL headers and libraries can be found in this path: /opt/intel/oneapi/compiler/latest/linux/include/sycl/CL.”

[Intel® oneAPI Programming Guide](https://www.intel.com/content/www/us/en/docs/oneapi/programming-guide/2024-1/overview.html)

\* Available platforms and devices on my PC

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\* Platform 0: Intel(R) OpenCL Graphics

Device 0: Intel(R) Iris(R) Xe Graphics

OpenCL Version: OpenCL 3.0 NEO

\* Platform 1: Intel(R) OpenCL

Device 0: 12th Gen Intel(R) Core(TM) i7-12700H

OpenCL Version: OpenCL 3.0 (Build 0)

\* Platform 2: Intel(R) FPGA Emulation Platform for OpenCL(TM)

Device 0: Intel(R) FPGA Emulation Device

OpenCL Version: OpenCL 1.2

\* Platform 3: Intel(R) FPGA SDK for OpenCL(TM)

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