Experiment 6

**Aim: To implement simple programs based on CUDA.**

**Assignment 1: Implement a program in CUDA to print Hello from each block.**

**Steps for environment configuration :**

**Step 1: Go to** [**https://colab.research.google.com**](https://colab.research.google.com) **in Browser and Click on New Notebook.**

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### Step 2: Click on Runtime > Change runtime type > Hardware Accelerator > GPU > Save.

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### Step 3: Check the latest CUDA version using the below command :

!nvcc --version

**(Write the output of this step in lab manual)**

### Step 4: Check if CUDA is available :

import torch

if torch.cuda.is\_available():

    gpu\_info = !nvidia-smi

    gpu\_info = '\n'.join(gpu\_info)

    print("GPU Information:")

    print(gpu\_info)

else:

    print("CUDA is not available. You may need to enable GPU acceleration.")

**(Write the Driver Version, CUDA Version and GPU Name as output in lab manual)**

### Step 5 : Install extension that allows users to run CUDA C/C++ code directly within Jupyter notebooks.

pip install nvcc4jupyter

### Step 6 : Load nvcc4jupyter extension.

%load\_ext nvcc4jupyter

### Step 7 : CUDA code to print Hello from each block

%%cuda

#include <stdio.h>

\_\_global\_\_ void hello(){

printf("Hello from block: %u, thread: %u\n", blockIdx.x, threadIdx.x);

}

int main(){

hello<<<2, 2>>>();

cudaDeviceSynchronize();

}