Assignment 3

The due date for submitting this assignment has passed. **Due on 2020-02-19, 23:59 IST.**
As per our records you have not submitted this assignment.

1)
Let us consider a kernel which processes two one-dimensional input buffers d_A, d_B and produces two one-dimensional output buffers d_C and d_D. The corresponding host arrays are h_A, h_B, h_C and h_D respectively. The size of each such buffer is sz. Consider the following host code snippet for the same depicted as follows.

// Code for initializing host arrays h_A, h_B, h_C, h_D

// Code for copying input buffers
(i) err = cudaMemcpy(__, __, sz, cudaMemcpyHostToDevice);
(ii) err = cudaMemcpy(__, __, sz, cudaMemcpyHostToDevice);

// Code to launch kernel

// Code for copying output_buffers
(iii) err = cudaMemcpy(__, __, sz, cudaMemcpyHostToDevice);
(iv) err = cudaMemcpy(__, __, sz, cudaMemcpyHostToDevice);

Consider only the incomplete four lines of code (i) -- (iv) where each line has two blanks. Which of the following options hold true?

A. (i) d_A, h_A (ii) d_B, h_B (iii) h_C, d_C (iv) h_D, d_D
B. (i) h_A, d_A (ii) h_B, d_B (iii) h_C, d_C (iv) h_D, d_D
C. (i) h_A, d_A (ii) h_B, d_B (iii) d_C, h_C (iv) d_D, h_D
D. (i) d_A, h_A (ii) d_B, h_B (iii) d_C, h_C (iv) d_D, h_D

No, the answer is incorrect.
Score: 0
Accepted Answers:
A.
Consider the following kernel snippet.

```c
__global__ void kernel1(int N, int M, float *A, float *B, float *C)
{
    int i = blockIdx.x * blockDim.x + threadIdx.x;
    if (i < N)
    {
        C[i] = 0;
        int k:
        for(k=0; k < M; k++)
        {
            C[i] += A[i] * B[i]; // compute operation
        }
    }
}
```

Given $M=128$, $N=1024$ and a total of 1024 threads being launched for the kernel, what is the total number of floating point operations (total number of floating point additions and floating point multiplications pertaining to the compute operation)?

A. 1024  
B. 262144  
C. 131072  
D. 65536

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
B.

3)  
10 points
Consider the following kernel snippet (given with line numbers).

1. `__global__ void kernel2(int N, int M, float *A, float *B, float *C)
2. {
3.     int i = blockIdx.x * blockDim.x + threadIdx.x;
4.     if (i < N)
5.         { 
6.             C[i] = sin(A[i]);  // compute operation
7.         }
8.     else if (i >= M && i < N)
9.         { 
10.            C[i] = cos(B[i]);
11.         }
12.     else if (i >= N)
13.         { 
14.             C[i] = sin(A[i]) + cos(B[i]);
15.         }
16. }

The kernel takes two arrays A and B of size 1024 and performs the following operations.

i) For the first 256 elements, $C[i] = \sin(A[i])$
ii) For the next 512 elements $C[i] = \cos(B[i])$
iii) For the last 256 elements, $C[i] = \sin(A[i]) + \cos(B[i])$

The values of $M$ and $N$ passed as arguments are 256 and 768 respectively. The code above has one line which poses a logical error with respect to the specification given above. Which of the following options corresponds to that line number?

A. 4  
B. 6  
C. 8  
D. 12

No, the answer is incorrect.
Score: 0
Accepted Answers:
A.

4)
Which of the following is false?

A. A function declared with the keyword `__device__` is executed on the device.
B. A function declared with the keyword `__global__` is callable from the host.
C. A function declared with the keyword `__host__` is executed on the host.
D. A function declared with the keyword `__device__` is callable from the host.

No, the answer is incorrect.
Score: 0
Accepted Answers: 
D.