

Parallel Processing

Assignment 9

This assignment is individual assignment, every student should submit by himself.

Due: Next Section

1. Suppose we have a program with two parts, serial part represents 30% and parallel part represents the 70%. Write the Amdahl's law then Calculate the speed up of this program if you run it on a GPU with 12 thread.
2. A parallel program transposes 512 bytes in 5.3 ms on a GPU with a memory clock =1000 Mhz where the memory bus bandwidth= 32-bit. Calculate the Peak bandwidth of the GPU then calculate the actual bandwidth for this program considering all the reading and writing operations to transpose the data.
3. Shortly explain the global memory replay overhead.
4. Specify which of the following code snippets is considered coalesced, stride, or random memory access
 - a.

```
for(int i=0; i< 10; i=i+2)
    b[i]=a[i];
```
 - b.

```
for(int i=0; i<10; i++)
    for(int j=0; j<10; j++)
        b[i][j]=5*a[i][j];
```
 - c.

```
for(int i=0; i<10; i++)
    for(int j=0; j<10; j++)
        b[j][i]=a[j][i];
```
 - d.

```
for(int i=0; i<10; i++)
    for(int j=0; j<10; j++)
        b[i][j]= a[j][i];
```