Quiz 4

ECE 277

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Create your own power point file

Print your name, student Id and Site ID

(This is not a computer programming quiz. Use a power point's table to draw figures.

If you cannot use a power point, the hand-drawing is fine but make sure clearly identify all the requirements.

Row-wise read, Column-wise write

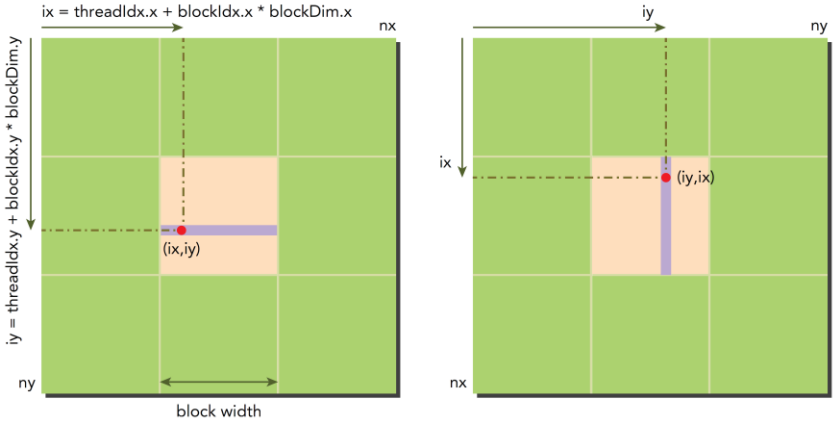
1) Draw a matrix transpose region like the below example by the threads of warp 0 in blockIdx.x=2, blockIdx.y=1, blockIdx.z=0

- Your drawing should clearly indicate how many rows or columns are processed by warp 0 in blockIdx.x=2, blockIdx.y=1, blockIdx.z=0
- Separate drawing for the row-wise read and the column-wise write at next two slides

```
__global__ void transposeNaiveRow(float *out, float *in, const int nx, const int ny) {
  unsigned int ix = blockDim.x * blockIdx.x + threadIdx.x;
  unsigned int iy = blockDim.y * blockIdx.y + threadIdx.y;
  if (ix < nx && iy < ny)
    out[ix * ny + iy] = in[iy * nx + ix];
}

transposeNaiveRow<<<(?, ?, ?),(8,32)>>>
```

example



Row-wise read (2.5 points)

```
__global__ void transposeNaiveRow(float *out, float *in, const int nx, const int ny) {
  unsigned int ix = blockDim.x * blockIdx.x + threadIdx.x;
  unsigned int iy = blockDim.y * blockIdx.y + threadIdx.y;
  if (ix < nx && iy < ny)
    out[ix * ny + iy] = in[iy * nx + ix];
}

transposeNaiveRow<<<(?, ?, ?),(8,32)>>>
```

Draw a figure using a power point table.
(DO NOT combine the row-wise read and the column-wise write drawings)

Column-wise write (2.5 points)

```
__global__ void transposeNaiveRow(float *out, float *in, const int nx, const int ny) {
  unsigned int ix = blockDim.x * blockIdx.x + threadIdx.x;
  unsigned int iy = blockDim.y * blockIdx.y + threadIdx.y;
  if (ix < nx && iy < ny)
    out[ix * ny + iy] = in[iy * nx + ix];
}

transposeNaiveRow<<<(?, ?, ?),(8,32)>>>
```

Draw a figure using a power point table.
(DO NOT combine the row-wise read and the column-wise write drawings)

Row-wise read, Column-wise write (Bonus +1 point)

2) Describe how many transactions per request in a warp for the row-wise read? (+0.5 bonus point)

3) Describe how many transactions per request in a warp for the column-wise write? (+0.5 bonus point)