```
int main(int argc, char** argv)
{
#ifdef NDEBUG
    int M = 8192;
#else
    int M = 1024;
#endif
    int N = M;

    cudaError_t err;
    culaStatus status;

    // point to host memory
    float* A = NULL;
    float* TAU = NULL;

    // point to device memory
    float* Ad = NULL;
    float* TAUd = NULL;

    printf("Allocating Matrices\n");
    A = (float*)malloc(M*N*sizeof(float));
    TAU = (float*)malloc(N*sizeof(float));
    if(!A || !TAU)
        exit(EXIT_FAILURE);

    err = cudaMalloc((void**)&Ad, M*N*sizeof(float));
    checkCudaError(err);

    err = cudaMalloc((void**)&TAUd, N*sizeof(float));
    checkCudaError(err);
```