

## HPC HW3

CIMS Processor details:

```
[ag7890@access2 homework3]$ lscpu
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                4
On-line CPU(s) list:   0-3
Thread(s) per core:    1
Core(s) per socket:    1
Socket(s):              4
NUMA node(s):          1
Vendor ID:              AuthenticAMD
CPU family:             23
Model:                  1
Model name:             AMD EPYC Processor (with IBPB)
Stepping:               2
CPU MHz:                2894.562
BogoMIPS:               5789.12
Hypervisor vendor:     KVM
Virtualization type:    full
L1d cache:              32K
L1i cache:              64K
L2 cache:               512K
L3 cache:               8192K
NUMA node0 CPU(s):     0-3
```

Q2) Improves Intren time

```
Reference time: 16.9196
Taylor time:    2.4060      Error: 6.928125e-12
Intrin time:    0.6732      Error: 6.928125e-12
Vector time:    0.5057      Error: 2.454130e-03
```

Q3)

```
sequential-scan = 0.716877s  
N: 100000000  
Number of threads: 2  
parallel-scan   = 0.219846s  
error = 0
```

```
sequential-scan = 0.765265s  
N: 100000000  
Number of threads: 4  
parallel-scan   = 0.197912s  
error = 0
```

```
N: 100000000  
Number of threads: 6  
parallel-scan   = 0.164683s  
error = 0
```

```
N: 100000000  
Number of threads: 9  
parallel-scan   = 0.154389s  
error = 0
```

```
N: 100000000  
Number of threads: 10  
parallel-scan   = 0.153660s  
error = 0
```

```
N: 100000000  
Number of threads: 20  
parallel-scan   = 0.151522s  
error = 0
```