

Results for different inputs

For compilation: `gcc k_means.c -lm -fopenmp -o main`

For compilation of non-optimized code: `gcc k_means_non_opt.c -lm -fopenmp -o main`

For execution of c code: `./main`

For execution of plot: `python3 plots.py`

- 1000000 samples and 10 cluster.

With neither mapping nor reduction:

```
burak@burak-laptop:~/Documents/ceng444/term_project$ gcc k_means.c -lm -o main -fopenmp
burak@burak-laptop:~/Documents/ceng444/term_project$ ./main
The elapsed time to run is 424.632 seconds
```

With mapping and without reduction:

```
burak@burak-laptop:~/Documents/ceng444/term_project$ gcc k_means.c -lm -o main -fopenmp
k_means.c: In function 'Assigning_points_to_clusters_omp_fn.0.hsa':
cc1: warning: could not emit HSAIL for the function [-Whsa]
cc1: note: support for HSA does not implement GOMP function __builtin_GOMP_loop_nonmonotonic_guided_next
burak@burak-laptop:~/Documents/ceng444/term_project$ ./main
The elapsed time to run is 73.391 seconds
```

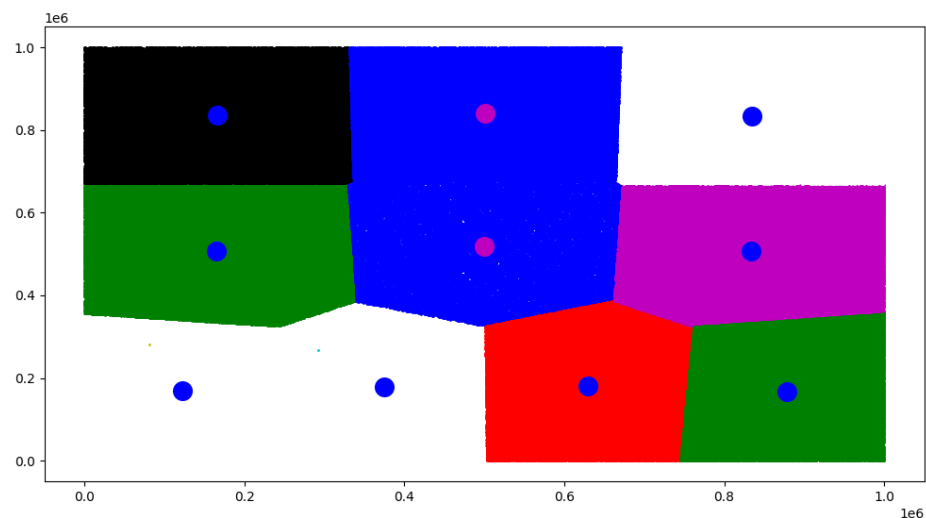
Without mapping and with reduction:

```
burak@burak-laptop:~/Documents/ceng444/term_project$ gcc k_means.c -lm -o main -fopenmp
burak@burak-laptop:~/Documents/ceng444/term_project$ ./main
The elapsed time to run is 391.561 seconds
```

With both mapping and reduction:

```
burak@burak-laptop:~/Documents/ceng444/term_project$ gcc k_means.c -lm -o main -fopenmp
k_means.c: In function 'Assigning_points_to_clusters_omp_fn.0.hsa':
cc1: warning: could not emit HSAIL for the function [-Whsa]
cc1: note: support for HSA does not implement GOMP function __builtin_GOMP_loop_nonmonotonic_guided_next
burak@burak-laptop:~/Documents/ceng444/term_project$ ./main
The elapsed time to run is 66.445 seconds
```

- Output:



For compilation of optimized code: `gcc k_means.c -lm -fopenmp -o main`

For compilation of non-optimized code: `gcc k_means_non_opt.c -lm -fopenmp -o main`

For execution of c code: `./main`

For execution of plot: `python3 plots.py`

- 250000 samples and 5 cluster.

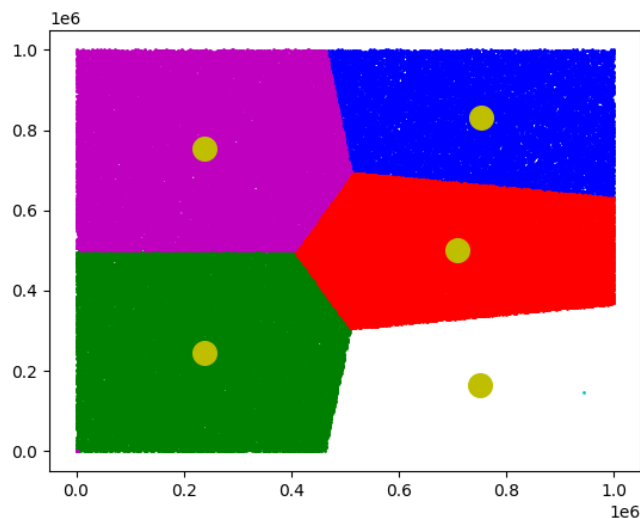
With neither mapping nor reduction:

```
burak@burak-laptop:~/Documents/ceng444/term_project$ gcc k_means_non_opt.c -lm -o main_non -fopenmp
burak@burak-laptop:~/Documents/ceng444/term_project$ ./main_non
The elapsed time to run is 52.188 seconds
```

With both mapping and reduction:

```
burak@burak-laptop:~/Documents/ceng444/term_project$ gcc k_means.c -lm -o main -fopenmp
k_means.c: In function 'Assigning_points_to_clusters_omp_fn.0.hsa':
cc1: warning: could not emit HSAIL for the function [-Whsa]
cc1: note: support for HSA does not implement GOMP function __builtin_GOMP_loop_nonmonotonic_guided_next
burak@burak-laptop:~/Documents/ceng444/term_project$ ./main
The elapsed time to run is 10.974 seconds
```

- Output:



Note: One can try both c and python code after setting the NUM_OF_CLUSTER and NUM_OF_POINTS variables for both codes. (For python, additive uncomments has to be done to obtain correct plot)