

Comprehension Assignment

A few sample outputs

N = 4 C = 4

```
mirage@Mirages-MacBook-Pro Comprehension Assignment % go run map.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition 30000000 : [  0,   17]
Partition 20000000 : [ 11, 272]
Partition 10000000 : [ 11, 540]
Partition 21000000 : [  6, 288]
Partition 31000000 : [  7, 226]
Partition      0 : [ 35, 6514]
Partition 11000000 : [ 31, 14022]
Partition 22000000 : [ 18, 19940]
Partition 32000000 : [ 20, 1192]
Partition 3000000 : [  4, 2015]
Partition 13000000 : [ 19, 15370]
Partition 2000000 : [ 30, 31599]
Partition 33000000 : [ 18, 2187]
Partition 23000000 : [ 23, 16535]
Partition 1000000 : [ 20, 38774]
Partition 12000000 : [ 10, 56611]

Execution time: 10m0.401299291s of 206102 points
Number of CPUs: 10
```

N = 4 C= 10

```
mirage@Mirages-MacBook-Pro Comprehension Assignment % go run mymap.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition 30000000 : [  0,   17]
Partition 31000000 : [  7, 226]
Partition 20000000 : [ 11, 272]
Partition 21000000 : [  6, 288]
Partition 10000000 : [ 11, 540]
Partition 32000000 : [ 20, 1192]
Partition 3000000 : [  4, 2015]
Partition 33000000 : [ 18, 2187]
Partition      0 : [ 35, 6514]
Partition 11000000 : [ 31, 14022]
Partition 13000000 : [ 19, 15370]
Partition 23000000 : [ 23, 16535]
Partition 22000000 : [ 18, 19940]
Partition 2000000 : [ 30, 31599]
Partition 1000000 : [ 20, 38774]
Partition 12000000 : [ 10, 56611]

Execution time: 9m54.748064625s of 206102 points
Number of CPUs: 10
```

N = 4 C = 16

```
mirage@Mirages-MacBook-Pro Comprehension Assignment % go run map.go
```

```
Number of points: 232050
```

```
SW:(40.700000 , -74.000000)
```

```
NE:(40.800000 , -73.930000)
```

```
Partition 30000000 : [ 0, 17]
Partition 31000000 : [ 7, 226]
Partition 21000000 : [ 6, 288]
Partition 20000000 : [ 11, 272]
Partition 10000000 : [ 11, 540]
Partition 32000000 : [ 20, 1192]
Partition 33000000 : [ 18, 2187]
Partition 3000000 : [ 4, 2015]
Partition 0 : [ 35, 6514]
Partition 11000000 : [ 31, 14022]
Partition 13000000 : [ 19, 15370]
Partition 23000000 : [ 23, 16535]
Partition 22000000 : [ 18, 19940]
Partition 20000000 : [ 30, 31599]
Partition 10000000 : [ 20, 38774]
Partition 12000000 : [ 10, 56611]
```

```
Execution time: 9m55.279793916s of 206102 points
```

```
Number of CPUs: 10
```

N = 10 C = 10

```
mirage@Mirages-MacBook-Pro Comprehension Assignment % go run map.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition 90000000 : [ 0, 0]
Partition 80000000 : [ 0, 3]
Partition 20000000 : [ 0, 3]
Partition 60000000 : [ 0, 11]
Partition 30000000 : [ 0, 3]
Partition 70000000 : [ 0, 3]
Partition 41000000 : [ 0, 10]
Partition 50000000 : [ 1, 25]
Partition 71000000 : [ 0, 16]
Partition 81000000 : [ 0, 3]
Partition 91000000 : [ 0, 1]
Partition 0 : [ 1, 31]
Partition 40000000 : [ 0, 5]
Partition 31000000 : [ 3, 80]
Partition 61000000 : [ 4, 88]
Partition 51000000 : [ 6, 110]
Partition 10000000 : [ 5, 118]
Partition 42000000 : [ 0, 14]
Partition 62000000 : [ 2, 65]
Partition 82000000 : [ 0, 5]
Partition 92000000 : [ 0, 2]
Partition 52000000 : [ 1, 36]
Partition 72000000 : [ 1, 41]
Partition 21000000 : [ 6, 165]
Partition 32000000 : [ 7, 477]
Partition 43000000 : [ 0, 11]
Partition 53000000 : [ 0, 14]
Partition 63000000 : [ 1, 67]
Partition 73000000 : [ 1, 18]
Partition 83000000 : [ 0, 8]
Partition 93000000 : [ 0, 13]
Partition 11000000 : [ 10, 876]
Partition 1000000 : [ 13, 985]
Partition 33000000 : [ 16, 1329]
Partition 22000000 : [ 11, 2218]
Partition 44000000 : [ 5, 892]
Partition 54000000 : [ 0, 24]
Partition 64000000 : [ 1, 53]
Partition 74000000 : [ 3, 102]
Partition 84000000 : [ 4, 89]
Partition 94000000 : [ 2, 94]
Partition 12000000 : [ 10, 3558]
Partition 23000000 : [ 8, 4365]
Partition 5000000 : [ 14, 4353]
Partition 2000000 : [ 8, 5101]
Partition 3000000 : [ 11, 5498]
Partition 55000000 : [ 6, 1797]
Partition 65000000 : [ 4, 74]
Partition 75000000 : [ 2, 63]
Partition 85000000 : [ 7, 204]
Partition 95000000 : [ 7, 122]
Partition 6000000 : [ 12, 1312]
Partition 34000000 : [ 7, 6032]
Partition 4000000 : [ 8, 6330]
Partition 16000000 : [ 6, 4340]
Partition 24000000 : [ 5, 8553]
Partition 13000000 : [ 5, 8760]
Partition 14000000 : [ 1, 9790]
Partition 76000000 : [ 4, 95]
Partition 86000000 : [ 1, 20]
Partition 96000000 : [ 4, 77]
Partition 7000000 : [ 0, 18]
Partition 66000000 : [ 5, 4619]
Partition 17000000 : [ 6, 1913]
Partition 37000000 : [ 6, 1772]
Partition 47000000 : [ 3, 1140]
```

```
Partition 22000000 : [ 11, 2218]
Partition 44000000 : [ 5, 892]
Partition 54000000 : [ 0, 24]
Partition 64000000 : [ 1, 53]
Partition 74000000 : [ 3, 102]
Partition 84000000 : [ 4, 89]
Partition 94000000 : [ 2, 94]
Partition 12000000 : [ 10, 3558]
Partition 23000000 : [ 8, 4365]
Partition 5000000 : [ 14, 4353]
Partition 2000000 : [ 8, 5101]
Partition 3000000 : [ 11, 5498]
Partition 55000000 : [ 6, 1797]
Partition 65000000 : [ 4, 74]
Partition 75000000 : [ 2, 63]
Partition 85000000 : [ 7, 204]
Partition 95000000 : [ 7, 122]
Partition 6000000 : [ 12, 1312]
Partition 34000000 : [ 7, 6032]
Partition 40000000 : [ 8, 6330]
Partition 16000000 : [ 6, 4340]
Partition 24000000 : [ 5, 8553]
Partition 13000000 : [ 5, 8760]
Partition 14000000 : [ 1, 9790]
Partition 76000000 : [ 4, 95]
Partition 86000000 : [ 1, 20]
Partition 96000000 : [ 4, 77]
Partition 7000000 : [ 0, 18]
Partition 66000000 : [ 5, 4619]
Partition 17000000 : [ 6, 1913]
Partition 37000000 : [ 6, 1772]
Partition 47000000 : [ 3, 1140]
Partition 45000000 : [ 3, 8902]
Partition 56000000 : [ 5, 6330]
Partition 77000000 : [ 6, 3619]
Partition 87000000 : [ 2, 94]
Partition 97000000 : [ 0, 2]
Partition 8000000 : [ 0, 3]
Partition 18000000 : [ 1, 26]
Partition 15000000 : [ 2, 10764]
Partition 25000000 : [ 1, 10329]
Partition 36000000 : [ 2, 9388]
Partition 27000000 : [ 7, 5791]
Partition 58000000 : [ 3, 1526]
Partition 48000000 : [ 2, 1934]
Partition 88000000 : [ 3, 127]
Partition 98000000 : [ 0, 2]
Partition 9000000 : [ 0, 7]
Partition 19000000 : [ 0, 4]
Partition 29000000 : [ 1, 31]
Partition 78000000 : [ 6, 1840]
Partition 28000000 : [ 4, 3293]
Partition 39000000 : [ 5, 1913]
Partition 59000000 : [ 8, 613]
Partition 79000000 : [ 12, 259]
Partition 89000000 : [ 6, 282]
Partition 99000000 : [ 2, 56]
Partition 69000000 : [ 5, 684]
Partition 49000000 : [ 12, 2481]
Partition 38000000 : [ 2, 4446]
Partition 67000000 : [ 4, 6578]
Partition 68000000 : [ 4, 5688]
Partition 57000000 : [ 2, 7967]
Partition 46000000 : [ 2, 11442]
Partition 26000000 : [ 3, 12393]
Partition 35000000 : [ 1, 15660]
```

Execution time: 1m2.974802417s of 222488 points

Number of CPUs: 10

MacBook Pro, Computation Assignment 8 □

N = 10 C = 50

```

mirage@Mirages-MacBook-Pro Comprehension Assignment % go run map.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition      0 : [  1,   31]
Partition  71000000 : [  0,   16]
Partition  41000000 : [  0,   10]
Partition  60000000 : [  0,   11]
Partition  40000000 : [  0,    5]
Partition  30000000 : [  0,    3]
Partition  20000000 : [  0,    3]
Partition  50000000 : [  1,   25]
Partition  90000000 : [  0,    0]
Partition  70000000 : [  0,    3]
Partition  80000000 : [  0,    3]
Partition  91000000 : [  0,    1]
Partition  81000000 : [  0,    3]
Partition  84000000 : [  4,   89]
Partition  43000000 : [  0,   11]
Partition  31000000 : [  3,   80]
Partition  51000000 : [  6,  110]
Partition  10000000 : [  5,  118]
Partition  54000000 : [  0,   24]
Partition  61000000 : [  4,   88]
Partition  74000000 : [  3,  102]
Partition  73000000 : [  1,   18]
Partition  53000000 : [  0,   14]
Partition  64000000 : [  1,   53]
Partition  72000000 : [  1,   41]
Partition  63000000 : [  1,   67]
Partition  83000000 : [  0,    8]
Partition  94000000 : [  2,   94]
Partition  52000000 : [  1,   36]
Partition  87000000 : [  2,   94]
Partition  97000000 : [  0,    2]
Partition  8000000 : [  0,    3]
Partition  76000000 : [  4,   95]
Partition  18000000 : [  1,   26]
Partition  86000000 : [  1,   20]
Partition  96000000 : [  4,   77]
Partition  7000000 : [  0,   18]
Partition  62000000 : [  2,   65]
Partition  75000000 : [  2,   63]
Partition  88000000 : [  3,  127]
Partition  98000000 : [  0,    2]
Partition  90000000 : [  0,    7]
Partition  19000000 : [  0,    4]
Partition  29000000 : [  1,   31]
Partition  85000000 : [  7,  204]
Partition  92000000 : [  0,    2]
Partition  93000000 : [  0,   13]
Partition  21000000 : [  6,  165]
Partition  79000000 : [ 12,  259]
Partition  42000000 : [  0,   14]
Partition  99000000 : [  2,   56]
Partition  65000000 : [  4,   74]
Partition  95000000 : [  7,  122]
Partition  82000000 : [  0,    5]
Partition  59000000 : [  8,  613]
Partition  32000000 : [  7,  477]
Partition  89000000 : [  6,  282]
Partition  11000000 : [ 10,  876]
Partition  69000000 : [  5,  684]
Partition  1000000 : [ 13,  985]
Partition  6000000 : [ 12, 1312]

```

Partition	6000000	:	[12,	1312]
Partition	47000000	:	[3,	1140]
Partition	44000000	:	[5,	892]
Partition	33000000	:	[16,	1329]
Partition	78000000	:	[6,	1840]
Partition	17000000	:	[6,	1913]
Partition	58000000	:	[3,	1526]
Partition	39000000	:	[5,	1913]
Partition	55000000	:	[6,	1797]
Partition	37000000	:	[6,	1772]
Partition	22000000	:	[11,	2218]
Partition	49000000	:	[12,	2481]
Partition	48000000	:	[2,	1934]
Partition	28000000	:	[4,	3293]
Partition	12000000	:	[10,	3558]
Partition	77000000	:	[6,	3619]
Partition	16000000	:	[6,	4340]
Partition	5000000	:	[14,	4353]
Partition	23000000	:	[8,	4365]
Partition	38000000	:	[2,	4446]
Partition	66000000	:	[5,	4619]
Partition	2000000	:	[8,	5101]
Partition	3000000	:	[11,	5498]
Partition	68000000	:	[4,	5688]
Partition	27000000	:	[7,	5791]
Partition	34000000	:	[7,	6032]
Partition	56000000	:	[5,	6330]
Partition	4000000	:	[8,	6330]
Partition	67000000	:	[4,	6578]
Partition	57000000	:	[2,	7967]
Partition	24000000	:	[5,	8553]
Partition	13000000	:	[5,	8760]
Partition	45000000	:	[3,	8902]
Partition	36000000	:	[2,	9388]
Partition	14000000	:	[1,	9790]
Partition	25000000	:	[1,	10329]
Partition	15000000	:	[2,	10764]
Partition	46000000	:	[2,	11442]
Partition	26000000	:	[3,	12393]
Partition	35000000	:	[1,	15660]

Execution time: 1m7.246756584s of 222488 points

Number of CPUs: 10

N = 20 C = 10

```
Number of cross: 10
mirage@Mirages-MacBook-Pro:~/Comprehension Assignment% go run map.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition      0 : [  0,   1]
Partition 100000000 : [  0,   0]
Partition 110000000 : [  0,   2]
Partition 120000000 : [  0,   2]
Partition 130000000 : [  0,   1]
Partition 140000000 : [  0,   1]
Partition 150000000 : [  0,   1]
Partition 160000000 : [  0,   1]
Partition 170000000 : [  0,   0]
Partition 180000000 : [  0,   0]
Partition 190000000 : [  0,   0]
Partition 50000000 : [  0,   1]
Partition 1000000 : [  0,  12]
Partition 1100000 : [  1,  14]
Partition 3100000 : [  0,   0]
Partition 4100000 : [  0,   1]
Partition 5100000 : [  0,   0]
Partition 6100000 : [  0,   0]
Partition 7100000 : [  0,   3]
Partition 8100000 : [  0,   3]
Partition 9100000 : [  0,   5]
Partition 10100000 : [  1,   8]
Partition 11100000 : [  0,  15]
Partition 12100000 : [  0,   6]
Partition 13100000 : [  0,   3]
Partition 14100000 : [  0,   1]
Partition 15100000 : [  0,   0]
Partition 16100000 : [  0,   1]
Partition 17100000 : [  0,   1]
Partition 18100000 : [  0,   0]
Partition 19100000 : [  0,   0]
Partition 80000000 : [  0,   0]
Partition 21000000 : [  0,   6]
Partition 70000000 : [  0,   3]
Partition 40000000 : [  0,   3]
Partition 32000000 : [  1,  13]
Partition 42000000 : [  2,  22]
Partition 62000000 : [  1,  11]
Partition 72000000 : [  0,   3]
Partition 82000000 : [  0,   1]
Partition 92000000 : [  0,   5]
Partition 52000000 : [  1,  33]
Partition 102000000 : [  1,  24]
Partition 122000000 : [  1,  16]
Partition 132000000 : [  1,  16]
Partition 142000000 : [  0,  12]
Partition 152000000 : [  0,   2]
Partition 162000000 : [  0,   2]
Partition 172000000 : [  0,   2]
Partition 182000000 : [  0,   0]
Partition 192000000 : [  0,   0]
Partition 120000000 : [  3,  58]
Partition 60000000 : [  0,   0]
Partition 90000000 : [  0,   0]
Partition 112000000 : [  4,  47]
Partition 10000000 : [  0,   9]
Partition 20000000 : [  2,  50]
Partition 53000000 : [  2,  39]
Partition 42000000 : [  5, 102]
```

Partition	172000000	: [0,	2]
Partition	182000000	: [0,	0]
Partition	192000000	: [0,	0]
Partition	12000000	: [3,	58]
Partition	60000000	: [0,	0]
Partition	90000000	: [0,	0]
Partition	112000000	: [4,	47]
Partition	10000000	: [0,	9]
Partition	20000000	: [2,	50]
Partition	53000000	: [2,	39]
Partition	43000000	: [5,	102]
Partition	83000000	: [0,	2]
Partition	93000000	: [0,	2]
Partition	103000000	: [0,	2]
Partition	63000000	: [2,	61]
Partition	73000000	: [0,	11]
Partition	133000000	: [0,	0]
Partition	143000000	: [0,	2]
Partition	153000000	: [0,	1]
Partition	163000000	: [0,	0]
Partition	173000000	: [0,	0]
Partition	183000000	: [0,	1]
Partition	193000000	: [0,	0]
Partition	113000000	: [1,	43]
Partition	22000000	: [4,	143]
Partition	123000000	: [2,	57]
Partition	30000000	: [5,	84]
Partition	2000000	: [3,	129]
Partition	13000000	: [9,	353]
Partition	64000000	: [4,	148]
Partition	74000000	: [0,	8]
Partition	84000000	: [0,	5]
Partition	94000000	: [0,	4]
Partition	104000000	: [0,	4]
Partition	114000000	: [1,	30]
Partition	124000000	: [1,	33]
Partition	134000000	: [1,	20]
Partition	144000000	: [0,	10]
Partition	154000000	: [0,	2]
Partition	164000000	: [0,	3]
Partition	174000000	: [0,	1]
Partition	184000000	: [0,	2]
Partition	194000000	: [0,	0]
Partition	54000000	: [6,	346]
Partition	23000000	: [3,	388]
Partition	33000000	: [5,	417]
Partition	3000000	: [4,	542]
Partition	24000000	: [7,	649]
Partition	44000000	: [3,	639]
Partition	65000000	: [3,	335]
Partition	75000000	: [2,	27]
Partition	85000000	: [0,	8]
Partition	95000000	: [0,	1]
Partition	105000000	: [0,	1]
Partition	115000000	: [1,	30]
Partition	125000000	: [1,	31]
Partition	135000000	: [0,	12]
Partition	145000000	: [1,	29]
Partition	155000000	: [0,	2]
Partition	165000000	: [0,	1]
Partition	175000000	: [0,	0]
Partition	185000000	: [0,	0]
Partition	195000000	: [0,	0]
Partition	55000000	: [5,	495]

```
Partition 135000000 : [ 3, 2314]
Partition 126000000 : [ 1, 1474]
Partition 117000000 : [ 0, 7]
Partition 127000000 : [ 1, 75]
Partition 87000000 : [ 3, 1084]
Partition 107000000 : [ 1, 564]
Partition 157000000 : [ 2, 377]
Partition 167000000 : [ 2, 156]
Partition 177000000 : [ 2, 88]
Partition 187000000 : [ 1, 14]
Partition 197000000 : [ 0, 0]
Partition 207000000 : [ 0, 0]
Partition 18000000 : [ 0, 3]
Partition 28000000 : [ 0, 3]
Partition 38000000 : [ 0, 1]
Partition 48000000 : [ 0, 1]
Partition 58000000 : [ 0, 1]
Partition 68000000 : [ 1, 30]
Partition 97000000 : [ 2, 1070]
Partition 146000000 : [ 2, 1632]
Partition 78000000 : [ 3, 381]
Partition 98000000 : [ 3, 865]
Partition 108000000 : [ 5, 777]
Partition 128000000 : [ 1, 20]
Partition 138000000 : [ 1, 47]
Partition 118000000 : [ 3, 268]
Partition 158000000 : [ 5, 103]
Partition 137000000 : [ 2, 1036]
Partition 168000000 : [ 5, 103]
Partition 188000000 : [ 1, 66]
Partition 198000000 : [ 0, 4]
Partition 208000000 : [ 0, 1]
Partition 190000000 : [ 0, 0]
Partition 290000000 : [ 0, 1]
Partition 390000000 : [ 0, 0]
Partition 490000000 : [ 0, 2]
Partition 590000000 : [ 0, 0]
Partition 690000000 : [ 0, 1]
Partition 790000000 : [ 1, 31]
Partition 178000000 : [ 2, 131]
Partition 890000000 : [ 1, 274]
Partition 109000000 : [ 6, 232]
Partition 119000000 : [ 4, 212]
Partition 129000000 : [ 3, 186]
Partition 139000000 : [ 1, 19]
Partition 149000000 : [ 2, 34]
Partition 159000000 : [ 4, 71]
Partition 169000000 : [ 1, 43]
Partition 179000000 : [ 2, 59]
Partition 189000000 : [ 2, 75]
Partition 199000000 : [ 2, 50]
Partition 209000000 : [ 0, 5]
Partition 148000000 : [ 3, 630]
Partition 147000000 : [ 2, 1343]
Partition 99000000 : [ 4, 973]
Partition 88000000 : [ 4, 1473]
Partition 82000000 : [ 1, 5407]
Partition 77000000 : [ 1, 1828]
Partition 66000000 : [ 1, 2477]
Partition 136000000 : [ 3, 2699]
Partition 92000000 : [ 1, 5836]
```

Execution time: 20.116215166s of 255300 points

Number of CPUs: 10

MacBook-Pro-Comprehension Assignment 2 □

N = 20 C = 50

```
mirage@Mirages-MacBook-Pro Comprehension Assignment % go run map.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition      0 : [  0,    1]
Partition 140000000 : [  0,    1]
Partition 102000000 : [  1,   24]
Partition 120000000 : [  0,    2]
Partition 130000000 : [  0,    1]
Partition 21000000 : [  0,    6]
Partition 150000000 : [  0,    1]
Partition 160000000 : [  0,    1]
Partition 70000000 : [  0,    3]
Partition 40000000 : [  0,    3]
Partition 31000000 : [  0,    0]
Partition 121000000 : [  0,    6]
Partition 170000000 : [  0,    0]
Partition 151000000 : [  0,    0]
Partition 71000000 : [  0,    3]
Partition 41000000 : [  0,    1]
Partition 111000000 : [  0,   15]
Partition 60000000 : [  0,    0]
Partition 51000000 : [  0,    0]
Partition 190000000 : [  0,    0]
Partition 180000000 : [  0,    0]
Partition 50000000 : [  0,    1]
Partition 10000000 : [  0,   12]
Partition 53000000 : [  2,   39]
Partition 133000000 : [  0,    0]
Partition 143000000 : [  0,    2]
Partition 153000000 : [  0,    1]
Partition 163000000 : [  0,    0]
Partition 173000000 : [  0,    0]
Partition 183000000 : [  0,    1]
Partition 193000000 : [  0,    0]
Partition 92000000 : [  0,    5]
Partition 81000000 : [  0,    3]
Partition 100000000 : [  0,    0]
Partition 91000000 : [  0,    5]
Partition 80000000 : [  0,    0]
Partition 90000000 : [  0,    0]
Partition 72000000 : [  0,    3]
Partition 101000000 : [  1,    8]
Partition 62000000 : [  1,   11]
Partition 32000000 : [  1,   13]
Partition 10000000 : [  0,    9]
Partition 172000000 : [  0,    2]
Partition 42000000 : [  2,   22]
Partition 83000000 : [  0,    2]
Partition 61000000 : [  0,    0]
Partition 110000000 : [  0,    2]
Partition 103000000 : [  0,    2]
Partition 93000000 : [  0,    2]
Partition 142000000 : [  0,   12]
Partition 112000000 : [  4,   47]
Partition 122000000 : [  1,   16]
Partition 152000000 : [  0,    2]
Partition 162000000 : [  0,    2]
Partition 132000000 : [  1,   16]
Partition 82000000 : [  0,    1]
Partition 141000000 : [  0,    1]
Partition 161000000 : [  0,    1]
Partition 11000000 : [  1,   14]
Partition 85000000 : [  0,    8]
Partition 95000000 : [  0,    1]
Partition 105000000 : [  0,    1]
Partition 181000000 : [  0,    0]
Partition 191000000 : [  0,    0]
```

Partition	131000000	:	[0,	3]
Partition	182000000	:	[0,	0]
Partition	115000000	:	[1,	30]
Partition	165000000	:	[0,	1]
Partition	175000000	:	[0,	0]
Partition	185000000	:	[0,	0]
Partition	195000000	:	[0,	0]
Partition	192000000	:	[0,	0]
Partition	113000000	:	[1,	43]
Partition	123000000	:	[2,	57]
Partition	171000000	:	[0,	1]
Partition	194000000	:	[0,	0]
Partition	63000000	:	[2,	61]
Partition	30000000	:	[5,	84]
Partition	75000000	:	[2,	27]
Partition	86000000	:	[0,	1]
Partition	96000000	:	[0,	1]
Partition	106000000	:	[0,	3]
Partition	116000000	:	[0,	5]
Partition	126000000	:	[0,	6]
Partition	52000000	:	[1,	33]
Partition	146000000	:	[0,	2]
Partition	156000000	:	[0,	2]
Partition	166000000	:	[0,	3]
Partition	176000000	:	[0,	1]
Partition	186000000	:	[0,	1]
Partition	196000000	:	[0,	1]
Partition	136000000	:	[1,	60]
Partition	76000000	:	[3,	136]
Partition	12000000	:	[3,	58]
Partition	73000000	:	[0,	11]
Partition	84000000	:	[0,	5]
Partition	94000000	:	[0,	4]
Partition	104000000	:	[0,	4]
Partition	114000000	:	[1,	30]
Partition	124000000	:	[1,	33]
Partition	134000000	:	[1,	20]
Partition	107000000	:	[0,	4]
Partition	117000000	:	[0,	3]
Partition	127000000	:	[0,	3]
Partition	137000000	:	[0,	3]
Partition	147000000	:	[1,	14]
Partition	157000000	:	[0,	1]
Partition	167000000	:	[0,	2]
Partition	177000000	:	[0,	4]
Partition	187000000	:	[0,	5]
Partition	197000000	:	[0,	7]
Partition	154000000	:	[0,	2]
Partition	164000000	:	[0,	3]
Partition	174000000	:	[0,	1]
Partition	184000000	:	[0,	2]
Partition	87000000	:	[0,	8]
Partition	13000000	:	[9,	353]
Partition	97000000	:	[0,	3]
Partition	155000000	:	[0,	2]
Partition	145000000	:	[1,	29]
Partition	98000000	:	[0,	3]
Partition	108000000	:	[0,	6]
Partition	118000000	:	[0,	7]
Partition	128000000	:	[0,	8]
Partition	138000000	:	[1,	32]
Partition	148000000	:	[1,	41]
Partition	158000000	:	[1,	13]
Partition	168000000	:	[0,	2]
Partition	178000000	:	[1,	13]
Partition	188000000	:	[0,	33]
Partition	198000000	:	[2,	39]
Partition	66000000	:	[4,	189]
Partition	43000000	:	[5,	102]
Partition	54000000	:	[6,	346]

```
Partition 54000000 : [ 6, 346]
Partition 74000000 : [ 0, 8]
Partition 135000000 : [ 0, 12]
Partition 88000000 : [ 2, 24]
Partition 77000000 : [ 6, 121]
Partition 20000000 : [ 2, 50]
Partition 144000000 : [ 0, 10]
Partition 99000000 : [ 1, 36]
Partition 109000000 : [ 0, 5]
Partition 119000000 : [ 0, 7]
Partition 129000000 : [ 0, 7]
Partition 139000000 : [ 0, 13]
Partition 149000000 : [ 1, 41]
Partition 159000000 : [ 1, 50]
Partition 169000000 : [ 3, 56]
Partition 179000000 : [ 1, 26]
Partition 189000000 : [ 0, 37]
Partition 199000000 : [ 1, 32]
Partition 55000000 : [ 5, 495]
Partition 125000000 : [ 1, 31]
Partition 22000000 : [ 4, 143]
Partition 64000000 : [ 4, 148]
Partition 2000000 : [ 3, 129]
Partition 23000000 : [ 3, 388]
Partition 33000000 : [ 5, 417]
Partition 65000000 : [ 3, 335]
Partition 3000000 : [ 4, 542]
Partition 24000000 : [ 7, 649]
Partition 110000000 : [ 2, 119]
Partition 120000000 : [ 1, 17]
Partition 130000000 : [ 0, 9]
Partition 140000000 : [ 1, 12]
Partition 150000000 : [ 1, 20]
Partition 160000000 : [ 1, 37]
Partition 10000000 : [ 7, 763]
Partition 180000000 : [ 3, 77]
Partition 190000000 : [ 2, 45]
Partition 200000000 : [ 1, 22]
Partition 11000000 : [ 5, 308]
Partition 170000000 : [ 3, 89]
Partition 44000000 : [ 3, 639]
Partition 89000000 : [ 4, 860]
Partition 35000000 : [ 3, 958]
Partition 45000000 : [ 3, 959]
Partition 9000000 : [ 4, 856]
Partition 21000000 : [ 3, 700]
Partition 67000000 : [ 6, 961]
Partition 25000000 : [ 6, 1405]
Partition 100000000 : [ 2, 956]
Partition 6000000 : [ 5, 1269]
Partition 131000000 : [ 3, 50]
Partition 141000000 : [ 0, 4]
Partition 151000000 : [ 0, 2]
Partition 161000000 : [ 0, 7]
Partition 171000000 : [ 0, 9]
Partition 181000000 : [ 2, 57]
Partition 191000000 : [ 2, 44]
Partition 201000000 : [ 2, 27]
Partition 12000000 : [ 5, 401]
Partition 121000000 : [ 6, 426]
Partition 14000000 : [ 7, 1139]
Partition 34000000 : [ 1, 945]
Partition 56000000 : [ 6, 1104]
Partition 68000000 : [ 4, 1461]
Partition 22000000 : [ 6, 741]
Partition 57000000 : [ 3, 1229]
Partition 78000000 : [ 4, 1346]
Partition 46000000 : [ 2, 1160]
Partition 16000000 : [ 3, 1308]
Partition 5000000 : [ 2, 1327]
Partition 32000000 : [ 4, 928]
Partition 7000000 : [ 9, 1532]
```

```
Partition 29000000 : [ 0, 1]
Partition 39000000 : [ 0, 0]
Partition 49000000 : [ 0, 2]
Partition 59000000 : [ 0, 0]
Partition 69000000 : [ 0, 1]
Partition 79000000 : [ 1, 31]
Partition 178000000 : [ 2, 131]
Partition 107000000 : [ 1, 564]
Partition 109000000 : [ 6, 232]
Partition 119000000 : [ 4, 212]
Partition 76000000 : [ 2, 1194]
Partition 139000000 : [ 1, 19]
Partition 149000000 : [ 2, 34]
Partition 159000000 : [ 4, 71]
Partition 169000000 : [ 1, 43]
Partition 179000000 : [ 2, 59]
Partition 189000000 : [ 2, 75]
Partition 129000000 : [ 3, 186]
Partition 209000000 : [ 0, 5]
Partition 199000000 : [ 2, 50]
Partition 48000000 : [ 2, 2899]
Partition 89000000 : [ 1, 274]
Partition 145000000 : [ 3, 1652]
Partition 108000000 : [ 5, 777]
Partition 98000000 : [ 3, 865]
Partition 115000000 : [ 2, 1721]
Partition 148000000 : [ 3, 630]
Partition 61000000 : [ 1, 2838]
Partition 20000000 : [ 5, 2919]
Partition 87000000 : [ 3, 1084]
Partition 99000000 : [ 4, 973]
Partition 103000000 : [ 2, 2203]
Partition 18000000 : [ 2, 2913]
Partition 137000000 : [ 2, 1036]
Partition 97000000 : [ 2, 1070]
Partition 133000000 : [ 3, 2198]
Partition 88000000 : [ 4, 1473]
Partition 65000000 : [ 2, 2169]
Partition 146000000 : [ 2, 1632]
Partition 126000000 : [ 1, 1474]
Partition 147000000 : [ 2, 1343]
Partition 27000000 : [ 2, 3126]
Partition 64000000 : [ 4, 2537]
Partition 114000000 : [ 2, 2573]
Partition 41000000 : [ 3, 2977]
Partition 77000000 : [ 1, 1828]
Partition 60000000 : [ 1, 3222]
Partition 125000000 : [ 1, 2363]
Partition 124000000 : [ 3, 2689]
Partition 135000000 : [ 3, 2314]
Partition 53000000 : [ 2, 2981]
Partition 29000000 : [ 1, 3335]
Partition 66000000 : [ 1, 2477]
Partition 71000000 : [ 1, 3614]
Partition 136000000 : [ 3, 2699]
Partition 52000000 : [ 1, 3714]
Partition 51000000 : [ 1, 3914]
Partition 72000000 : [ 1, 3765]
Partition 63000000 : [ 2, 3664]
Partition 102000000 : [ 3, 3825]
Partition 91000000 : [ 1, 4083]
Partition 80000000 : [ 1, 4252]
Partition 30000000 : [ 1, 4119]
Partition 62000000 : [ 1, 4512]
Partition 81000000 : [ 1, 4727]
Partition 70000000 : [ 1, 5278]
Partition 82000000 : [ 1, 5407]
Partition 92000000 : [ 1, 5836]
```

Execution time: 20.991037458s of 255300 points

Number of CPUs: 10

mirage@Mirage-MacBook-Pro:~/Comprehension_Assignment % █

N = 20 C = 200

```
mirage@Mirages-MacBook-Pro Comprehension Assignment % go run map.go
Number of points: 232050
SW:(40.700000 , -74.000000)
NE:(40.800000 , -73.930000)

Partition      0 : [ 0,    1]
Partition 10000000 : [ 0,    9]
Partition 90000000 : [ 0,    0]
Partition 60000000 : [ 0,    0]
Partition 50000000 : [ 0,    1]
Partition 70000000 : [ 0,    3]
Partition 100000000 : [ 0,    0]
Partition 127000000 : [ 0,    3]
Partition 130000000 : [ 0,    1]
Partition 120000000 : [ 0,    2]
Partition 96000000 : [ 0,    1]
Partition 85000000 : [ 0,    8]
Partition 95000000 : [ 0,    1]
Partition 105000000 : [ 0,    1]
Partition 75000000 : [ 2,   27]
Partition 106000000 : [ 0,    3]
Partition 116000000 : [ 0,    5]
Partition 126000000 : [ 0,    6]
Partition 80000000 : [ 0,    0]
Partition 110000000 : [ 0,    2]
Partition 200000000 : [ 2,   50]
Partition 40000000 : [ 0,    3]
Partition 155000000 : [ 0,    2]
Partition 115000000 : [ 1,   30]
Partition 165000000 : [ 0,    1]
Partition 175000000 : [ 0,    0]
Partition 86000000 : [ 0,    1]
Partition 135000000 : [ 0,   12]
Partition 157000000 : [ 0,    1]
Partition 30000000 : [ 5,   84]
Partition 194000000 : [ 0,    0]
Partition 136000000 : [ 1,   60]
Partition 164000000 : [ 0,    3]
Partition 141000000 : [ 0,    1]
Partition 195000000 : [ 0,    0]
Partition 171000000 : [ 0,    1]
Partition 161000000 : [ 0,    7]
Partition 161000000 : [ 0,    1]
Partition 151000000 : [ 0,    2]
Partition 181000000 : [ 0,    0]
Partition 191000000 : [ 0,    0]
Partition 2000000 : [ 3, 129]
Partition 12000000 : [ 3,   58]
Partition 141000000 : [ 0,    4]
Partition 162000000 : [ 0,    2]
Partition 167000000 : [ 0,    2]
Partition 168000000 : [ 0,    2]
Partition 182000000 : [ 0,    0]
Partition 192000000 : [ 0,    0]
Partition 151000000 : [ 0,    0]
Partition 174000000 : [ 0,    1]
Partition 82000000 : [ 0,    1]
Partition 176000000 : [ 0,    1]
Partition 186000000 : [ 0,    1]
Partition 196000000 : [ 0,    1]
Partition 200000000 : [ 1,   22]
Partition 162000000 : [ 1,   10]
Partition 172000000 : [ 0,    4]
Partition 182000000 : [ 1,   10]
Partition 192000000 : [ 1,   20]
Partition 202000000 : [ 1,   32]
Partition 13000000 : [ 1,   34]
Partition 180000000 : [ 0,    0]
Partition 190000000 : [ 0,    0]
```

```
Partition 115000000 : [ 2, 1721]
Partition 58000000 : [ 5, 1762]
Partition 36000000 : [ 4, 1587]
Partition 47000000 : [ 3, 1632]
Partition 144000000 : [ 2, 1603]
Partition 146000000 : [ 2, 1632]
Partition 145000000 : [ 3, 1652]
Partition 78000000 : [ 4, 1346]
Partition 54000000 : [ 3, 1532]
Partition 112000000 : [ 2, 1778]
Partition 50000000 : [ 1, 1834]
Partition 134000000 : [ 4, 1832]
Partition 126000000 : [ 1, 1474]
Partition 42000000 : [ 2, 1804]
Partition 19000000 : [ 5, 2006]
Partition 113000000 : [ 3, 2054]
Partition 77000000 : [ 1, 1828]
Partition 15000000 : [ 2, 1746]
Partition 79000000 : [ 6, 1890]
Partition 123000000 : [ 3, 1902]
Partition 143000000 : [ 2, 1875]
Partition 4000000 : [ 3, 1966]
Partition 65000000 : [ 2, 2169]
Partition 133000000 : [ 3, 2198]
Partition 103000000 : [ 2, 2203]
Partition 31000000 : [ 2, 2114]
Partition 17000000 : [ 3, 2089]
Partition 64000000 : [ 4, 2537]
Partition 39000000 : [ 2, 2040]
Partition 101000000 : [ 3, 2493]
Partition 125000000 : [ 1, 2363]
Partition 69000000 : [ 2, 2349]
Partition 49000000 : [ 1, 2509]
Partition 135000000 : [ 3, 2314]
Partition 40000000 : [ 1, 2647]
Partition 66000000 : [ 1, 2477]
Partition 59000000 : [ 1, 2664]
Partition 114000000 : [ 2, 2573]
Partition 124000000 : [ 3, 2689]
Partition 37000000 : [ 2, 2672]
Partition 38000000 : [ 1, 2584]
Partition 48000000 : [ 2, 2899]
Partition 26000000 : [ 2, 2697]
Partition 90000000 : [ 1, 2672]
Partition 61000000 : [ 1, 2838]
Partition 136000000 : [ 3, 2699]
Partition 28000000 : [ 1, 2747]
Partition 20000000 : [ 5, 2919]
Partition 41000000 : [ 3, 2977]
Partition 27000000 : [ 2, 3126]
Partition 18000000 : [ 2, 2913]
Partition 60000000 : [ 1, 3222]
Partition 53000000 : [ 2, 2981]
Partition 29000000 : [ 1, 3335]
Partition 71000000 : [ 1, 3614]
Partition 63000000 : [ 2, 3664]
Partition 52000000 : [ 1, 3714]
Partition 72000000 : [ 1, 3765]
Partition 51000000 : [ 1, 3914]
Partition 102000000 : [ 3, 3825]
Partition 91000000 : [ 1, 4083]
Partition 80000000 : [ 1, 4252]
Partition 30000000 : [ 1, 4119]
Partition 62000000 : [ 1, 4512]
Partition 81000000 : [ 1, 4727]
Partition 70000000 : [ 1, 5278]
Partition 82000000 : [ 1, 5407]
Partition 92000000 : [ 1, 5836]
```

Execution time: 20.928175667s of 255300 points
Number of CPUs: 10