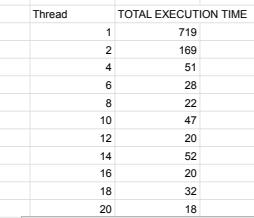
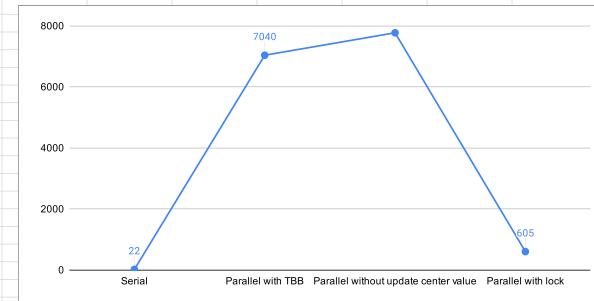


serial method	parallel	prints info without update the center value	add the lock				
Break in iteration 2	reak in iteration 1	Break in iteration 1	Break in iteration 1				
Cluster 1	Cluster 1	Cluster 1	Cluster 1				
Point 1: 1 1	Point 7: 3.5 4.5	Point 5: 3.5 5	Point 7: 3.5 4.5				
Point 2: 1.5 2	Cluster values: 3.5 4.5	Cluster values: 3.5 5	Point 3: 3 4				
Cluster values: 1.25 1.5			Point 4: 5 7				
TOTAL EXECUTION TIME = 22	TOTAL EXECUTION TIME = 7040	TOTAL EXECUTION TIME = 7775	Point 5: 3.5 5				
TIME PHASE 1 = 4	TIME PHASE 1 = 4	TIME PHASE 1 = 4	Point 6: 4.5 5				
TIME PHASE 2 = 17	TIME PHASE 2 = 7036	TIME PHASE 2 = 7770	Cluster 2				
Cluster 2	Cluster 2	Cluster values: 3.83333 5	Point 1: 1 1				
Point 6: 4.5 5	Point 4: 5 7	Point 2: 1.5 2	Point 1: 1 1				
Point 7: 3.5 4.5	Cluster values: 4.5 5	Cluster values: 5 7	Point 2: 1.5 2				
Point 3: 3 4			Point 1: 1 1				
Point 4: 5 7	TOTAL EXECUTION TIME = 7040	TOTAL EXECUTION TIME = 7775	Point 2: 1.5 2				
Point 5: 3.5 5	TIME PHASE 1 = 4	TIME PHASE 1 = 4	Point 1: 1 1				
Point 6: 4.5 5	TIME PHASE 2 = 7036	TIME PHASE 2 = 7770	Point 2: 1.5 2				
Cluster values: 3.9 5.1			Point 1: 1 1				
TOTAL EXECUTION TIME = 22			Point 2: 1.5 2				
TIME PHASE 1 = 4			Point 1: 1 1				
TIME PHASE 2 = 17			Point 2: 1.5 2				
			Running with 1 threads:	Thread	TOTAL EXECUTION TIME		
			Break in iteration 1		1 719		
			Cluster 1		2 169		
			Point 2: 1.5 2		4 51		
			Point 1: 1 1		6 28		
			Point 2: 1.5 2		8 22		
			Cluster values: 1.33333 1.66667		10 47		
					12 20		
					14 52		
					16 20		
					18 32		
					20 18		
			TOTAL EXECUTION TIME = 719				
			TIME PHASE 1 = 4				
			TIME PHASE 2 = 714				
			Cluster 2				
			Point 7: 3.5 4.5				
			Point 3: 3 4				
			Point 4: 5 7				
			Point 5: 3.5 5				
			Point 6: 4.5 5				
			Point 7: 3.5 4.5				
			Cluster values: 3.83333 5				
			TOTAL EXECUTION TIME = 719				
			TIME PHASE 1 = 4				
			TIME PHASE 2 = 714				
			Running with 2 threads:				
			Break in iteration 1				
			Cluster 1				
			Point 1: 1 1				
			Point 1: 1 1				
			Cluster values: 1 1				
			TOTAL EXECUTION TIME = 149				
			TIME PHASE 1 = 4				
			TIME PHASE 2 = 145				
			Cluster 2				
			Point 2: 1.5 2				
			Point 2: 1.5 2				
			Point 3: 3 4				
			Point 4: 5 7				
			Point 5: 3.5 5				
			Point 6: 4.5 5				
			Point 7: 3.5 4.5				
			Cluster values: 3.21429 4.21429				
			TOTAL EXECUTION TIME = 149				
			TIME PHASE 1 = 4				
			TIME PHASE 2 = 145				
			#ERROR!				



```
Running with 4 threads:  
Break in iteration 1  
  
Cluster 1  
Point 5: 3.5 5  
Point 3: 3 4  
Point 4: 5 7  
Point 5: 3.5 5  
Point 7: 3.5 4.5  
Point 6: 4.5 5  
Cluster values: 3.83333 5.08333
```

```
TOTAL EXECUTION TIME = 51  
TIME PHASE 1 = 19  
TIME PHASE 2 = 31  
Cluster 2  
Point 1: 1 1  
Point 1: 1 1  
Point 2: 1.5 2  
Cluster values: 1.16667 1.33333
```

TOTAL EXECUTION TIME = 51
TIME PHASE 1 = 19
TIME PHASE 2 = 31
#ERROR!

Running with 6 threads:
Break in iteration 1

Cluster 1
Point 4: 5 7
Point 4: 5 7
Cluster values: 5 7

```
TOTAL EXECUTION TIME = 28  
TIME PHASE 1 = 4  
TIME PHASE 2 = 23  
Cluster 2  
Point 6: 4.5 5  
Point 1: 1 1  
Point 2: 1.5 2  
Point 3: 3 4  
Point 6: 4.5 5  
Point 5: 3.5 5  
Point 7: 3.5 4.5  
Cluster values: 3.07143 3.78571
```

TOTAL EXECUTION TIME = 28
TIME PHASE 1 = 4
TIME PHASE 2 = 23
#ERROR!

Running with 8 threads:
Break in iteration 1

Cluster 1
Point 1: 1 1
Point 1: 1 1
Point 2: 1.5 2
Point 3: 3 4
Cluster values: 1.625 2

TOTAL EXECUTION TIME = 22
TIME PHASE 1 = 4
TIME PHASE 2 = 17
Cluster 2
Point 4: 5 7
Point 4: 5 7
Point 5: 3.5 5
Point 6: 4.5 5
Point 7: 3.5 4.5
Cluster values: 4.3 5.7

TOTAL EXECUTION TIME = 22

	TIME PHASE 1 = 4 TIME PHASE 2 = 17 #ERROR!
	Running with 10 threads: Break in iteration 1
	Cluster 1 Point 6: 4.5 5 Point 4: 5 7 Point 6: 4.5 5 Cluster values: 4.66667 5.66667
	TOTAL EXECUTION TIME = 47 TIME PHASE 1 = 4 TIME PHASE 2 = 43 Cluster 2 Point 5: 3.5 5 Point 1: 1 1 Point 5: 3.5 5 Point 3: 3 4 Point 2: 1.5 2 Point 7: 3.5 4.5 Cluster values: 2.66667 3.58333
	TOTAL EXECUTION TIME = 47 TIME PHASE 1 = 4 TIME PHASE 2 = 43 #ERROR!
	Running with 12 threads: Break in iteration 1
	Cluster 1 Point 2: 1.5 2 Point 1: 1 1 Point 2: 1.5 2 Cluster values: 1.33333 1.66667
	TOTAL EXECUTION TIME = 20 TIME PHASE 1 = 3 TIME PHASE 2 = 17 Cluster 2 Point 5: 3.5 5 Point 3: 3 4 Point 4: 5 7 Point 5: 3.5 5 Point 6: 4.5 5 Point 7: 3.5 4.5 Cluster values: 3.83333 5.08333
	TOTAL EXECUTION TIME = 20 TIME PHASE 1 = 3 TIME PHASE 2 = 17 #ERROR!
	Running with 14 threads: Break in iteration 1
	Cluster 1 Point 5: 3.5 5 Point 5: 3.5 5 Point 4: 5 7 Point 7: 3.5 4.5 Point 6: 4.5 5 Cluster values: 4 5.3
	TOTAL EXECUTION TIME = 52 TIME PHASE 1 = 4 TIME PHASE 2 = 47 Cluster 2 Point 3: 3 4 Point 1: 1 1 Point 2: 1.5 2 Point 3: 3 4

	Cluster values: 2.125 2.75
	TOTAL EXECUTION TIME = 52 TIME PHASE 1 = 4 TIME PHASE 2 = 47 #ERROR!
	Running with 16 threads: Break in iteration 1
	Cluster 1 Point 7: 3.5 4.5 Point 1: 1 1 Point 2: 1.5 2 Point 3: 3 4 Point 7: 3.5 4.5 Cluster values: 2.5 3.2
	TOTAL EXECUTION TIME = 20 TIME PHASE 1 = 5 TIME PHASE 2 = 14 Cluster 2 Point 5: 3.5 5 Point 4: 5 7 Point 5: 3.5 5 Point 6: 4.5 5 Cluster values: 4.125 5.5
	TOTAL EXECUTION TIME = 20 TIME PHASE 1 = 5 TIME PHASE 2 = 14 #ERROR!
	Running with 18 threads: Break in iteration 1
	Cluster 1 Point 7: 3.5 4.5 Point 1: 1 1 Point 2: 1.5 2 Point 3: 3 4 Point 5: 3.5 5 Point 7: 3.5 4.5 Cluster values: 2.66667 3.5
	TOTAL EXECUTION TIME = 32 TIME PHASE 1 = 4 TIME PHASE 2 = 28 Cluster 2 Point 6: 4.5 5 Point 4: 5 7 Point 6: 4.5 5 Cluster values: 4.66667 5.66667
	TOTAL EXECUTION TIME = 32 TIME PHASE 1 = 4 TIME PHASE 2 = 28 #ERROR!
	Running with 20 threads: Break in iteration 1
	Cluster 1 Point 4: 5 7 Point 4: 5 7 Cluster values: 5 7
	TOTAL EXECUTION TIME = 18 TIME PHASE 1 = 3 TIME PHASE 2 = 15 Cluster 2 Point 7: 3.5 4.5 Point 1: 1 1 Point 2: 1.5 2 Point 3: 3 4

Point 5: 3.5 5
Point 6: 4.5 5
Point 7: 3.5 4.5
Cluster values: 2.92857 3.71429

TOTAL EXECUTION TIME = 18
TIME PHASE 1 = 3
TIME PHASE 2 = 15
#ERROR!