

Laboratory 3 – PDP

Test 1 – Multiplying the matrix one element at a time

A Thread for Each Task		A Thread Pool	
Matrix Size	Time for Running	Matrix Size	Time for Running
4 by 4	0.0 sec	4 by 4	0.0 sec
9 by 9	0.0 sec	9 by 9	0.0 sec
10 by 10	0.032 sec	10 by 10	0.032 sec
100 by 100	0.096 sec	100 by 100	19.52 sec
1000 by 1000	2.944 sec	1000 by 1000	Not patient enough

Test 2 – Multiplying the matrix row by row with a number of tasks (task1)

A Thread for Each Task			A Thread Pool		
Matrix Size	Tasks no.	Time	Matrix Size	Tasks no.	Time
4 by 4	4	0.0 sec	4 by 4	4	0.0 sec
9 by 9	4	0.0 sec	9 by 9	4	0.032 sec
10 by 10	5	0.0 sec	10 by 10	5	0.032 sec
100 by 100	10	0.0 sec	100 by 100	10	error
100 by 100	20	0.0 sec	100 by 100	20	error

Test 3 – Multiplying the matrix column by column with a number of tasks (task2)

A Thread for Each Task			A Thread Pool		
Matrix Size	Tasks no.	Time	Matrix Size	Tasks no.	Time
4 by 4	4	0.0 sec	4 by 4	4	0.0 sec
9 by 9	4	0.0 sec	9 by 9	4	0.032 sec
10 by 10	5	0.0 sec	10 by 10	5	0.032 sec
100 by 100	10	0.0 sec	100 by 100	10	
100 by 100	20	0.0 sec	100 by 100	20	

A Thread for Each Task			A Thread Pool		
Matrix Size	Tasks no.	Time	Matrix Size	Tasks no.	Time
4 by 4	4	0.0 sec	4 by 4	4	0.0 sec
9 by 9	4	0.0 sec	9 by 9	4	0.0 sec
10 by 10	5	0.0 sec	10 by 10	5	0.032 sec
100 by 100	10	0.32 sec	100 by 100	10	Error
100 by 100	20	0.32 sec	100 by 100	20	error

Test 3 - Multiplying the matrix column by column with a number of tasks (task2)

A Thread for Each Task			A Thread Pool		
Matrix Size	Tasks no.	Time	Matrix Size	Tasks no.	Time
4 by 4	4	0.0 sec	4 by 4	4	0.0 sec
9 by 9	4	0.0 sec	9 by 9	4	0.0 sec
10 by 10	5	0.0 sec	10 by 10	5	0.0 sec
100 by 100	10	0.0 sec	100 by 100	10	0.032 sec
100 by 100	20	0.032 sec	100 by 100	20	0.032 sec

```
* | a00 a01 a02 a03 a04 a05 a06 a07 a08 |
* | a10 a11 a12 a13 a14 a15 a16 a17 a18 |
* | a20 a21 a22 a23 a24 a25 a26 a27 a28 |
* | a30 a31 a32 a33 a34 a35 a36 a37 a38 |
* | a40 a41 a42 a43 a44 a45 a46 a47 a48 |
* | a50 a51 a52 a53 a54 a55 a56 a57 a58 |
* | a60 a61 a62 a63 a64 a65 a66 a67 a68 |
* | a70 a71 a72 a73 a74 a75 a76 a77 a78 |
* | a80 a81 a82 a83 a84 a85 a86 a87 a88 |
```

```
task0 -> 20 elements
task1 -> 20 elements
task2 -> 20 elements
task3 -> 21 elements (the rest)
```

9x9 matrix → 81 elements → $81/4 = 20 + \text{the rest}$

```
* | a00 a01 a02 a03 a04 a05 a06 a07 a08 |
* | a10 a11 a12 a13 a14 a15 a16 a17 a18 |
* | a20 a21 a22 a23 a24 a25 a26 a27 a28 |
* | a30 a31 a32 a33 a34 a35 a36 a37 a38 |
* | a40 a41 a42 a43 a44 a45 a46 a47 a48 |
* | a50 a51 a52 a53 a54 a55 a56 a57 a58 |
* | a60 a61 a62 a63 a64 a65 a66 a67 a68 |
* | a70 a71 a72 a73 a74 a75 a76 a77 a78 |
* | a80 a81 a82 a83 a84 a85 a86 a87 a88 |
```

```
task0 -> 20 elements
task1 -> 20 elements
task2 -> 20 elements
task3 -> 21 elements (the rest)
```

```
* | a00 a01 a02 a03 a04 a05 a06 a07 a08 |
* | a10 a11 a12 a13 a14 a15 a16 a17 a18 |
* | a20 a21 a22 a23 a24 a25 a26 a27 a28 |
* | a30 a31 a32 a33 a34 a35 a36 a37 a38 |
* | a40 a41 a42 a43 a44 a45 a46 a47 a48 |
* | a50 a51 a52 a53 a54 a55 a56 a57 a58 |
* | a60 a61 a62 a63 a64 a65 a66 a67 a68 |
* | a70 a71 a72 a73 a74 a75 a76 a77 a78 |
* | a80 a81 a82 a83 a84 a85 a86 a87 a88 |
```

```
task0 -> 21 elements
```

task1 -> 20 elements
task2 -> 20 elements
task3 -> 20 elements

a00 a01 a02 a03
a10 a11 a12 a13
a20 a21 a22 a23
a30 a31 a32 a33

b00 b01 **b02** b03 **b04**
b10 b11 **b12** b13 **b14**
b20 b21 **b22** b23 **b24**
b30 b31 **b32** b33 **b34**

c00 c01 c02 c03 c04
c10 c11 **c12** c13 c14
c20 c21 c22 c23 **c24**
c30 c31 c32 c33 c34