

## CENG536 ADVANCED UNIX

### Programming Assignment 2

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#### Part-1)

You can compile the project with following commands in linux environment:

Inside the Part1 folder run commands:

**mkdir build**

**cd build**

**cmake ..**

**cd ..**

**make -C build/**

**./part1 <number of threads> <number of shift operation>**

Here are the outputs of our program:

```
(base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part1$ ./part1 1 1
matrix length is 4
1 number of threads will be created
1 shift operation will be performed
before shift operation, matrix is
7 6 5 3
8 2 4 5
7 3 1 9
2 1 0 8
after shift operation, matrix is
5 8 2 4
9 7 3 1
8 2 1 0
3 7 6 5
number of threads: 1, Execution time: 0.000087 seconds
(base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part1$
```

```
(base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part1$ ./part1 2 1
matrix length is 4
2 number of threads will be created
1 shift operation will be performed
before shift operation, matrix is
7 6 5 3
8 2 4 5
7 3 1 9
2 1 0 8
after shift operation, matrix is
5 8 2 4
9 7 3 1
8 2 1 0
3 7 6 5
number of threads: 2, Execution time: 0.000277 seconds
(base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part1$
```

```
(base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part1$ ./part1 3 1
matrix length is 4
3 number of threads will be created
1 shift operation will be performed
before shift operation, matrix is
7 6 5 3
8 2 4 5
7 3 1 9
2 1 0 8
after shift operation, matrix is
5 8 2 4
9 7 3 1
8 2 1 0
3 7 6 5
number of threads: 3, Execution time: 0.000322 seconds
(base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part1$
```

Part-2)

You can compile the project with following commands in linux environment:

Inside the Part2 folder run commands:

**mkdir build**

**cd build**

**cmake ..**

**cd ..**

**make -C build/**

**./part2**

Here is the outputs of our program:

```
• (base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part2$ ./part2
number_of_row is 7
number_of_column is 4
Result Matrix:
18 18 16 16
46 18 18 11
8 4 2 10
40 17 14 14
16 9 9 10
2 5 11 10
12 14 16 14
Multi thread Execution Time: 0.000442 sec.
Result Matrix:
18 18 16 16
46 18 18 11
8 4 2 10
40 17 14 14
16 9 9 10
2 5 11 10
12 14 16 14
Single thread Execution Time: 0.000076 sec.
○ (base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW_2/Part2$
```

Part-3)

You can compile the project with following commands in linux environment:

Inside the Part3 folder run commands:

**mkdir build**

**cd build**

**cmake ..**

**cd ..**

**make -C build/**

**./part3**

Here is the outputs of our program:

```
• (base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW 2/Part3$ ./part3
number_of_row1 is 3
number_of_column1 is 4
number_of_row2 is 4
number_of_column2 is 2
Result Matrix:
50 60
114 140
178 220
Multi thread Execution Time: 0.000247 sec.
Result Matrix:
50 60
114 140
178 220
Single thread Execution Time: 0.000058 sec.
○ (base) erhancengiz@ErhanCengiz-DESKTOP:/mnt/c/Users/erhan/Desktop/CENG536_AdvancedUnix/CENG536_HW 2/Part3$
```