# Activity 1. [Map Colouring]:

|  |  |
| --- | --- |
| ***n*** | ***t Colouring (ms)*** |
| 8 |  |
| 16 |  |
| 32 |  |
| … |  |
| 4096 |  |
| 8192 |  |
| 16384 |  |
| 32768 |  |
| 65536 |  |

# Activity 2. [Loop5.java, Loop6.java, Loop7.java times in milliseconds and WITHOUT OPTIMIZATION

**N Loop5 Loop6 Loop7**

100 5 73 526 200 27 602 8088 400 131 5078 OoT 800 607 43995 OoT 1600 2803 OoT OoT 3200 12953 OoT OoT 6400 58494 OoT OoT

# Activity 3. [TABLE3 (times in milliseconds and WITHOUT OPTIMIZATION)]

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## N time\_loop1 (s) time\_loop2 (s) T1/T2 Ratio

100 0.01 0.1 0.10

200 0.01 0.6 0.0167

400 0.02 2.9 0.0069

800 0.05 12.4 0.0040

1600 0.1 47.8 0.0021

3200 0.22 217.9 0.0010 6400 0.44 865.4 0.0005

12800 1.00 3918.6 0.00026

25600 2.03 1757 0.00116

51200 4.36 7000.8 0.00062

As the ratio goes to 0, T1 is better than T2

# Activity 4. [TABLE4 (times in milliseconds and WITHOUT OPTIMIZATION)]

## N time\_loop3 (s) time\_loop2 (s) T3/T2 Ratio

100 1.0 0.1 10.000

200 4.0 0.6 6.667

400 15.0 2.9 5.172

800 62.0 12.4 5.000

1600 260.0 47.8 5.439

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3200 1081.0 217.9 4.961

6400 4488.0 865.4 5.186

12800 19123.0 3918.6 4.880

25600 Oot 1757.0 Oot

51200 Oot 7000.8 Oot

As ratio keeps constant (5) T3 has the same complexity than T2, although T3 is 5 times worse

# Activity 5. ([Same algorithm in different development environments])

**JAVA T42/T41 T43/T42**

## N Python(T41) JAVA NO OPT(T42 ) OPT(T43)

100 27 2 4 0.148 0.5

200 130 3 15 0.115 0.2

400 578 6 106 0.18 0.05

800 6009 4 708 0.117 0.005

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1600 36091 30 5444 0.15 0.005

3200 Oot 184 42798 0.004

6400 Oot 1180 Oot

12800 Oot 8062 Oot

25600 Oot 61144 Oot

Taking the ratios into account, T42 is better than T41 and T43 is better than T42