**Assignment 7 (Problem 2.1)**

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**Output 1:**

Input Number of Tasks = 5

Input factorial (n) = 5

Input Thread Pool Size = 20

**Execution 1:**

Input Number of Tasks = 5

Input factorial (n) = 5

Input Thread Pool Size = 20

Starting task Task 4 at 15: 17: 53: 667

Starting task Task 0 at 15: 17: 53: 667

Starting task Task 1 at 15: 17: 53: 667

Starting task Task 2 at 15: 17: 53: 667

Ending task Task 1 at 15: 17: 53: 667 after 0 milliseconds

Starting task Task 3 at 15: 17: 53: 667

Ending task Task 2 at 15: 17: 53: 667 after 0 milliseconds

Ending task Task 0 at 15: 17: 53: 667 after 0 milliseconds

Ending task Task 4 at 15: 17: 53: 667 after 0 milliseconds

Ending task Task 3 at 15: 17: 53: 667 after 0 milliseconds

**Execution 2:**

Input Number of Tasks = 5

Input factorial (n) = 5

Input Thread Pool Size = 20

Starting task Task 4 at 15: 19: 09: 112

Starting task Task 1 at 15: 19: 09: 112

Ending task Task 4 at 15: 19: 09: 112 after 0 milliseconds

Starting task Task 3 at 15: 19: 09: 112

Starting task Task 0 at 15: 19: 09: 112

Starting task Task 2 at 15: 19: 09: 112

Ending task Task 0 at 15: 19: 09: 126 after 14 milliseconds

Ending task Task 3 at 15: 19: 09: 126 after 14 milliseconds

Ending task Task 1 at 15: 19: 09: 112 after 0 milliseconds

Ending task Task 2 at 15: 19: 09: 126 after 14 milliseconds

**Execution 3:**

Input Number of Tasks = 5

Input factorial (n) = 5

Input Thread Pool Size = 20

Starting task Task 2 at 15: 19: 52: 718

Starting task Task 1 at 15: 19: 52: 718

Starting task Task 3 at 15: 19: 52: 718

Starting task Task 4 at 15: 19: 52: 718

Ending task Task 3 at 15: 19: 52: 718 after 0 milliseconds

Starting task Task 0 at 15: 19: 52: 718

Ending task Task 4 at 15: 19: 52: 718 after 0 milliseconds

Ending task Task 1 at 15: 19: 52: 718 after 0 milliseconds

Ending task Task 2 at 15: 19: 52: 718 after 0 milliseconds

Ending task Task 0 at 15: 19: 52: 730 after 12 milliseconds

**Output 2:**

Input Number of Tasks = 15

Input factorial (n) = 8

Input Thread Pool Size = 9

**Execution 1:**

Input Number of Tasks = 15

Input factorial (n) = 8

Input Thread Pool Size = 9

Starting task Task 7 at 12: 46: 32: 856

Starting task Task 1 at 12: 46: 32: 856

Ending task Task 1 at 12: 46: 32: 856 after 0 milliseconds

Starting task Task 4 at 12: 46: 32: 856

Starting task Task 2 at 12: 46: 32: 856

Starting task Task 0 at 12: 46: 32: 856

Starting task Task 6 at 12: 46: 32: 856

Starting task Task 5 at 12: 46: 32: 856

Starting task Task 8 at 12: 46: 32: 856

Ending task Task 5 at 12: 46: 32: 860 after 4 milliseconds

Ending task Task 6 at 12: 46: 32: 860 after 4 milliseconds

Ending task Task 0 at 12: 46: 32: 860 after 4 milliseconds

Ending task Task 2 at 12: 46: 32: 860 after 4 milliseconds

Starting task Task 11 at 12: 46: 32: 860

Starting task Task 12 at 12: 46: 32: 860

Starting task Task 9 at 12: 46: 32: 860

Starting task Task 13 at 12: 46: 32: 860

Ending task Task 9 at 12: 46: 32: 860 after 0 milliseconds

Ending task Task 4 at 12: 46: 32: 856 after 0 milliseconds

Starting task Task 3 at 12: 46: 32: 856

Ending task Task 7 at 12: 46: 32: 856 after 0 milliseconds

Starting task Task 14 at 12: 46: 32: 861

Ending task Task 3 at 12: 46: 32: 861 after 5 milliseconds

Ending task Task 13 at 12: 46: 32: 861 after 1 milliseconds

Ending task Task 12 at 12: 46: 32: 860 after 0 milliseconds

Starting task Task 10 at 12: 46: 32: 860

Ending task Task 11 at 12: 46: 32: 860 after 0 milliseconds

Ending task Task 8 at 12: 46: 32: 860 after 4 milliseconds

Ending task Task 10 at 12: 46: 32: 861 after 1 milliseconds

Ending task Task 14 at 12: 46: 32: 861 after 0 milliseconds

**Execution 2:**

Input Number of Tasks = 15

Input factorial (n) = 8

Input Thread Pool Size = 9

Starting task Task 3 at 12: 47: 14: 315

Starting task Task 5 at 12: 47: 14: 315

Starting task Task 6 at 12: 47: 14: 315

Starting task Task 0 at 12: 47: 14: 327

Ending task Task 6 at 12: 47: 14: 327 after 12 milliseconds

Starting task Task 8 at 12: 47: 14: 315

Ending task Task 0 at 12: 47: 14: 327 after 0 milliseconds

Ending task Task 8 at 12: 47: 14: 327 after 12 milliseconds

Starting task Task 4 at 12: 47: 14: 315

Starting task Task 9 at 12: 47: 14: 327

Starting task Task 7 at 12: 47: 14: 315

Ending task Task 9 at 12: 47: 14: 327 after 0 milliseconds

Ending task Task 7 at 12: 47: 14: 327 after 12 milliseconds

Starting task Task 2 at 12: 47: 14: 315

Ending task Task 5 at 12: 47: 14: 327 after 12 milliseconds

Ending task Task 3 at 12: 47: 14: 315 after 0 milliseconds

Starting task Task 13 at 12: 47: 14: 327

Ending task Task 2 at 12: 47: 14: 327 after 12 milliseconds

Starting task Task 14 at 12: 47: 14: 327

Starting task Task 12 at 12: 47: 14: 327

Starting task Task 11 at 12: 47: 14: 327

Ending task Task 4 at 12: 47: 14: 327 after 12 milliseconds

Ending task Task 11 at 12: 47: 14: 328 after 1 milliseconds

Starting task Task 10 at 12: 47: 14: 327

Starting task Task 1 at 12: 47: 14: 327

Ending task Task 10 at 12: 47: 14: 328 after 1 milliseconds

Ending task Task 12 at 12: 47: 14: 328 after 1 milliseconds

Ending task Task 14 at 12: 47: 14: 328 after 1 milliseconds

Ending task Task 13 at 12: 47: 14: 327 after 0 milliseconds

Ending task Task 1 at 12: 47: 14: 328 after 1 milliseconds

**Execution 3:**

Input Number of Tasks = 15

Input factorial (n) = 8

Input Thread Pool Size = 9

Starting task Task 4 at 12: 47: 35: 015

Ending task Task 4 at 12: 47: 35: 015 after 0 milliseconds

Starting task Task 5 at 12: 47: 35: 015

Ending task Task 5 at 12: 47: 35: 026 after 11 milliseconds

Starting task Task 1 at 12: 47: 35: 015

Starting task Task 10 at 12: 47: 35: 026

Starting task Task 7 at 12: 47: 35: 015

Starting task Task 6 at 12: 47: 35: 015

Ending task Task 7 at 12: 47: 35: 026 after 11 milliseconds

Starting task Task 8 at 12: 47: 35: 026

Ending task Task 8 at 12: 47: 35: 026 after 0 milliseconds

Starting task Task 9 at 12: 47: 35: 026

Starting task Task 11 at 12: 47: 35: 026

Ending task Task 9 at 12: 47: 35: 026 after 0 milliseconds

Starting task Task 12 at 12: 47: 35: 026

Starting task Task 3 at 12: 47: 35: 026

Ending task Task 12 at 12: 47: 35: 026 after 0 milliseconds

Starting task Task 0 at 12: 47: 35: 026

Ending task Task 6 at 12: 47: 35: 026 after 11 milliseconds

Ending task Task 0 at 12: 47: 35: 026 after 0 milliseconds

Starting task Task 2 at 12: 47: 35: 026

Ending task Task 10 at 12: 47: 35: 026 after 0 milliseconds

Ending task Task 2 at 12: 47: 35: 027 after 1 milliseconds

Ending task Task 1 at 12: 47: 35: 026 after 11 milliseconds

Starting task Task 14 at 12: 47: 35: 026

Ending task Task 3 at 12: 47: 35: 026 after 0 milliseconds

Starting task Task 13 at 12: 47: 35: 026

Ending task Task 11 at 12: 47: 35: 026 after 0 milliseconds

Ending task Task 13 at 12: 47: 35: 027 after 1 milliseconds

Ending task Task 14 at 12: 47: 35: 027 after 1 milliseconds

**Output 3:**

Input Number of Tasks = 20

Input factorial (n) = 8

Input Thread Pool Size = 15

**Execution 1:**

Input Number of Tasks = 20

Input factorial (n) = 8

Input Thread Pool Size = 15

Starting task Task 5 at 15: 26: 29: 492

Ending task Task 5 at 15: 26: 29: 492 after 0 milliseconds

Starting task Task 0 at 15: 26: 29: 492

Starting task Task 15 at 15: 26: 29: 501

Starting task Task 6 at 15: 26: 29: 492

Ending task Task 15 at 15: 26: 29: 501 after 0 milliseconds

Ending task Task 6 at 15: 26: 29: 501 after 9 milliseconds

Starting task Task 9 at 15: 26: 29: 501

Ending task Task 9 at 15: 26: 29: 501 after 0 milliseconds

Starting task Task 17 at 15: 26: 29: 501

Starting task Task 1 at 15: 26: 29: 492

Ending task Task 1 at 15: 26: 29: 501 after 9 milliseconds

Starting task Task 13 at 15: 26: 29: 492

Starting task Task 8 at 15: 26: 29: 492

Ending task Task 13 at 15: 26: 29: 501 after 9 milliseconds

Starting task Task 11 at 15: 26: 29: 492

Ending task Task 8 at 15: 26: 29: 501 after 9 milliseconds

Starting task Task 4 at 15: 26: 29: 492

Starting task Task 19 at 15: 26: 29: 501

Starting task Task 3 at 15: 26: 29: 501

Starting task Task 18 at 15: 26: 29: 501

Ending task Task 17 at 15: 26: 29: 501 after 0 milliseconds

Ending task Task 18 at 15: 26: 29: 502 after 1 milliseconds

Starting task Task 12 at 15: 26: 29: 492

Starting task Task 16 at 15: 26: 29: 501

Starting task Task 7 at 15: 26: 29: 492

Starting task Task 2 at 15: 26: 29: 492

Ending task Task 0 at 15: 26: 29: 501 after 9 milliseconds

Starting task Task 14 at 15: 26: 29: 492

Starting task Task 10 at 15: 26: 29: 492

Ending task Task 14 at 15: 26: 29: 502 after 10 milliseconds

Ending task Task 2 at 15: 26: 29: 502 after 10 milliseconds

Ending task Task 7 at 15: 26: 29: 502 after 10 milliseconds

Ending task Task 16 at 15: 26: 29: 502 after 1 milliseconds

Ending task Task 12 at 15: 26: 29: 502 after 10 milliseconds

Ending task Task 3 at 15: 26: 29: 502 after 1 milliseconds

Ending task Task 19 at 15: 26: 29: 502 after 1 milliseconds

Ending task Task 4 at 15: 26: 29: 502 after 10 milliseconds

Ending task Task 11 at 15: 26: 29: 501 after 9 milliseconds

Ending task Task 10 at 15: 26: 29: 502 after 10 milliseconds

**Execution 2:**

Input Number of Tasks = 20

Input factorial (n) = 8

Input Thread Pool Size = 15

Starting task Task 8 at 15: 27: 53: 245

Starting task Task 9 at 15: 27: 53: 245

Starting task Task 6 at 15: 27: 53: 245

Ending task Task 9 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 13 at 15: 27: 53: 245

Ending task Task 13 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 15 at 15: 27: 53: 245

Starting task Task 16 at 15: 27: 53: 245

Starting task Task 11 at 15: 27: 53: 245

Ending task Task 11 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 1 at 15: 27: 53: 245

Starting task Task 7 at 15: 27: 53: 245

Starting task Task 3 at 15: 27: 53: 245

Ending task Task 7 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 3 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 5 at 15: 27: 53: 245

Starting task Task 19 at 15: 27: 53: 245

Starting task Task 4 at 15: 27: 53: 245

Ending task Task 19 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 4 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 1 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 12 at 15: 27: 53: 245

Starting task Task 17 at 15: 27: 53: 245

Starting task Task 2 at 15: 27: 53: 245

Starting task Task 0 at 15: 27: 53: 245

Ending task Task 2 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 16 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 10 at 15: 27: 53: 245

Ending task Task 15 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 10 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 6 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 14 at 15: 27: 53: 245

Ending task Task 8 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 14 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 0 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 17 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 12 at 15: 27: 53: 245 after 0 milliseconds

Ending task Task 5 at 15: 27: 53: 245 after 0 milliseconds

Starting task Task 18 at 15: 27: 53: 245

Ending task Task 18 at 15: 27: 53: 245 after 0 milliseconds

**Execution 3:**

Input Number of Tasks = 20

Input factorial (n) = 8

Input Thread Pool Size = 15

Starting task Task 0 at 15: 28: 57: 595

Starting task Task 8 at 15: 28: 57: 595

Starting task Task 9 at 15: 28: 57: 595

Starting task Task 12 at 15: 28: 57: 595

Starting task Task 3 at 15: 28: 57: 595

Starting task Task 13 at 15: 28: 57: 595

Ending task Task 3 at 15: 28: 57: 605 after 10 milliseconds

Ending task Task 13 at 15: 28: 57: 605 after 10 milliseconds

Starting task Task 1 at 15: 28: 57: 605

Ending task Task 1 at 15: 28: 57: 605 after 0 milliseconds

Starting task Task 15 at 15: 28: 57: 605

Starting task Task 10 at 15: 28: 57: 595

Ending task Task 15 at 15: 28: 57: 605 after 0 milliseconds

Ending task Task 10 at 15: 28: 57: 605 after 10 milliseconds

Starting task Task 14 at 15: 28: 57: 595

Ending task Task 14 at 15: 28: 57: 605 after 10 milliseconds

Starting task Task 6 at 15: 28: 57: 595

Starting task Task 4 at 15: 28: 57: 595

Ending task Task 6 at 15: 28: 57: 605 after 10 milliseconds

Starting task Task 5 at 15: 28: 57: 595

Starting task Task 7 at 15: 28: 57: 605

Starting task Task 2 at 15: 28: 57: 595

Starting task Task 19 at 15: 28: 57: 605

Starting task Task 18 at 15: 28: 57: 605

Starting task Task 17 at 15: 28: 57: 605

Starting task Task 16 at 15: 28: 57: 605

Ending task Task 12 at 15: 28: 57: 605 after 10 milliseconds

Ending task Task 9 at 15: 28: 57: 605 after 10 milliseconds

Ending task Task 8 at 15: 28: 57: 595 after 0 milliseconds

Starting task Task 11 at 15: 28: 57: 595

Ending task Task 0 at 15: 28: 57: 595 after 0 milliseconds

Ending task Task 11 at 15: 28: 57: 606 after 11 milliseconds

Ending task Task 16 at 15: 28: 57: 606 after 1 milliseconds

Ending task Task 17 at 15: 28: 57: 606 after 1 milliseconds

Ending task Task 18 at 15: 28: 57: 606 after 1 milliseconds

Ending task Task 19 at 15: 28: 57: 606 after 1 milliseconds

Ending task Task 2 at 15: 28: 57: 606 after 11 milliseconds

Ending task Task 7 at 15: 28: 57: 606 after 1 milliseconds

Ending task Task 5 at 15: 28: 57: 606 after 11 milliseconds

Ending task Task 4 at 15: 28: 57: 606 after 11 milliseconds