Tutorial for Banker’s Algorithm

1. Find the need matrix

2. Find if it is in safe condition.

3. If safe, list the safe sequence.

A grid of numbers and letters

Description automatically generated

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Need matrix for: | A | B | C | D |
| P0 | 0 | 1 | 0 | 0 |
| P1 | 0 | 2 | 1 | 1 |
| P2 | 1 | 0 | 0 | 1 |
| P3 | 0 | 0 | 2 | 0 |
| P4 | 0 | 6 | 4 | 2 |

**Calculation:**

P0, new avail (1,3,1,0) + (0, 1, 1, 0) => 1 4 2 0

P3, new avail (1 4 2 0) + (0, 6, 3, 2) => 1 10 5 2

P4, new avail (1 10 5 2) + (0,0,1,4) => 1 10 6 6

P1, new avail (1 10 6 6) + (1,4,4,1) => 2 14 10 7

P2, new avail (2 14 10 7) + (1,3,6,5) => 3 17 16 12

**All processes can be accommodated, processes are in safe mode**

**Safe sequence: P0, P3, P4, P1, P2**

A table with numbers and letters

Description automatically generated

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Need matrix for: | A | B | C | D |
| P0 | 0 | 0 | 0 | 0 |
| P1 | 0 | 7 | 5 | 0 |
| P2 | 1 | 0 | 0 | 2 |
| P3 | 0 | 0 | 2 | 0 |
| P4 | 0 | 6 | 4 | 2 |

**Calculation:**

P0, new avail (1 5 2 0) + (0 0 1 2) => (1 5 3 2)

P2, new avail (1 5 3 2) + (1 3 5 4) => (2 8 8 6)

P3, new avail (2 8 8 6) + (0 6 3 2) => (2 14 11 8)

P4, new avail (2 14 11 8) + (0 0 1 4) => (2 14 12 12)

P1, new avail (2 14 12 12) + (1 0 0 0) => (3 14 12 12)

**All processes accommodated, processes are in safe mode**

**Safe sequence: P0, P2, P3, P4, P1**

A table with numbers and letters

Description automatically generated

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Need matrix for: | A | B | C | D |
| P0 | 1 | 1 | 0 | 0 |
| P1 | 0 | 1 | 1 | 2 |
| P2 | 3 | 1 | 0 | 0 |
| P3 | 0 | 0 | 0 | 0 |
| P4 | 2 | 1 | 1 | 0 |

**Calculation:**

P0, new avail (6 3 4 2) + (3 0 1 1) => (9 3 5 3)

P1, new avail (9 3 5 3) + (0 1 0 0) => (9 4 5 3)

P2, new avail (9 4 5 3) + (1 1 1 0) => (10 5 6 3)

P3, new avail (10 5 6 3) + (1 1 0 1) => (11 6 6 4)

P4, new avail (11 6 6 4) + (0 0 0 0) => (11 6 6 4)

**All processes accommodated, processes are in safe mode**

**Safe sequence: P0, P1, P2, P3, P4**