CS249 - Homework 5b – Maximal Consistent Cut

The program runs a sample execution plan for three processors P0, P1, and P2. The corresponding vector clocks are calculated and then maximal consistent cut is computed for given inconsistent cut.

Instructions to run:

$ git clone https://github.com/Mayuri-Wad-012447851/CS-249-Distributed-Computing

Above command will download entire repo with all the previous homework.

Homework5b folder: HW5b-Maximal-consistent-cut

Instructions to run the program from command prompt:

1. On command prompt, change directory to location of file (cloning location).
2. To compile and run, issue following commands:

Example command 1:

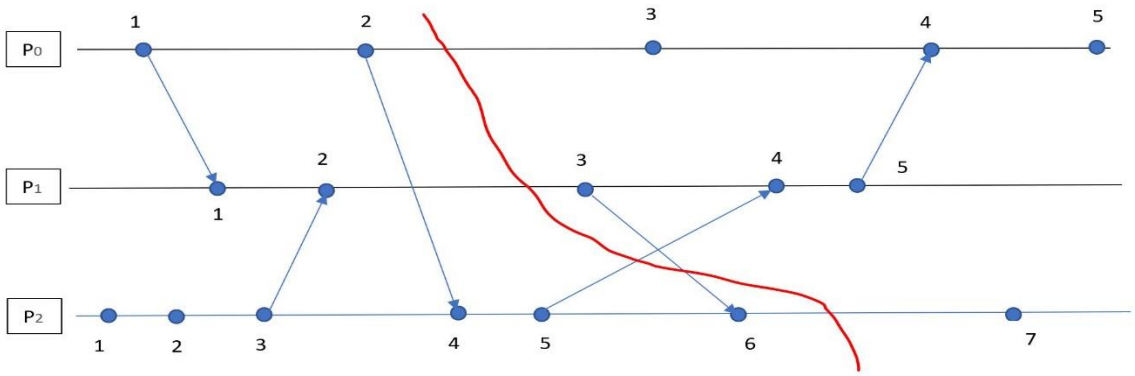
$..\CS-249-Distributed-Computing\HW5b-Maximal-consistent-cut\src>"C:\Program Files\Java\jdk1.8.0_121\bin\javac" *.java

Example command 2:

$..\CS-249-Distributed-Computing\HW5b-Maximal-consistent-cut\src >"C:\Program Files\Java\jdk1.8.0_121\bin\java" Algorithm

Input:

1. List of events of a processor along with their vector clock values
2. Inconsistent Cut {2,2,6}



Output of Program:

```
VectorClock before compute event at P2
0 0 0
COMPUTING at P2
VectorClock after compute event at P2
0 0 1
P0 SEND to P1
VectorClock before SEND event at P0
0 0 0
VectorClock after SEND event at P0
1 0 0
VectorClock before compute event at P2
0 0 1
COMPUTING at P2
VectorClock after compute event at P2
0 0 2
VectorClock before RECEIVE event at P1
0 0 0
VectorClock after RECEIVE event at P1
1 1 0
P2 SEND to P1
VectorClock before SEND event at P2
0 0 2
VectorClock after SEND event at P2
0 0 3
VectorClock before RECEIVE event at P1
1 1 0
VectorClock after RECEIVE event at P1
1 2 3
P0 SEND to P2
VectorClock before SEND event at P0
1 0 0
VectorClock after SEND event at P0
2 0 0
```

VectorClock before RECEIVE event at P2
0 0 3
VectorClock after RECEIVE event at P2
2 0 4
P2 SEND to P1
VectorClock before SEND event at P2
2 0 4
VectorClock after SEND event at P2
2 0 5
P1 SEND to P2
VectorClock before SEND event at P1
1 2 3
VectorClock after SEND event at P1
1 3 3
VectorClock before compute event at P0
2 0 0
COMPUTING at P0
VectorClock after compute event at P0
3 0 0
VectorClock before RECEIVE event at P2
2 0 5
VectorClock after RECEIVE event at P2
2 3 6
VectorClock before RECEIVE event at P1
1 3 3
VectorClock after RECEIVE event at P1
2 4 6
P1 SEND to P0
VectorClock before SEND event at P1
2 4 6
VectorClock after SEND event at P1
2 5 6
VectorClock before RECEIVE event at P0
3 0 0
VectorClock after RECEIVE event at P0

4 5 6
VectorClock before compute event at P2
2 3 6
COMPUTING at P2
VectorClock after compute event at P2
2 3 7
VectorClock before compute event at P0
4 5 6
COMPUTING at P0
VectorClock after compute event at P0
5 5 6

Event count at p0: 5
Vector Clock at Processor P0: [5 5 6]
Event count at p1: 5
Vector Clock at Processor P1: [2 5 6]
Event count at p2: 7
Vector Clock at Processor P2: [2 3 7]

Computing maximal consistent cut at {2,2,6}..

Events and VCs at P0:
VectorClock [VC=[1, 0, 0]]SEND
VectorClock [VC=[2, 0, 0]]SEND
VectorClock [VC=[3, 0, 0]]COMPUTE
VectorClock [VC=[4, 5, 6]]RECEIVE
VectorClock [VC=[5, 5, 6]]COMPUTE

Events and VCs at P1:
VectorClock [VC=[1, 1, 0]]RECEIVE
VectorClock [VC=[1, 2, 3]]RECEIVE
VectorClock [VC=[1, 3, 3]]SEND
VectorClock [VC=[2, 4, 6]]RECEIVE
VectorClock [VC=[2, 5, 6]]SEND

Events and VCs at P2:
VectorClock [VC=[0, 0, 1]]COMPUTE
VectorClock [VC=[0, 0, 2]]COMPUTE
VectorClock [VC=[0, 0, 3]]SEND
VectorClock [VC=[2, 0, 4]]RECEIVE
VectorClock [VC=[2, 0, 5]]SEND
VectorClock [VC=[2, 3, 6]]RECEIVE
VectorClock [VC=[2, 3, 7]]COMPUTE

Maximum consistent cut:
2 2 5

Green line represents Maximal Consistent Cut.