Solution to the Fall 2012 Second COSC 6360 Quiz

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ARC

- Consider a very small cache that can hold only 4 pages and assume that the cache is managed by the ARC replacement policy

	L1	**L2**
In cache	4	3
	5	2
Simulated	1	6
	7	9

How would ***target_T1*** be affected if the next page to be referenced is:

a) Page 5?

b) Page 6?

Answer

- Consider a very small cache that can hold only 4 pages and assume that the cache is managed by the ARC replacement policy

	L1	L2
In cache	4	3
	5	2
Simulated	1	6
	7	9

- How would ***target_T*1** be affected if the next page to be referenced is:
  - **a) Page 5? No change**
  - **b) Page 6? Decreased**

Similar question

- Consider a very small cache that can hold only 4 pages and assume that the cache is managed by the ARC replacement policy

	L1	L2
In cache	4	3
	5	2
Simulated	1	6
	7	9

- How would ***target_T1*** be affected if the next page to be referenced is:

  a) Page 7?

  b) Page 2?

Answers

- Consider a very small cache that can hold only 4 pages and assume that the cache is managed by the ARC replacement policy

	L1	**L2**
In cache	4	3
	5	2
Simulated	1	6
	7	9

- How would ***target_T1*** be affected if the next page to be referenced is:
  - **a) Page 7? Increased**
  - **b) Page 2? No change**

TLB issues

- A computer has a TLB with **128** entries and uses **8 KB** pages. What is the ***coverage*** of its TLB?

Answer

- A computer has a TLB with **128** entries and uses **8 KB** pages. What is the ***coverage*** of its TLB?
  - ***Coverage* = 128×8 *KB* = 1 *MB***
- If page size was **4KB**
  - ***Coverage* = 128×4 *KB* = 512 *KB***

Proof-carrying code (I)

- Which problem does ***proof-carrying code*** (PCC) attempt to solve?

Answer

- Which problem does ***proof-carrying code*** (PCC) attempt to solve?
  - ***To let kernels to check extension safety a extension load time***
    - *The idea is to eliminate any kind of run-time checking overhead*

Proof carrying code (II)

- What is the main drawback of the approach?

Answer

- What is the main drawback of the approach?
  - ***It is very difficult to construct safety proofs for non-trivial extensions***

Mach VM system (I)

- How does the Mach virtual memory subsystem guarantee exclusive access to its data structures?

Answer

- How does the Mach virtual memory subsystem guarantee exclusive access to its data structures?
  - ***It uses* locks *whenever exclusive access to a data structure has to be guaranteed.***

Mach VM system (II)

- How does it prevent deadlocks?

Answer

- How does it prevent deadlocks?

- ***All VM algorithms gain locks using the same ordering***.

More Mach

- Give one example of a Mach memory object.

Answer

- Give one example of a Mach memory object.
  - ***A swap area***
  - ***Any file of the file system***
    - *Could be*
      - *Executable file for a running program*
      - *A file being mapped*

Treadmarks (I)

- Treadmarks is said to use a ***lazy release policy***. Why?

Answer

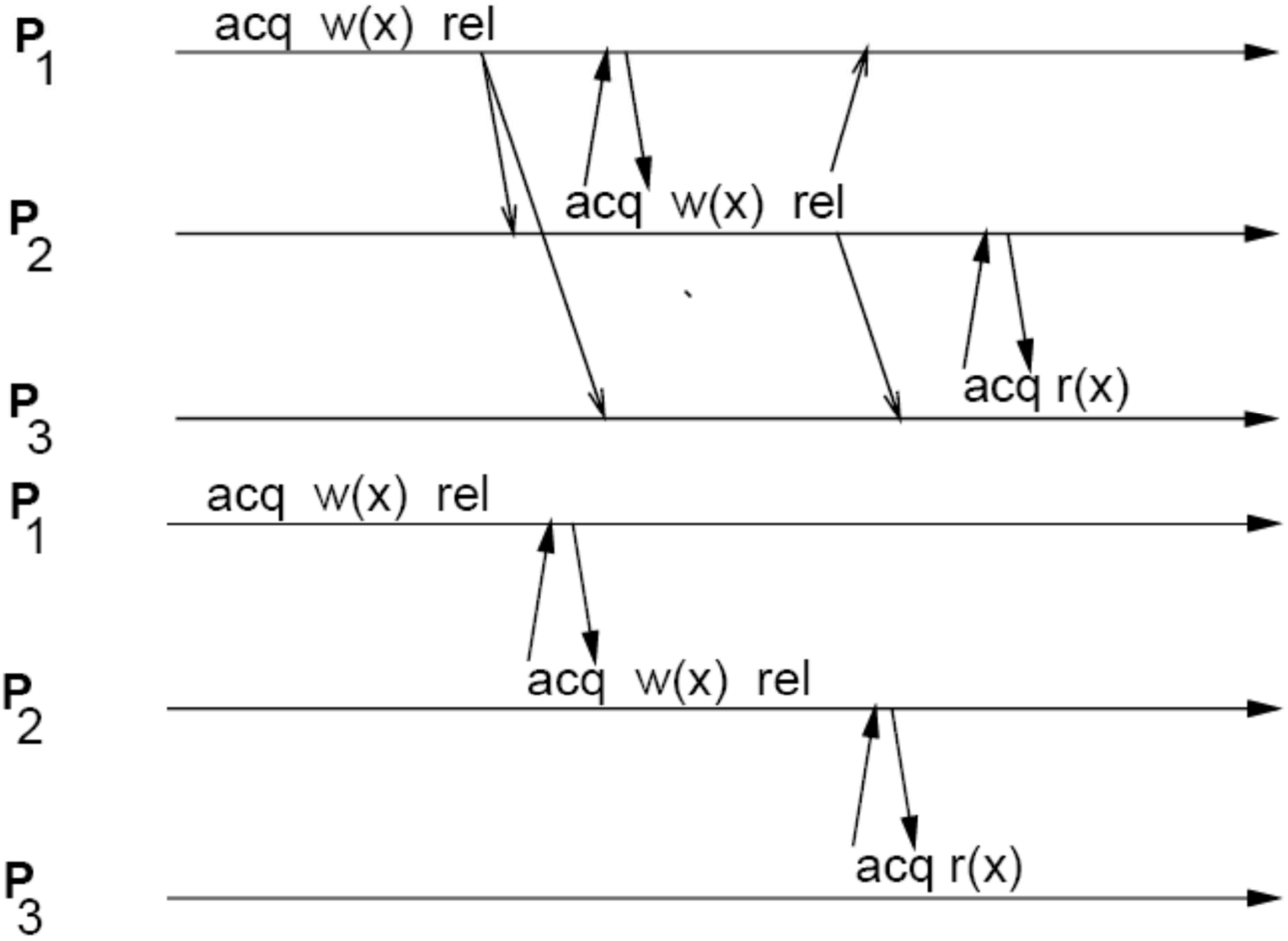
- Treadmarks is said to use a ***lazy release policy***. Why?
  - ***Delays propagation of release values until an acquire is issued***

Treadmarks (II)

- What would be the corresponding ***eager release policy***?

Answer

- What would be the corresponding ***eager release policy***?
  - The policy would immediately propagate all released values to all other processes


P1
acq w(x) rel
P2
acq w(x) rel
P3
acq r(x)
P1
acq w(x) rel
P2
acq w(x) rel
P3
acq r(x)