

# RAPORT

## Author

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## Properties

### Mutual exclusion

$\square (ncrit < 2)$

Always number of processes in critical section is lower than 2. It is hold by every algorithm presented.

### Liveness

$\square (ftry \rightarrow \neg fcs)$

Always if process is waits to enter critical section, it will eventually enter it. It is only hold by Anderson, MCS and MCS-WO for up to 2 processes.

It is symmetrical for all processes

### Inevitable waiting

That property is described in task description. None of processes should hold it, as they always enter critical section when they are first. It is being tested using assestions.

### Bounded overtaking

$\square (fwait \rightarrow (\neg scs \cup (scs \cup (\neg scs \cup fcs))))$

Always when first process waits to enter critical section, other process will enter it at maximum one time. It is simetrical for all processes. It is hold by anderson, MCS and MCS-WO for 2 processes

### First come first served

$\square ((ffcfs \ \&\& \ !sfcs) \rightarrow (\neg(sfcfs) \cup (\neg(scs) \cup fcs)))$

Always if first process is queued and second not implies second is not queue and first will be in critical section and second not.

It is of course symetrical

It is hold by MCS and MCS-WO for 2 processes.

Summary

|          | Mutual exclusion | Liveness   | Inevitable waiting | Bounded overtaking | First come first served |
|----------|------------------|------------|--------------------|--------------------|-------------------------|
| Basic    | PASS             | FAIL       | NULL               | FAIL               | NULL                    |
| Anderson | PASS             | PASS       | FAIL               | PASS               | FAIL                    |
| MCS      | PASS             | PASS       | FAIL               | PASS               | PASS                    |
| MCS-WO   | PASS             | PASS for 2 | FAIL               | PASS for 2         | PASS for 2              |