

# COMP6463: Temporal Logic and Model Checking

Assessable Exercise

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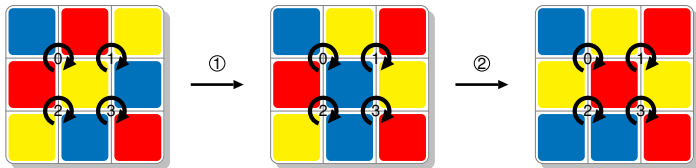


**NICTA**

# An Extended Exercise

Download and learn how to use the NuSMV model checker.

Model the “Colour Rotation” problem:

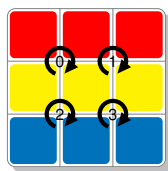
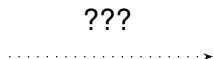


# Problem 1: Reaching a Goal State

State a (false) property stating that the goal configuration below cannot be reached.



Initial State



Goal State

When NuSMV determines that the goal is false it will also print out a sequence of steps giving the trace that reaches the goal.

## Problem 2: A Safety Property

State and verify the property that there are always

- 3 red tiles
- 3 blue tiles
- 3 yellow tiles

# NuSMV and You

- 1 Get it.
  - Google “NuSMV model checker”.
  - Go to web-site ([nusmv.fbk.eu](http://nusmv.fbk.eu))
  - Download it
- 2 Read documentation
- 3 Solve problems

## Hint

Use as few variables (defined in VAR block) as possible.

For example:

```
MODULE main
```

```
VAR
```

```
  colours : array 0..8 of {RED, BLUE, YELLOW};
```

```
  choice : 0..3 ;
```

# Marking Scheme

Modelling of transition relation (rotation).....	9
Initial & Goal States .....	1
Problem 1 .....	5
Problem 2 .....	5