

# *Sistema de Controlo de Passagem de Nível*

## *Trabalho de AMSR*

*FEUP/MRSC/AMSR  
MPR*

## *Specification and Verification of a Railway Crossing*

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Specify and verify a railway crossing with the following characteristics:

1. There are 2 tracks in the system: one for regular trains and the other for fast trains
2. There is a controller, which considers as inputs the number of cars waiting and the trains approaching.
3. There is a gate for cars, which must be controlled. The pattern of cars approaching is unknown. The maximum number of cars waiting is 5. In this situation, cars stop to arrive.
4. Each track has two sensors: one sensor when a train is approaching and one sensor when the train is leaving the gate. There is a sensor that indicates the number of cars waiting.

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## Crossing

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7. There is a signal on each track informing the trains if they are allowed to pass or if they have to stop
8. The controller can act either by closing the gate or by stopping a train (setting a closing signal).
9. The maximum number of trains allowed in each track is 2. A train stops when it sees a stopping signal and restarts when the stopping signal goes off. The trains on the same track run in the same direction.
10. The solution should allow two strategies of the gate controller to be checked:
  1. high speed trains take precedence;
  2. cars take precedence when there are 5 cars waiting.

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## Trabalho

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- ◆ Feito em grupos de 2 alunos
- ◆ O que deve ser feito
  - » Especificar o sistema em Promela com as duas estratégias de controlo
  - » Demonstrar que o sistema é seguro, usando as técnicas de verificação do XSPIN
- ◆ O que deve ser entregue
  - » Relatório com a descrição da
    - solução proposta
    - estratégia de verificação adoptada
  - » Em anexo ao relatório devem ser incluídos
    - A especificação do sistema em Promela
    - Os resultados de verificação obtidos