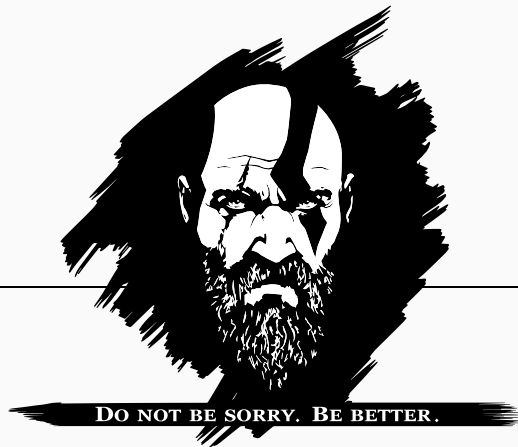


Formula One - Presentation

ACU 2019 Team



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Racing 101

Reminder

A car can perform various instructions:

- accelerate
- brake
- turn
- ...

Problem

How do we order these instructions to reach our goal ?

Granny driving

- Go slow
- One instruction at a time
- Safe trajectory

```
function ChooseMove()  
{  
    if angle is not right then  
        TurnRightOrLeft()  
    else if speed is too high  
        Brake()  
    else  
        Accelerate()  
}
```

- correct the angle between the car and the checkpoint

- correct the angle between the car and the checkpoint
- drive towards the checkpoint

- correct the angle between the car and the checkpoint
- drive towards the checkpoint
- stop on the checkpoint

- correct the angle between the car and the checkpoint
- drive towards the checkpoint
- stop on the checkpoint
- Rince and repeat

Clone army

- We want to select the best next instruction
- We can't afford to go random

- Create a clone
- Make it execute some instructions
- Analyze the result
- Select the next instruction depending on the result

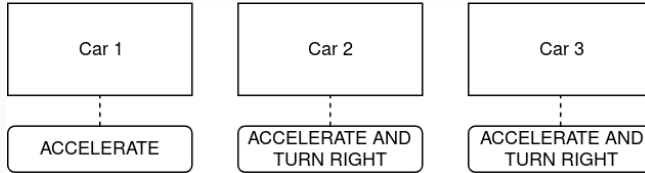
Example

Car 1

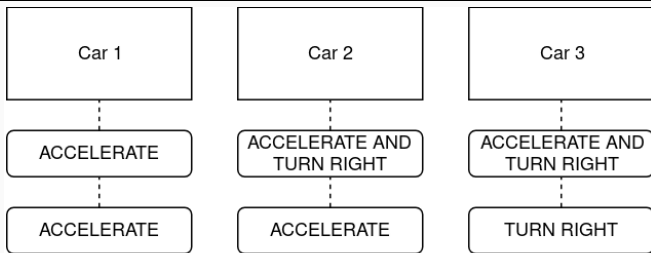
Car 2

Car 3

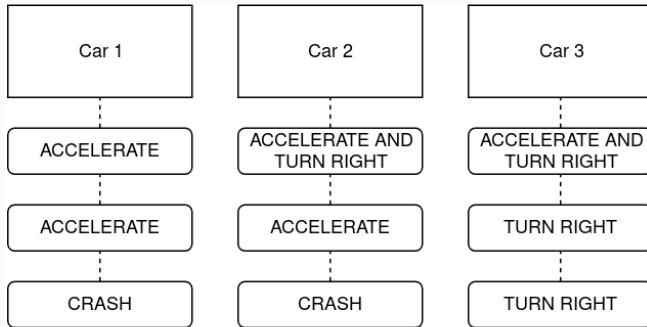
Example



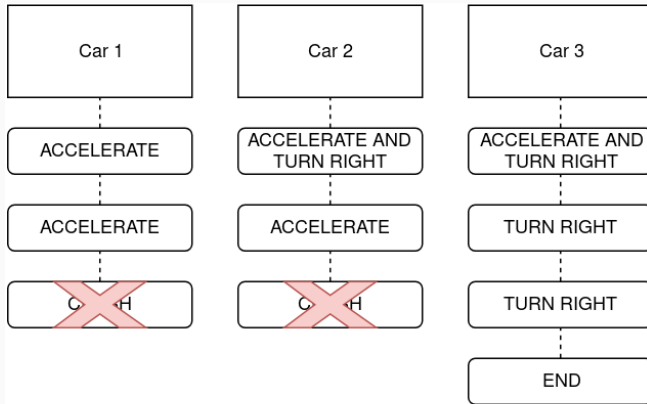
Example



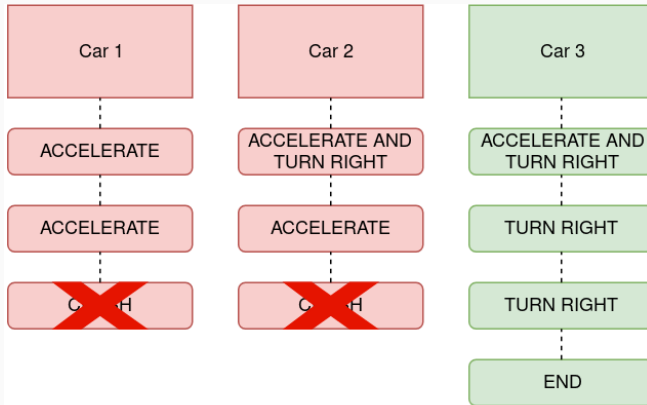
Example



Example



Example



Going further

- Use sin/cos for your angles and curves
- Relaxed checkpoints
- ...
- Bezier curves... eventually

Reminder

Get it right, **then** get it fast.

Any questions ?