

# Brute-Force Search

Note Title

11/10/2005

## The Goat-Cabbage-And-Wolf Problem.

A farmer wants to ferry a goat, a cabbage and a wolf across a river.

His boat can carry only one of them at a time.

The wolf cannot be left with the goat.

The goat cannot be left with the cabbage.

How can the farmer get them all across?

## Valid and Invalid States

F	farmer
G	goat
C	cabbage
W	wolf
L	at left bank
R	at right bank

F G C W

F G C W

L L L L

R L L L

L L L R

R L L R

L L R L

R L R L

L L R R

R L R R

L R L L

R R L L

L R L R

R R L R

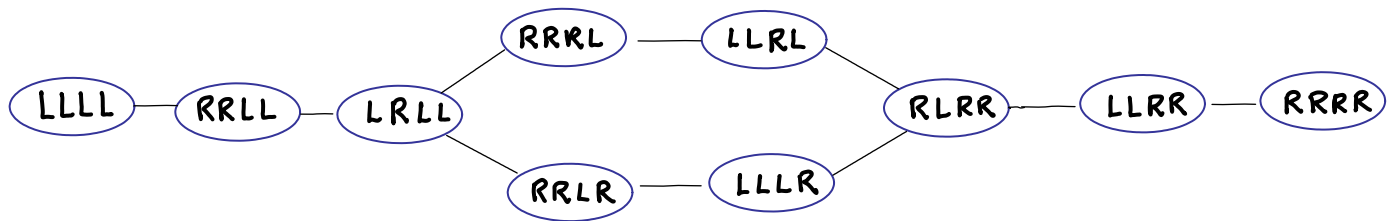
L R R L

R R R L

L R R R

R R R R

## State Transitions



Key: FGCW

## The Goat-Cabbage-And-Wolf Problem.

A farmer wants to ferry an alpha and two betas across a river.

His boat can carry only one of them at a time.

An alpha cannot be left with a beta.

How can the farmer get them all across?

|| river

•  $1\alpha 2\beta ||$   
 $2\beta || 1\alpha \cdot$  } states

$2\beta | 1\alpha |$  transition

•  $1\alpha 2\beta ||$   
 $2\beta | 1\alpha |$   
 $2\beta || 1\alpha \cdot$  } state transition.

•  $1\alpha 2\beta ||$

$|| 1\alpha 2\beta \cdot$