the Algorithm Experience

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## HOW?

Find out today:

- the King's Problem
- the Two Algorithms
- the Paper Computer
the King's Problem




the Two Algorithms


## ALGORITHM 1

input: two stacks $B$ and $R$
write: $x=0$
$\rightarrow$ take $b$ from $B$
p take r from R
write: $\mathrm{y}=$ height of intersection between brand wall
check: is $y$ higher than $x$ ?
yes: replace $x$ by $y$
discard old $x$
put ron S
next $r$ ?
no: putron S next $r$ -
is R empty?
restore R from S
discard b
next b-
is B empty?
output: $\times$

## ALGORITHM 2

input: two stacks $B$ and $R$
take $b$ from $B$
take $r$ from $R$
$P=$ shuffle the rest of $B$ and $R$ together

- take p from P
check: is $p$ below $b r$ ?
yes: put $p$ on $Q$ next $p$
no: replace b or rby p put old b or r on $S$
p take q from Q
check: is $q$ below $b r$ ?
yes: put q on $S$ next q
no: replace $b$ or $r$ by $q$ put old bor ron S next q
is $Q$ empty?
restore $Q$ from $S$
next p
is P empty?
output: height of intersection between $\mathrm{b} r$ and wall
the Paper Computer

- Stacks contain multiple memory cells, but only closed ones.
- With a pointer to a cell, you may open it and look at the value.
- You can do simple checks and calculations on open values.
- You can write new values based on such calculations.
the Experience
- Execute Algorithm 1.
$\rightarrow$ When you are done, write down your time!
- Execute Algorithm 2.
$\rightarrow$ When you are down, write down your time!

