

Problem Representation

- Monkey and Banana

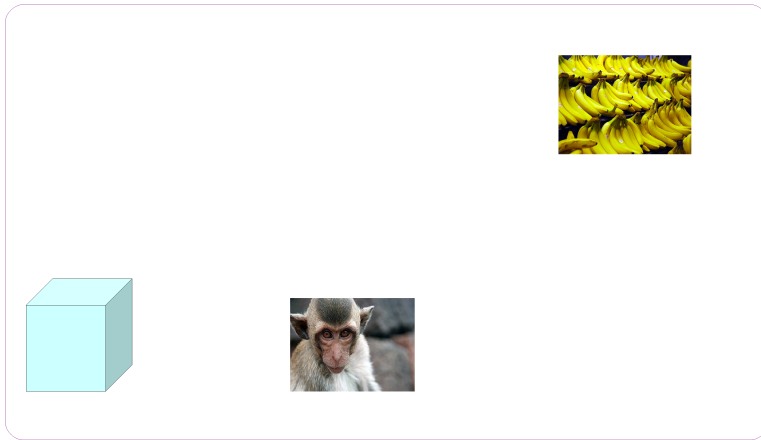
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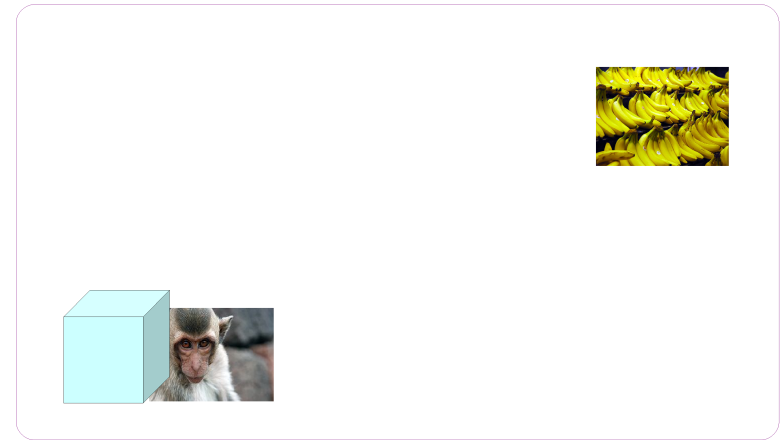
Please send corrections (or suggestions) to youngwlim@hotmail.com.

This document was produced by using OpenOffice and Octave.

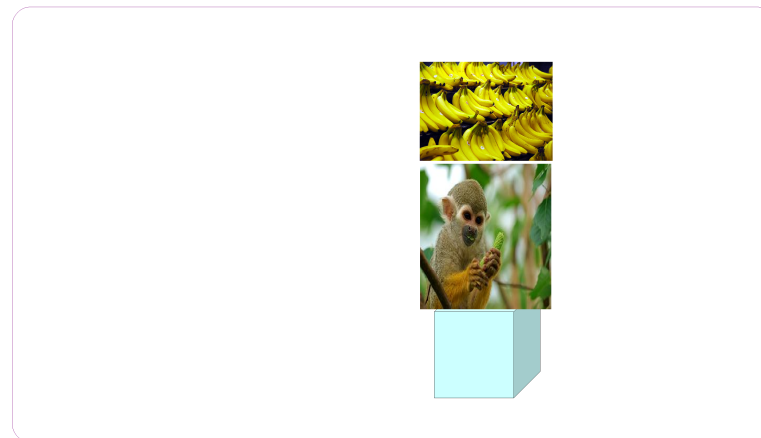
Monkey and Banana



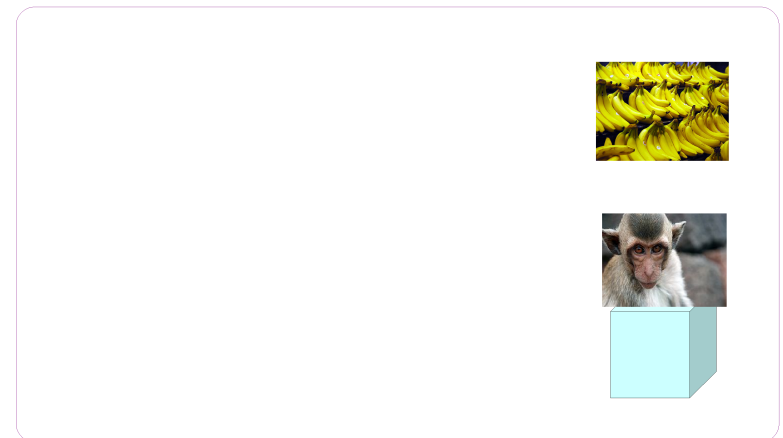
goto



**pushbox
climbbox**



grasp



Monkey and Banana - State

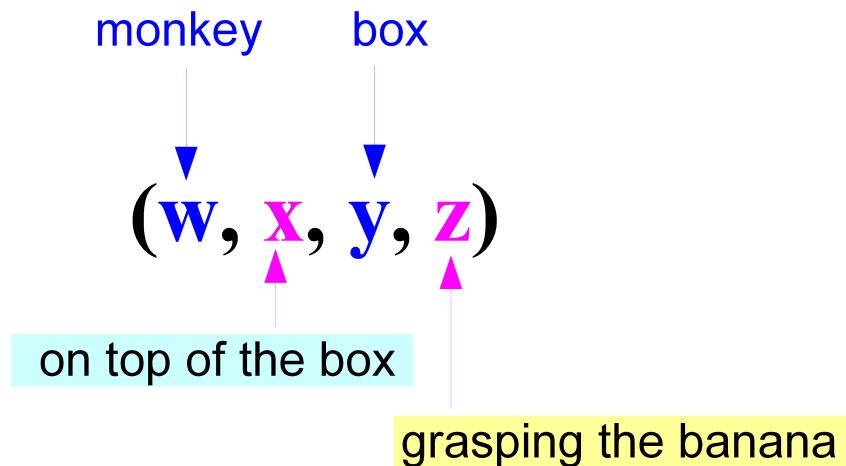
(w, x, y, z)

w: the position of the monkey (horizontal, vertical)

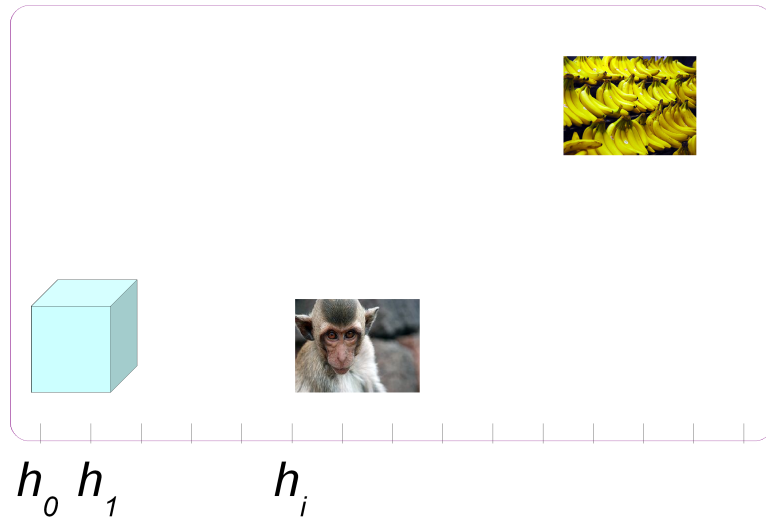
x: monkey on top of the box (1 or 0)

y: the position of the box (horizontal, vertical)

z: monkey grasping the banana (1 or 0)



Monkey and Banana – too many states



$(h_0, 0, h_0, 0)$

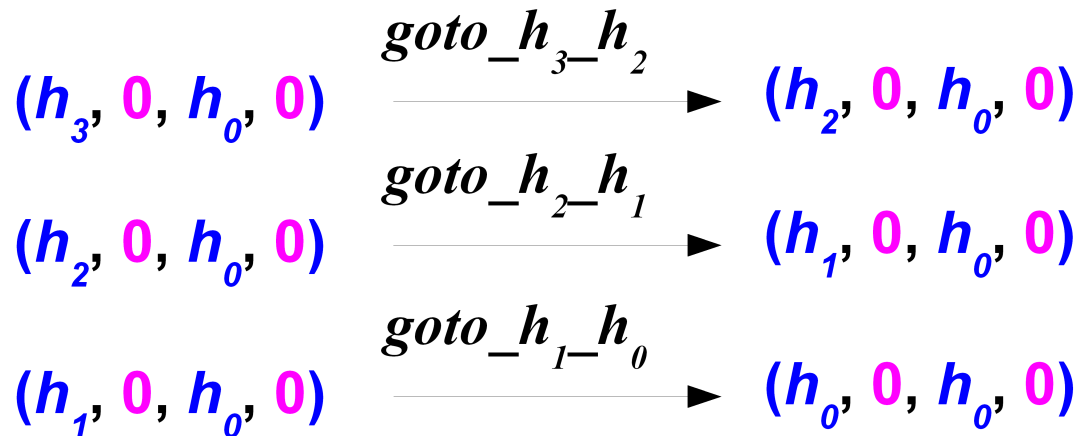
$(h_1, 0, h_0, 0)$

$(h_2, 0, h_0, 0)$

$(h_3, 0, h_0, 0)$

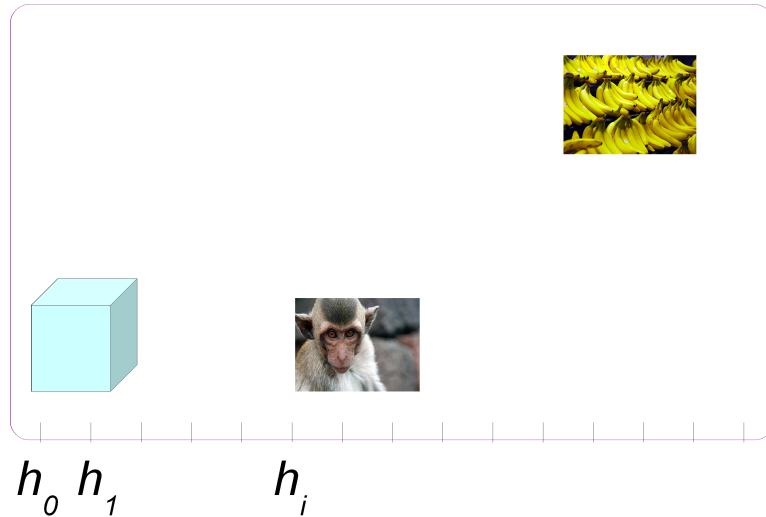
$(h_i, 0, h_0, 0)$

Too many states



Too many operators

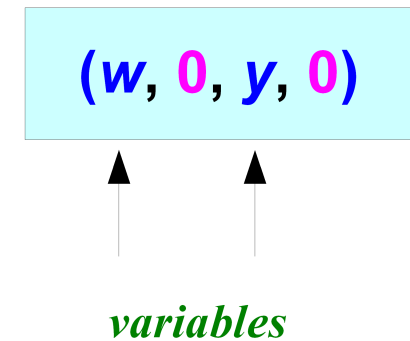
Monkey and Banana – Schema



Instances

$(h_0, 0, h_0, 0)$
 $(h_1, 0, h_0, 0)$
 $(h_2, 0, h_0, 0)$
 $(h_3, 0, h_0, 0)$
 $(h_i, 0, h_0, 0)$

Schema



$(h_3, 0, h_0, 0)$
 $(h_2, 0, h_0, 0)$
 $(h_1, 0, h_0, 0)$

$goto(h_0)$

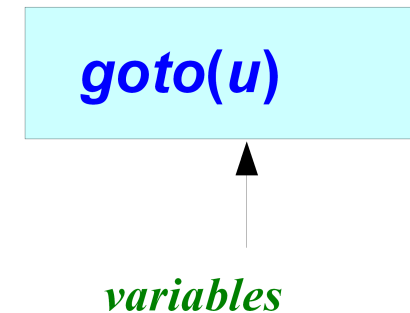
$goto(h_0)$

$goto(h_0)$

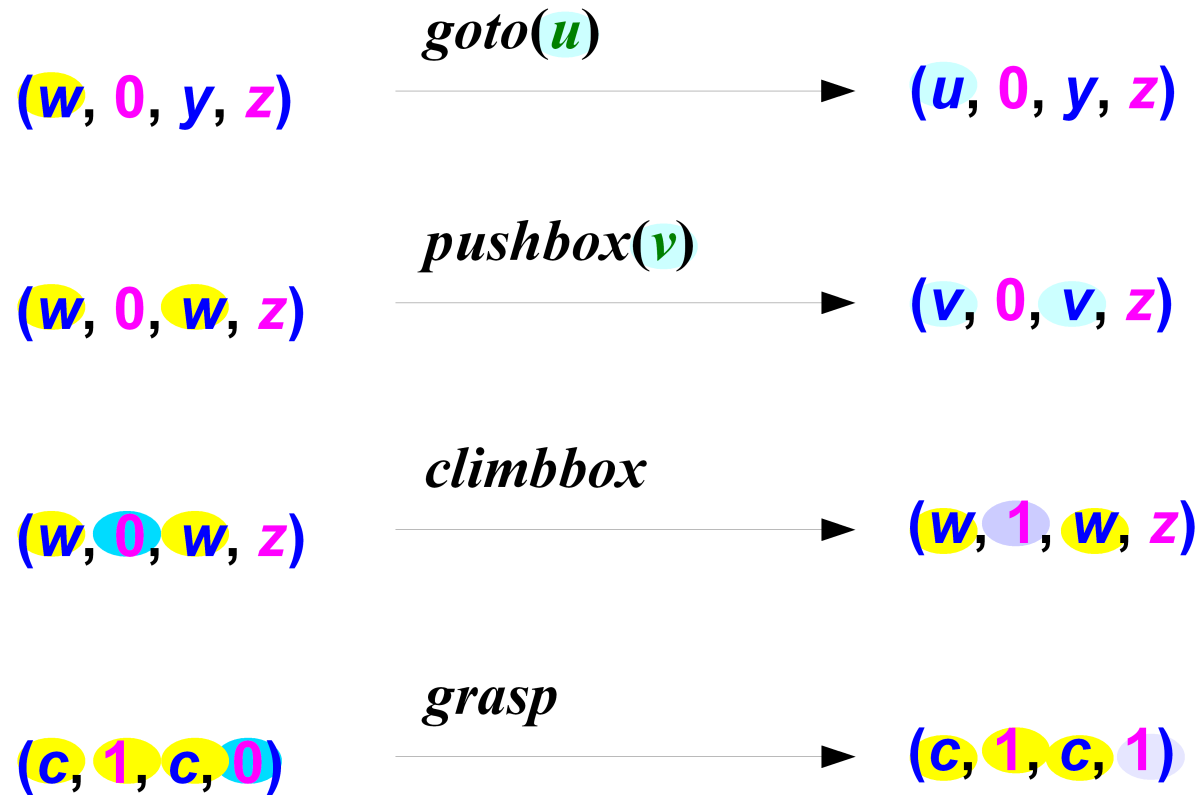
Instances

$(h_0, 0, h_0, 0)$
 $(h_0, 0, h_0, 0)$
 $(h_0, 0, h_0, 0)$

Operator Schema



Monkey and Banana – Operator Schema



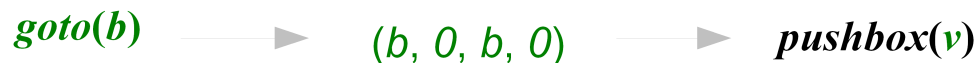
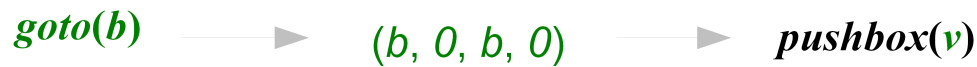
Monkey and Banana – $(a, 0, b, 0)$



a, b, c : constants

u, v : variables

Monkey and Banana – $(u, 0, b, 0)$



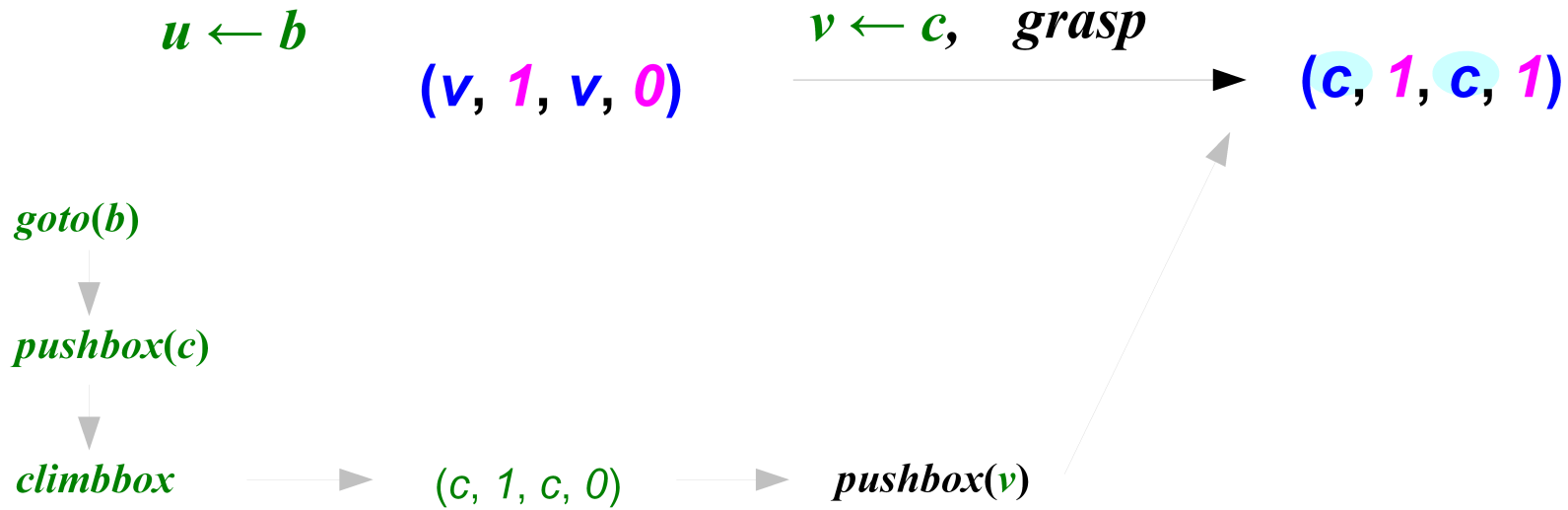
Monkey and Banana – $(v, 0, v, 0)$

$(v, 0, v, 0)$ $\xrightarrow{\text{pushbox}(v)}$ $(v, 0, v, 0)$

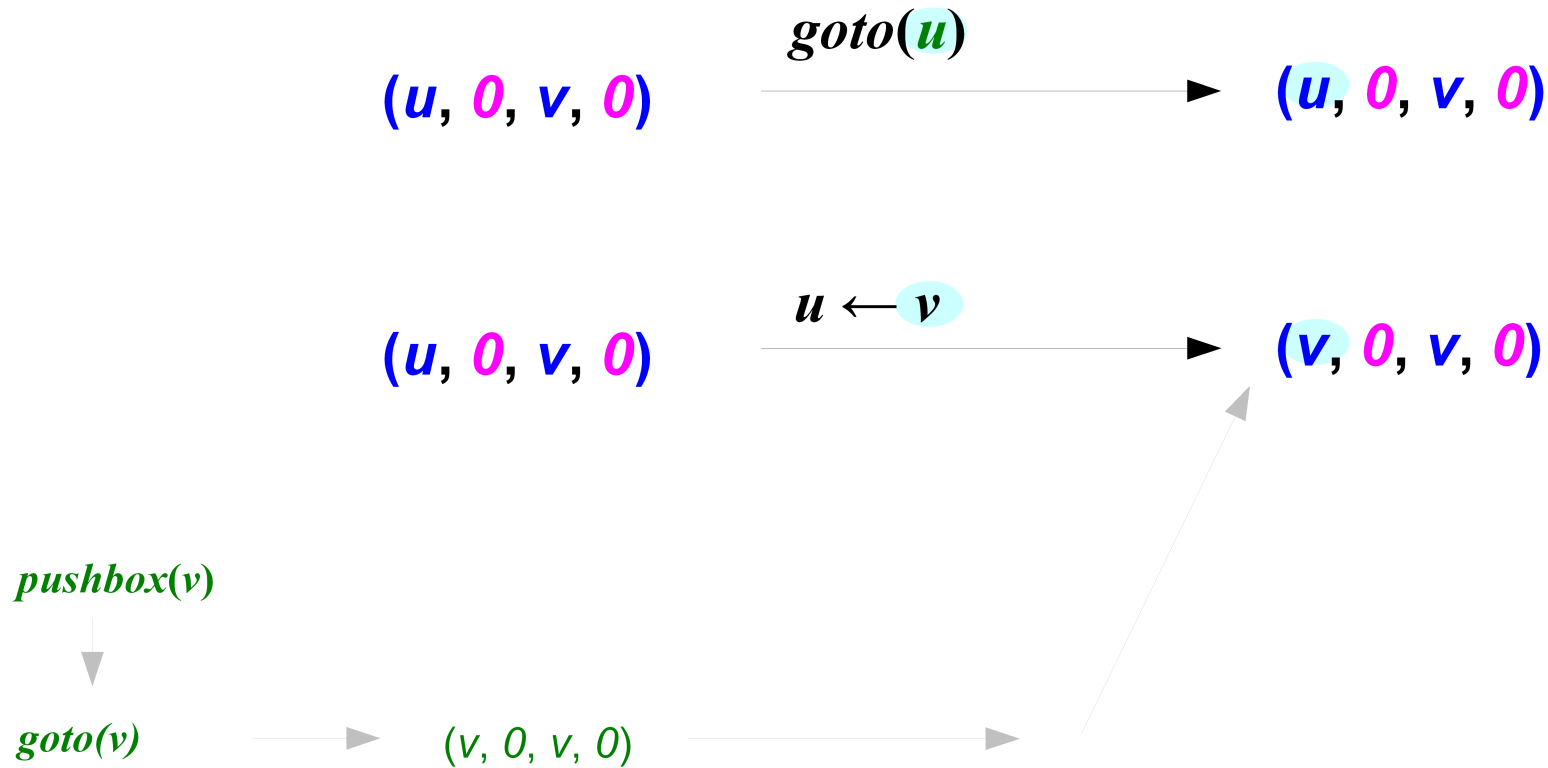
$(v, 0, v, 0)$ $\xrightarrow{\text{climbbox}}$ $(v, 1, v, 0)$

$(v, 0, v, 0)$ $\xrightarrow{\text{goto}(u)}$ $(u, 0, v, 0)$

Monkey and Banana – $(v, 1, v, 0)$



Monkey and Banana – $(u, 0, v, 0)$



References

[1] <http://en.wikipedia.org/>

[2] 인공지능개론, 이광형, 조충호, 홍릉과학출판사, 2000