

Problem Representation

- Monkey and Banana

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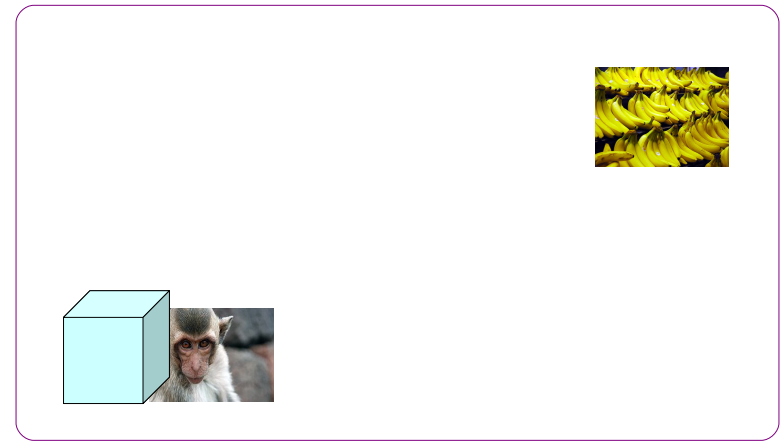
Please send corrections (or suggestions) to youngwlim@hotmail.com.

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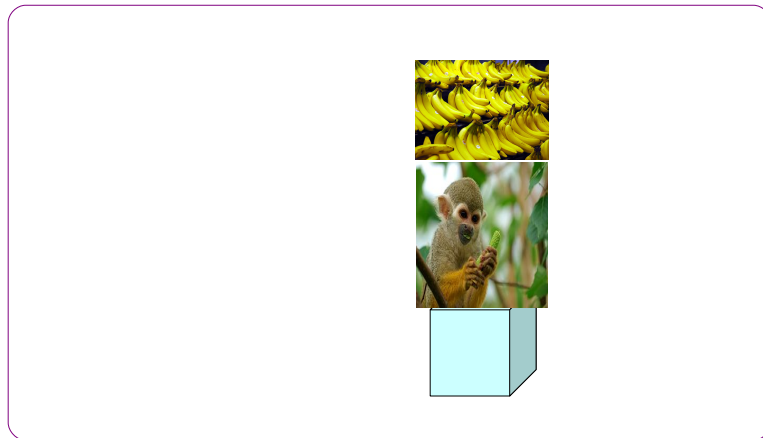
Monkey and Banana



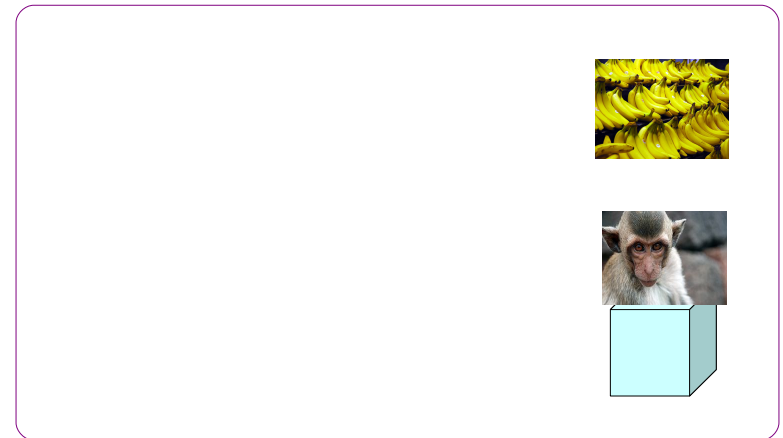
goto



**pushbox
climbbox**



grasp



Monkey and Banana - State

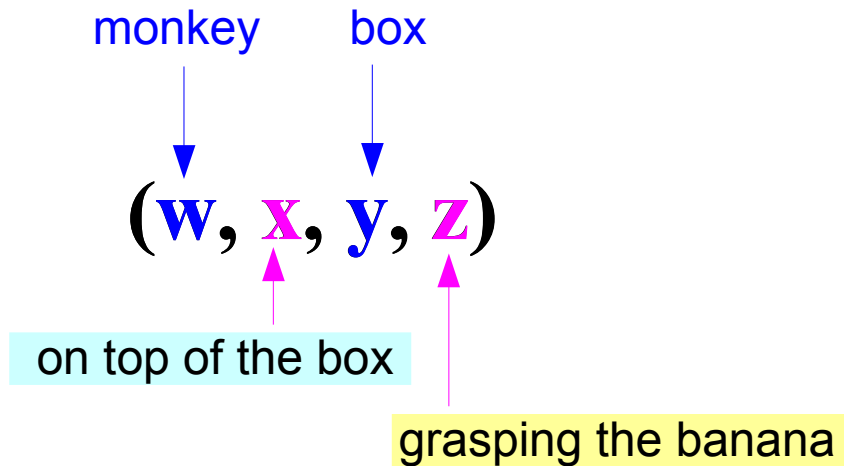
(w, x, y, z)

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

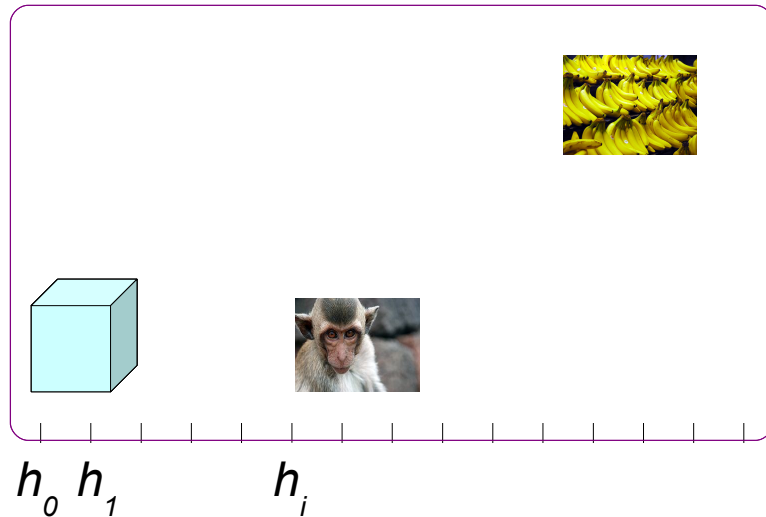
x: monkey on top of the box (1 or 0)

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

z: monkey grasping the banana (1 or 0)



Monkey and Banana – too many states



$(h_0, 0, h_0, 0)$

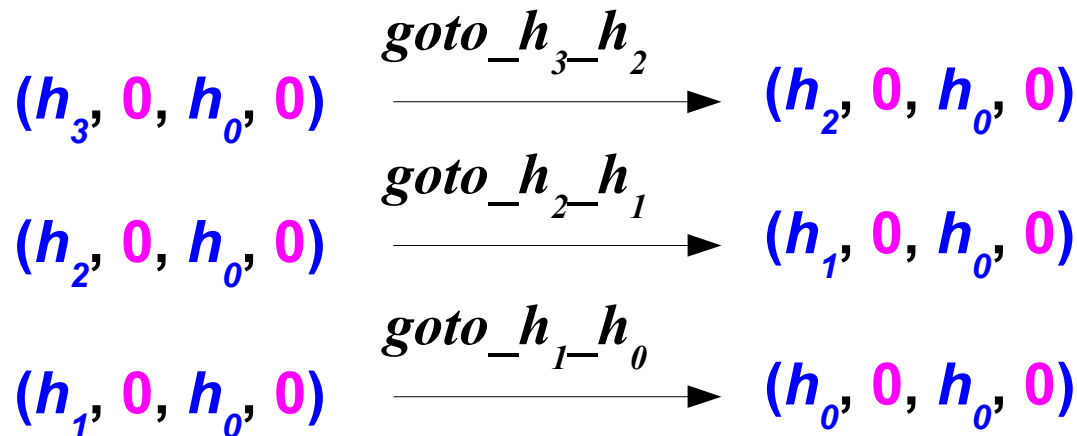
$(h_1, 0, h_0, 0)$

$(h_2, 0, h_0, 0)$

$(h_3, 0, h_0, 0)$

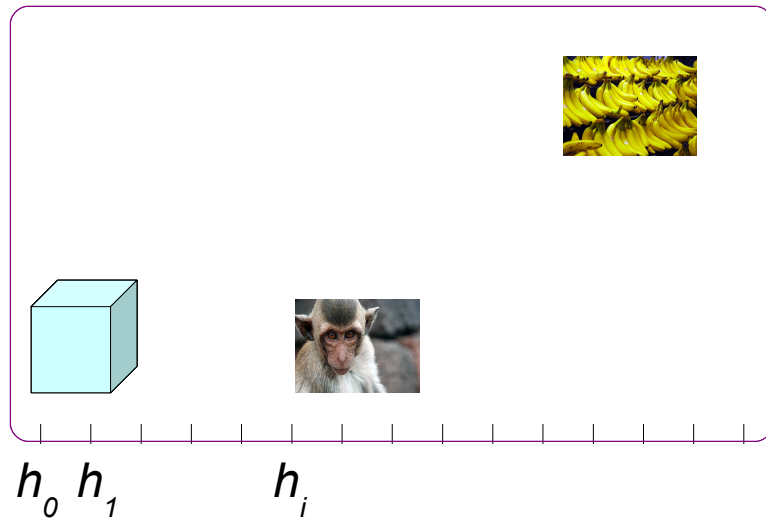
$(h_i, 0, h_0, 0)$

Too many states



Too many operators

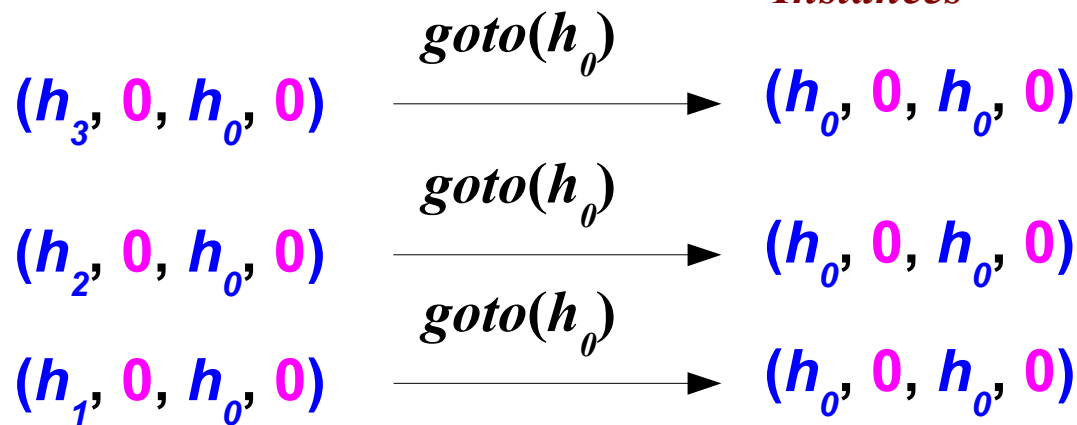
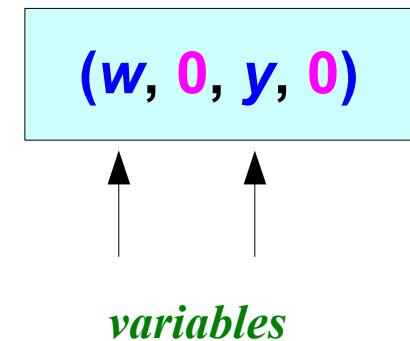
Monkey and Banana – Schema



Instances

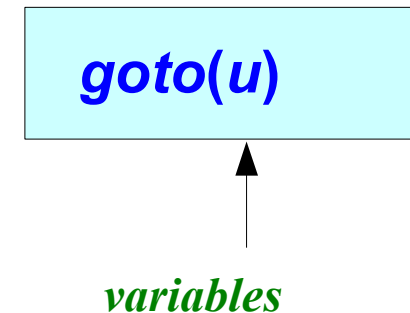
- $(h_0, 0, h_0, 0)$
- $(h_1, 0, h_0, 0)$
- $(h_2, 0, h_0, 0)$
- $(h_3, 0, h_0, 0)$
- $(h_i, 0, h_0, 0)$

Schema

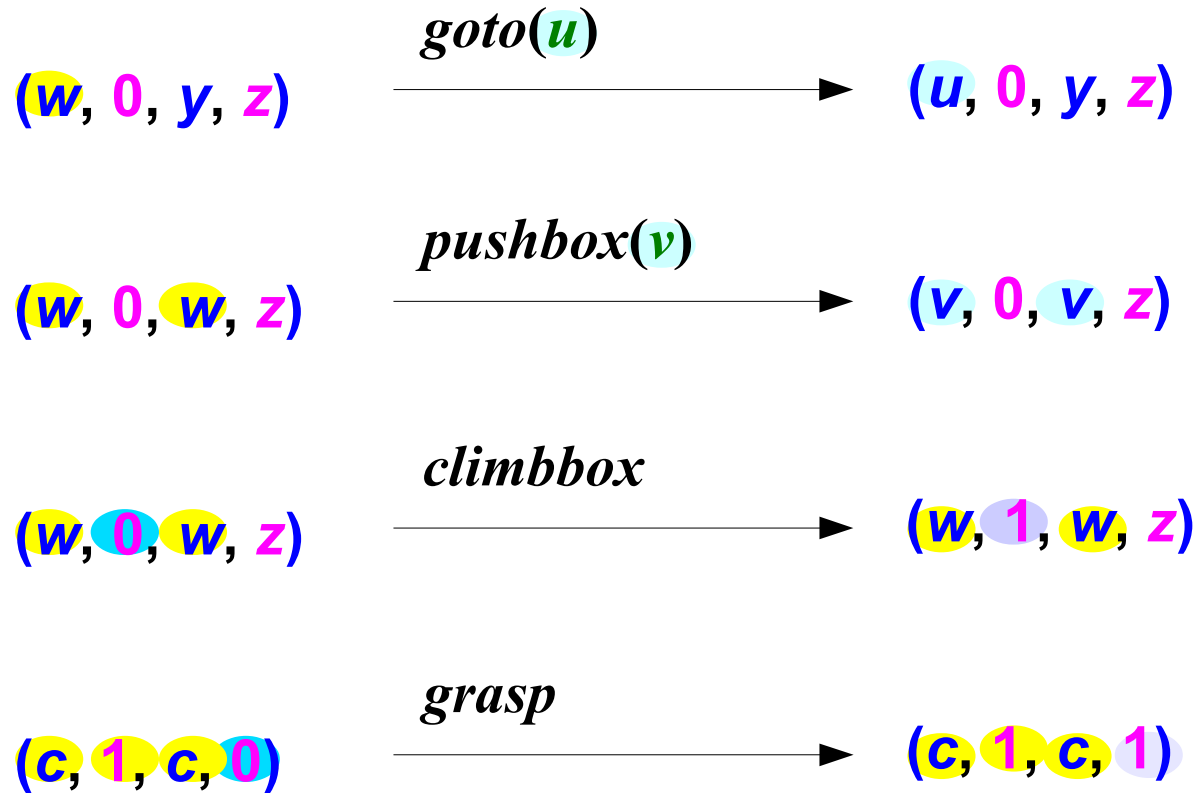


Instances

Operator Schema



Monkey and Banana – Operator Schema



Monkey and Banana – $(a, 0, b, 0)$



a, b, c : constants

u, v : variables

Monkey and Banana – $(u, 0, b, 0)$

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

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

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

$(u, 0, b, 0) \xrightarrow{u \leftarrow b, \text{climbbox}} (v, 0, v, 0)$

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

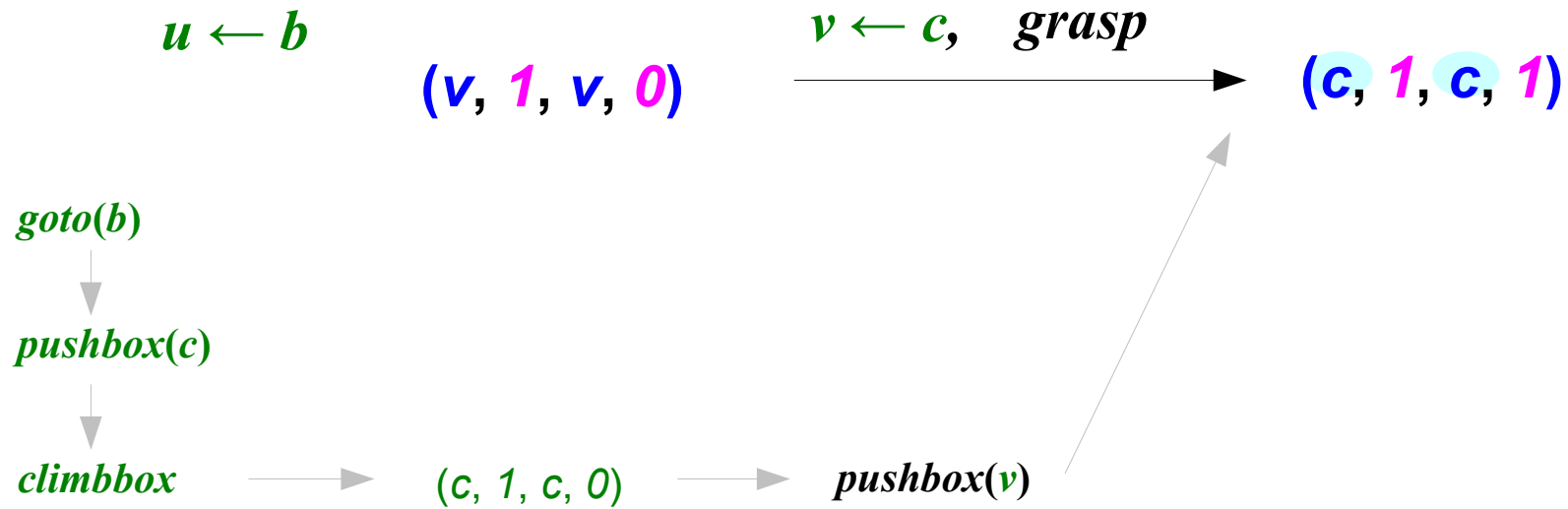
Monkey and Banana – $(v, 0, v, 0)$

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

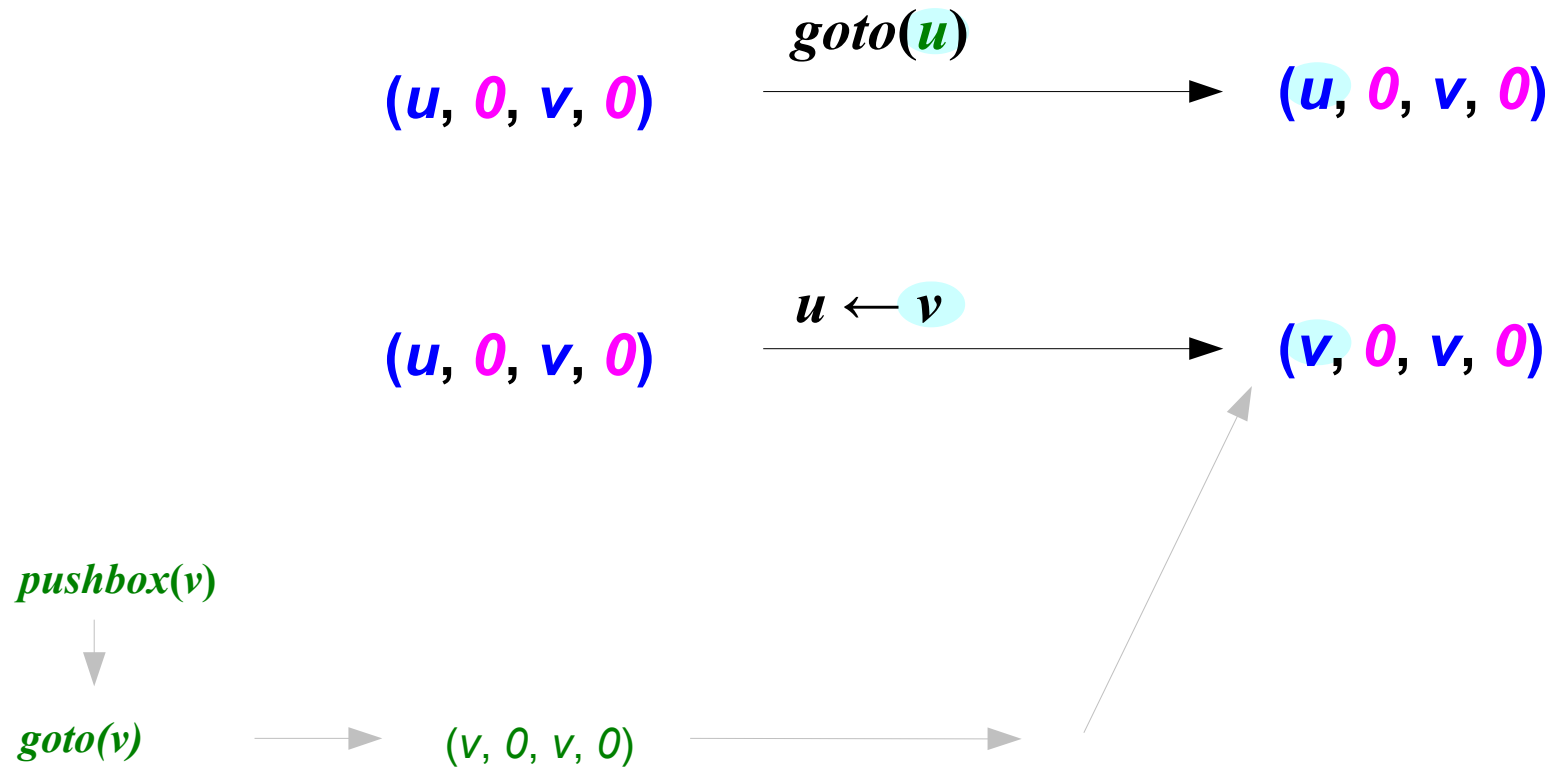
$(v, 0, v, 0)$ $\xrightarrow{\text{climbbox}}$ $(v, 1, v, 0)$

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

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