Artificial Intelligence
CSL 302
Lab 4 – Report
Yash Ubale – 2014CSB1040

Algorithm	No. of blocks	No. of nodes expanded	No. of actions	Time for running(s)
BFS	4	6808	10	0.168
	5	112599	14	3.157
	12	-	-	-
A*	4	29	10	0.012
	5	40	16	0.014
	12	1305	28	0.436
Goal Stack Planning	4*	42	12	0.007
	5*	65	18	0.007
	12*	231	56	0.008

*it is the averaged value, multiple answers can be found due to randomization and ordering

- You can see that A* is goal oriented and expands less number of unnecessary nodes than BFS
- Goal stack planning can give multiple answers depending on the order in which you are adding items in the stack
- Goal stack planning is very effecient (considering time taken)

Heuristic & Cost functions for A*:

h(n) = 3*(a + b + c + d) (heuristic function)

a = 3*(number of blocks which are not satisfying ‘on-table’ criteria)
b = 1.5*(number of blocks which are not satisfying the ‘clear’ criteria)
c = 1.5*(number of pairs of blocks not satisfying the on criteria + number of blocks which satisfy the ‘under’ criteria but not ‘on’ criteria)
d = 1 or 0 (1 if empty state matching & 0 if not matching)

g(n) = number of actions required till now

f(n) = g(n) + h(n) (total cost as priority, lower the cost greater the priority in expanding)