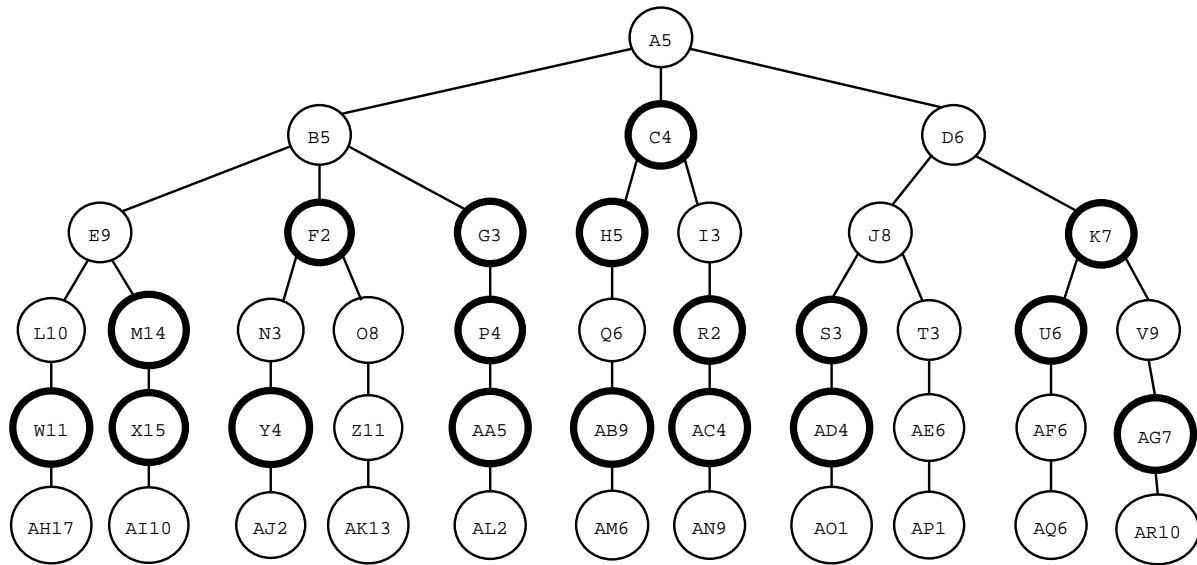


CS347 SP2005 Quiz 5 Key

This is an open-book open-notes quiz. The *only* prohibited items are electronic devices. Mark every sheet of paper you use with your name and the string “cs347sp2005 quiz5” (omittance, even if it is partial, will be penalized at 1 point per sheet). If you are caught cheating, you will receive a zero grade for this quiz. The max number of points per question is indicated in square brackets after each question. The sum of the max points is 25. You have 30 minutes to complete this quiz. Good luck!

The questions are about the following adversarial search tree. State evaluation heuristic values for the max player are provided in the form of numbers following the letter labels of the states (e.g., A5 indicates that the heuristic value of state A for the max player is 5). The order in which successors are generated is from left to right. Example: A generates first B, then C, and finally D. Non-quietescent states are indicated by bold circled states.



A pre-initialized history table is provided as follows: all entries are zero except for those specified in the following table:

Move	AC	AD	BF	BG
HT value	5	2	3	1

1. Give the execution trace for HTQSABDLM(A,3,2,-∞,∞). [20]

#define DLM() HTQSABDLM(), #define Max() HTQSABMaxV(), #define Min() HTQSABMinV()

call	open	eval	value	α, β	best action,value
DLM(A,3,2,-∞,∞)	C5D2B0	C	Min(C,2,2,-∞,∞)=6	6, ∞	AC,6
	D2B0	D	Min(D,2,2,6,∞)=3	6, ∞	AC,6
	B0	B	Min(B,2,2,6,∞)=2	6, ∞	AC,6 [AC:6]
Min(C,2,2,-∞,∞)	H0I0	H	Max(H,1,2,-∞,∞)=6 (SSS)	-∞, 6	CH,6 [HQ:1]
	I0	I	Max(I,1,2,-∞,6)=9 (SSS,QS,prune)	-∞, 6	CH,6 [CH:1,IR:1, R-AC:1,AC-AN:1]
Min(D,2,2,6,∞)	J0K0	J	Max(J,1,2,6,∞)=3 (prune)	6, ∞	DJ,3 [DJ:1]
Max(J,1,2,6,∞)	S0T0	S	Min(S,0,2,6,∞)=1 (QS,SSS,prune)	6, ∞	JS,1 [S-AD:1,AD-AO:1]
	T0	T	Min(T,0,2,6,∞)=3	6, ∞	JT,3 [JT:1]
Min(B,2,2,6,∞)	F3G1E0	F	Max(F,1,2,6,∞)=8	6, 8	BF,8
	G1E0	G	Max(G,1,2,6,8)=2 (SSS,QS,prune)	6, 8	BG,2 [BG:2,GP:1, P-AA:1,AA-AL:1]
Max(F,1,2,6,∞)	N0O0	N	Min(N,0,2,6,∞)=3	6, ∞	FN,3
	O0	O	Min(O,0,2,6,∞)=8	8, ∞	FO,8 [FO:1]

2. Which nodes, if any, get pruned by HTQSABDLM(A,3,2,-∞,∞)? [3]

K,U,AF,V,E,L,M,X,AI

3. What is the Principal Variant (PV) found by HTQSABDLM(A,3,2,-∞,∞)? [2]

ACHQ