

SOLUTION NOTES

Compiler Construction 2001 Paper 5 Question 6 (AM)

This is the file as submitted to the Examiners in January 2001.

PC points to code, SP to stack fringe, FP (frame pointer) to current frame, H (exception stack) to pair of (SP,PC); (maybe exception name included to make a triple, maybe chained through stack as a quadruple). First entry in FP is a pointer back to FP of statically enclosing block.

Clever students might use shallow binding for H, but this probably won't be lectured.

No need for search for variables—var access is a statically calculable number of blocks out (static pointer) then a statically computable offset. For exceptions likely to need a search through H to find correct exception. (But not if they used shallow binding via exception structures).;

For an interpreter, the max search for vars is still bounded by the number of vars in scope, but for exceptions may have unlimited search for handlers for 'a' defined in a recursive proc before we find a handler for 'b'. Hence dependent on dynamic call nesting.