

1996 Paper 12 Question 7

Compiler Construction

Outline the key features of the design of the part of a compiler that will translate the abstract syntax tree representation of a program into a stack-based intermediate code. Concentrate on those features used in the translation of the following fragment:

```
...
LET i = k
LET j = k
WHILE (i>0) AND (j<100) DO { i := i-1; j := j+2 }
...
```

In particular, concentrate on the mechanism you would choose to deal with

- (a) the scopes of identifiers [6 marks]
- (b) the compilation of boolean expressions involving the operators NOT, AND and OR [6 marks]
- (c) the translation of the WHILE command [4 marks]
- (d) the translation of the two assignments [4 marks]