

科目：編輯器設計 (A)

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1. (15 points) Please show the possible code generated for the following procedure call "X(3)". You need to explain the strategy for generating the code.

```
procedure A (X: proc)
begin
    X(3);
end;
```

```
procedure B()
    int x;
    procedure C(q: int)
        begin ... end;
begin A(C); end;
```

2. (15 points) Consider the following context-free grammar:

$$\begin{aligned} P &\rightarrow \textit{begin} \quad SL \quad \textit{end} \\ SL &\rightarrow S \\ SL &\rightarrow \\ S &\rightarrow v \quad := \quad v; \\ S &\rightarrow \textit{begin} \quad SL \quad \textit{end} \end{aligned}$$

Please add action routines to construct the parse tree of an input program.

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3. (10 points) How can we compile short-circuit boolean expressions, such as

if A and then B and then C then ... else ...

You need to explain your answer carefully.