

國立交通大學試題紙

科目：編譯器設計(A)

日期：101年1月17日 第1頁共1頁

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* 請將答案依題號順序寫入答案卷

答題時字跡需工整，否則不予計分。Write your answers legibly; otherwise you will get zero score.

1. (15 points) Please describe a method for translating exceptions in Java (or C++ or other similar languages).

2. (20 points) Unlike C, in a Pascal-like programming language, a procedure may be declared within another procedure. How can we pass a procedure p to another procedure q and later invoke p ? Note that we need to adjust the run-time stack in order to fit the scope rules.

3. (15 points) What are the advantages of employing an intermediate representation in a compiler? Please describe an optimization algorithm which, when operating on IR, will yield better result or performance than if it operates on assembly code.

◎ 請用深黑色鋼筆或原子筆出題

命題老師簽名：

國立交通大學試題紙

科目：編譯器設計(B)

日期：101 年 1 月 17 日 第 1 頁 共 1 頁

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答題時字跡需工整，否則不予計分。Write your answers legibly; otherwise you will get zero score.

1. (8 points) What is the primary function of the scanner and what computational mechanism is used to accomplish it? What is the primary function of the parser and what computational mechanism is used to accomplish it?
2. The following grammar is not suitable for a top-down predictive parser. Note that “a” and “b” are terminal symbols.
 $L \rightarrow A a \mid B b$
 $A \rightarrow L b \mid a a$
 $B \rightarrow b B b \mid b a$
 - (1) (8 points) Identify the problem and correct it by rewriting the grammar.
 - (2) (8 points) Show that your grammar satisfies LL(1) condition by building a LL(1) parse table for it.
3. Consider the context-free grammar depicted below where “begin”, “end” and “x” are all terminal symbols of the grammar and Stat is considered the starting symbol for this grammar. You can abbreviate “begin” to “b” and “end” to “e” respectively.
 $\text{Stat} \rightarrow \text{Block}$
 $\text{Block} \rightarrow \text{begin Block end}$
 $\text{Block} \rightarrow \text{Body}$
 $\text{Body} \rightarrow x$
 - (1) (15 points) Construct the corresponding LR parsing table.
 - (2) (5 points) Would this grammar be LR(0)? Why or why not? (Note: you do not need to construct the set of LR(0) items but rather look at the ones you have already made for LR(1) to answer this question.)
4. (6 points) What is the main advantage of SLR(1) and LALR(1) parsers, as compared to LR(1) parsers? What is the main disadvantage of SLR(1) and LALR(1) parsers, as compared to LR(1) parsers?

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命題老師簽名：