CS420: Compiler Design

Fall, 2019

Term Project : Internal Data Structure

(Due date: Nov. 21, 2019)

- **Overview**

  The first submission for the term project of this semester is a report that describes the internal data structure and its operation to build a compiler.

- **Internal data structure**

  One of the roles of a compiler is transforming human-readable program source code into a machine language code. To do this, the compiler should have its own data structure to contain the contexts of source code.

  You can choose any kind of data structure to build your compiler, such as array, linked list, network, and so on. In addition, you should consider what kind of the information in the source code must be stored in your data structure. For example, you can build a data structure to store the function information : the name of the function, return type, the number of parameters and its types, and another data structure to keep the local and global variables, and so on. Moreover, you should specify how each data structure operates and how the data structures are related to others.

- **Hints and notes**

  ✓ The data structures should also contain the information about the control flow of the source code so that the order of each statement of source code can be figured out.

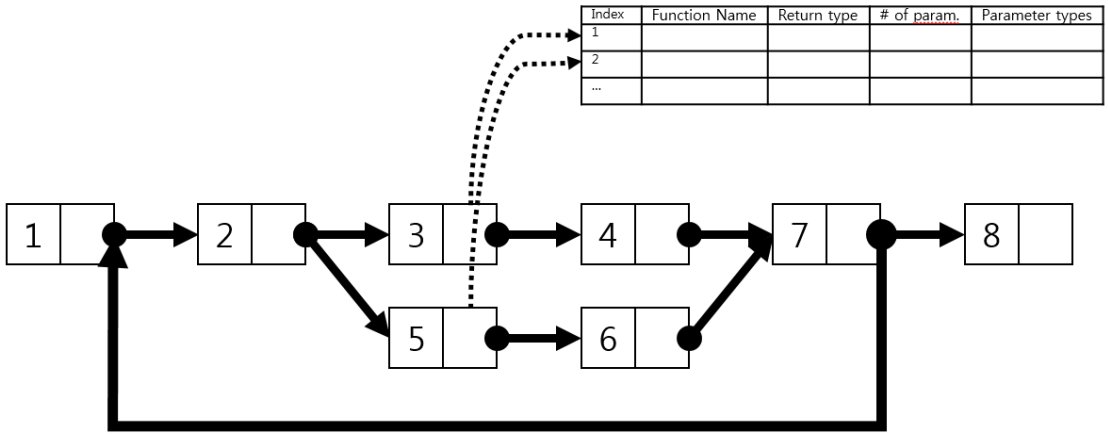
- ✓ In the internal data structure, there should be no loss of the information of source code. In other word, the original source code and related information should be extracted from the internal data structure.

- ✓ **A simple example of submission** :

Data Structure 1: A list that stores function information

Index	Function Name	Return type	# of param.	Parameter types
1				
2				
…				

Data Structure 2: A linked list that stores the sequence of statements



: Each node of the linked-list is mapped to a line of source code. The pointer points the node that has a line being executed next. If a node has conditional statements, the node can have more than one pointer. And if a node has function call, the node has additional pointer that points an entry of Data Structure 1. …

Data Structure X: …

Other various forms that describes internal data structure…

- **Submit form**

A PDF file document (<5 pages)

HW3_TeamNumber.pdf

ex) HW3_Team1.pdf

(Specifying team members in the document is highly recommended)

If plagiarism is detected, zero-score will be given.

TA will check the details of source code of each student.

If there any problem or question, feel free to ask TA with E-mail or Q&A board.

You also can contact TA in office hour, N1 402, every Tuesday.

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