Compiler Construction

Lecture # 05

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- hence, the symbol table is a data structure containing a record for each variable name with corresponding fields of attributes
- it should allow the compiler to find, store and retrieve data from the record quickly

Compiler Construction Tools

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4. **Code-generator Generators:** they produce target machine code by manipulating each rule for translating each operation of the intermediate code

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6. **Compiler-construction Toolkits:** they provide an integrated set of routines for construction various phases of a compiler.

Compiler Applications

1. Implementation of high level languages

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5. software productivity tools

Programming Language Basics

Static Policy

A policy that allows the compiler to address an issue then it is known as static policy

Dynamic Policy

A policy that addresses an issue during execution or run-time is known as dynamic policy

Programming Language Basics continued . . .

Environment

It refers to the mapping of names (variables) to locations (memory addresses).

Environments may change according to the scope rules of a language

States

It refers to the mapping of locations (addresses) to values

Programming Language Basics continued . . .

Identifier

It is a string of characters (letters or digits), that refers to an entity, such as a data object, a procedure (function), a class or a type

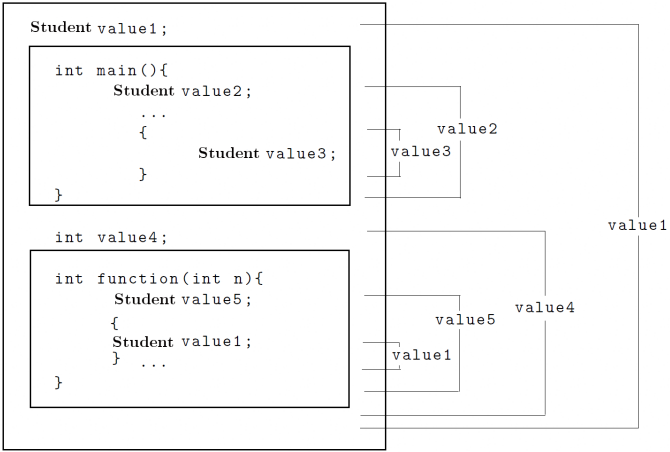
e.g., int result, class Box , void add, struct node etc

Variables

A variable is an instance of an identifier that refers to a particular location in memory.

An identifier can be declared more than once, each such `declaration` introduces a new variable

Variable Scope



Programming Language Basics continued . . .

Structure

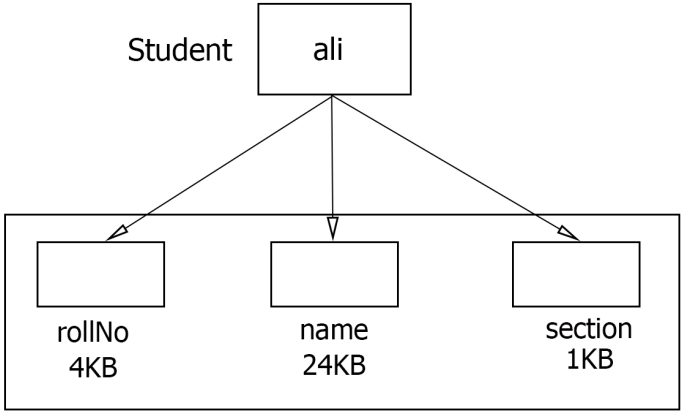
A structure is a collection of related data items that can be referenced with a single name

- The data items in structure are called members
- Unlike arrays, a structure can store members of different types
- Example code,

```
struct Student{
        int rollNo;
        string name;
        char section;
};

Student ali;
```

Structures



Programming Language Basics continued . . .

Function

It groups a number of statements into a single unit and assigns it a name

- It can be then invoked from other parts of program
- The function's body is stored in only one place of the memory
- Example,

```
void display(){
        ...
        ...
        ...
}
```