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C LANGUAGE

19CSE100 – PROBLEM SOLVING AND ALGORITHMIC THINKING

PROGRAMMING LANGUAGE SURVEY ASSIGNMENT

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Introduction

- Most of the programs of UNIX are written and run with the help of ‘c’.
- In 1972, Dennies Ritchie at Bell Laboratories wrote C language which caused a revolution in computing world.
- From beginning C was intended to be useful for busy programmers to get things done easily because C is powerful, dominant and supple language.

Why name ‘C’ was given to this language?

- Many of the ideas of C language were derived and taken from ‘b’ language.
- BCPL and CPL are previous versions of ‘B’ language.
- As many features came from B. So it named as ‘C’.

About “C”

- C is a structured programming language
- C supports functions that enables easy maintainability of code, by breaking large file into smaller modules.
- Comments in C provides easy readability
- C programs built from
  - ✓ *Variables and type declaration*
  - ✓ *Functions*
  - ✓ *Expressions*
  - ✓ *Statements.*

Structure of C Program

- Before going and reading the structure of C programs we need to have basic knowledge of the following:

1.C's Character Set

2.C's Keywords

3.The General Structure of a C Program

4.How to End A Statement

5.Header Files and Library Functions.

C's Character Set

C does not use every character set and key found on modern computers. The only characters that C Language uses for its programs are as follows:

- A-Z all alphabets
- a-z all alphabets
- 0-9
- # % & ! _ {} [] () $$$$ &&&&
- + - / * =

The Keywords

- “Keywords” are words that have special meaning to the C compiler.
- Their meaning cannot be changed at any instance.
- Serve as basic building blocks for program statements.
- All keywords are written in only lowercase.

Header Files

- The files that are specified in the include section is called as Header File.
- These are precompiled files that has some functions defined in them.
- We can call those functions in our program by supplying parameters.
- Header file is given an extension .h
- C source file is given an extension .c

Main Function

- This is the “Entry Point” of a program.
- When a file is executed, the start point is the main function.
- From main function the flow goes as per the programmers choice.
- There may or may not be other functions written by user in a program.
- Main function is compulsory for any C program.

Running a ‘C’ Program

- Type a program
- Save it
- Compile program-This will generate an .exe file (executable)
- Run the program (actually the exe created out of compilation will run and not the .C file)
- In different compiler we have different option for compiling and running.

The Identifiers

- They are programmer-chosen names to represent parts of the program: variables, functions, etc.
- Cannot use C keywords as identifiers
- Must begin with alpha character or _, followed by alpha, numeric, or_
- Must consist of only letters, digits or underscore (_)
- Only first 31 characters are significant
- Must NOT contain spaces ( ).

Declarations:

- Constants and variables must be declared before they can be used.
- A constant declaration specifies the type, the name and the value of the constant.
- Any attempt to alter the value of a variable defined.
- As constant results in an error message by the compiler.
- A variable declaration specifies the type, the name and possibly the initial value of the variable

What are variables in C?

- A variable is a data name that is used to store any data value.
- Variables are used to store values that can be changed during the program execution.
- Variables in C have the same meaning as variables in algebra. That is, they represent some unknown, or variable, value.

$$x=a+b$$

$$z+2=3(y-5)$$

- Remember that variable in algebra are represented by a single character.

Naming Variables

- Variables in C may be given representations containing multiple characters. But there are rules for these representations.
- Variable names in C ;
  - *May only consist of letters, digits and underscores.*
  - *May not begin with a number.*
  - *May not be a C reserved word (keyword)*
  - *Should start with a letter or an underscore (__)*
  - *Can contain letters, numbers or underscores*
  - *No special characters are followed.*

Case Sensitivity

- C is a case sensitive language.
- It matters whether an identifier, such as a variable name, is uppercase or lowercase.
- Examples: area, Area, AREA,ArEa

  are all seen as different variables by the compiler.

Declaring Variables

- Before using a variable, you must give the compiler some information about the variable; i.e., you must declare it.
- The declaration statement includes the data type of the variable.
- Example of variable declaration:
  - *int length*
  - *float area*
- Once a value has been placed in a variable it stays there until the program alters it.

Data types in ‘ansi c’

- There are three classes of data types here:
- Primitive data type

  Int, float, double, char
- Aggregate OR derived data types

  Arrays come under this category

  Arrays can contain collection of int or float or char or double data
- User defined data types

  Structures and enum fall under this category.

Example of ‘C’ Program

```
/*     HELLO.C – Hello, world*/

#include <stdio.h>

Void main()

{

    printf(“Hello, world\n”);

    Getch();

}
```

Thank You

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