SRI AKILANDESWARI WOMEN'S COLLEGE, WANDIWASH

PROGRAMMING IN C

Class: I. B. Sc Computer Science

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BASIC STRUCTURE

Basic Structure of C Programs
Documentation Section
Link Section
Definition Section
Global Declaration Section

main() Function Section
{
Declaration Part
Executable Part
}

Subprogram Section Function 1 Function 2 Function 3 - - - Function n

BASIC STRUCTURE

Documentation Section

- This section consists of comment lines which include the name of programmer, the author and other details like time and date of writing the program.
- Documentation section helps anyone to get an overview of the program.

Link Section

- The link section consists of the header files of the functions that are used in the program. It provides instructions to the compiler to link functions from the system library.

BASIC STRUCTURE

Definition Section

- All the symbolic constants are written in definition section. Macros are known as symbolic constants.

Global Declaration Section

- The global variables that can be used anywhere in the program are declared in global declaration section. This section also declares the user defined functions.

BASIC STRUCTURE

main() Function Section

- It is necessary have one main() function section in every C program. This section contains two parts, declaration and executable part.
- The declaration part declares all the variables that are used in executable part. These two parts must be written in between the opening and closing braces.
- Each statement in the declaration and executable part must end with a semicolon (;). The execution of program starts at opening braces and ends at closing braces.

Subprogram Section

- The subprogram section contains all the user defined functions that are used to perform a specific task. These user defined functions are called in the main() function.

PROGRAMMING STYLE

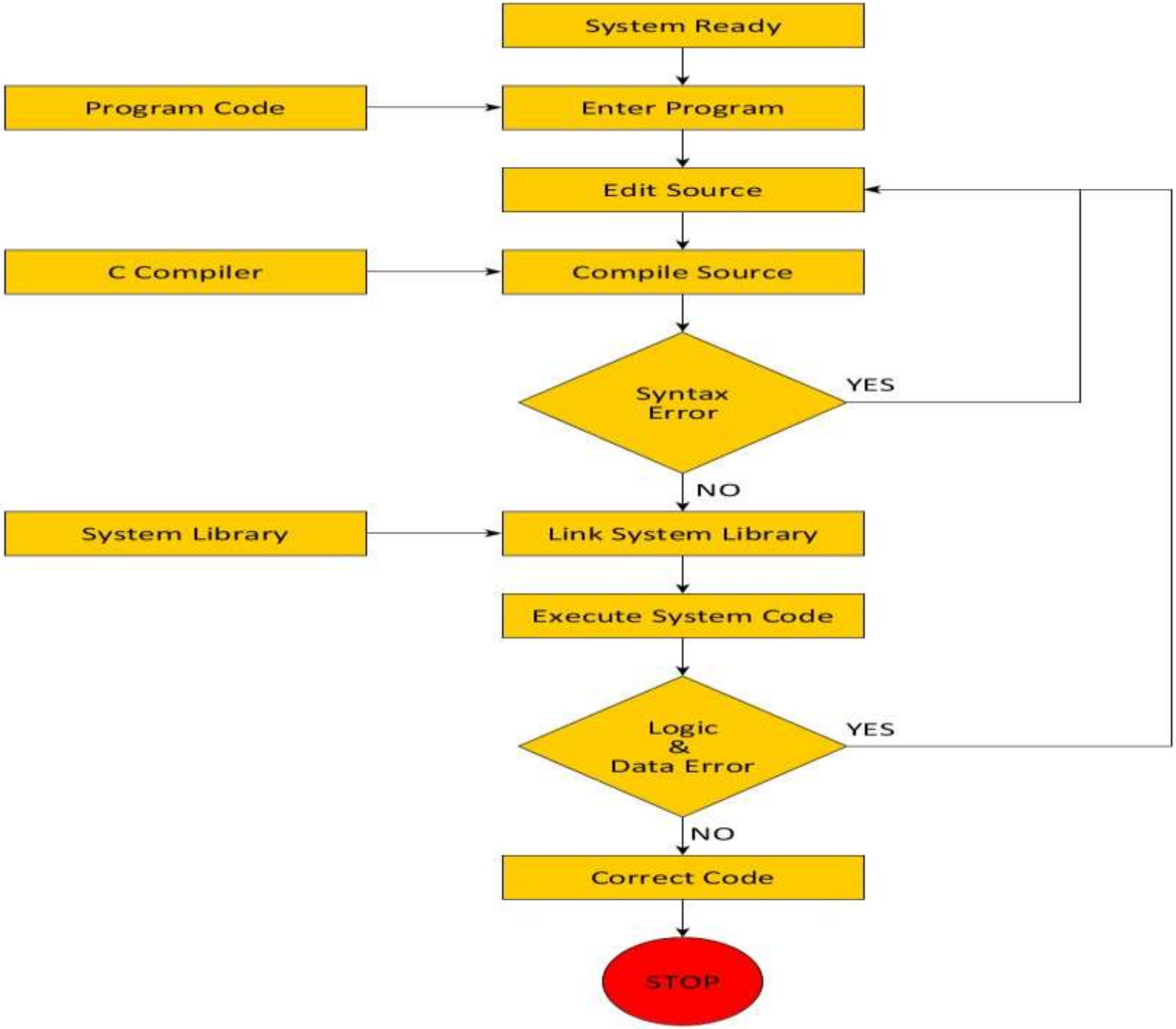
- C program statement are written in lower case letter uppercase letters are used for symbolic constant.
- braces group program statement together and mark the beginning of the end of the function.
- proper identification of braces and statement would make a program easier to read and debug.
- Command lines are very important for debugging and testing the program.

- C is a free-form language we can group together on one line.
- Ex:
  - a=b;
  - x=y+1;
  - z=a+x;
- Can be written on one line
  - a=b; x=y+1; z=a+x;

  - main()
  - {
  - printf(“CS”);
  - }
- May be written in one line
- main(){printf(“CS”);}
- However this style make the program more difficult to understand and should not be used.

EXECUTING

- 1.Creating the program.
- 2.Compiling the program.
- 3.Linking the program with functions that are needed from the C library.
- 4.Executing the program.
  - Operating system is a program that controls the entire operation in computer system.
  - The operating system which is interface between the hardware and user, handles the execution of user programs.


System Ready
Program Code
Enter Program
Edit Source
C Compiler
Compile Source
Syntax Error
YES
NO
System Library
Link System Library
Execute System Code
Logic & Data Error
YES
NO
Correct Code
STOP

TRUE OR FALSE:

- (a) Any valid printable ANSII character can be used in an identifier.
- (b) All variables must be given a type when they are declared.
- (c) Declarations can appear anywhere in a program.
- (d) ANSI C treats the variable name and Name to be same.
- (e) The underscore can be used anywhere in an identifier.
- (f) The keyword void is a data type in C.
- (g) Floating point data constants, by default, denote float type values.
- (h) Like variables, constants have a type.
- (i) Character constants are coded using double quotes.
- (j) Initialization is the process of assigning a value to a variable at the time of declaration.
- (k) All static variables are automatically initialized to zero.
- (l) The scanf function can be used to read only one value at a time.

CHARACTER SET

- The characters that can be used to form words, numbers and expressions depend upon the computer on which the program is run.

- The characters in C are grouped into the following categories:
  - Letters
  - Digits
  - Special Characters
  - White Spaces

CHARACTER SET

- The compiler ignores white spaces unless they are a part of string constant.

- White spaces may be used to separate words, but are prohibited between the characters of keywords and identifiers.

CHARACTER SET

LETTERS

- Uppercase letters A-Z
  Lowercase letters a-z

DIGITS

- 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

CHARACTER SET

- ~ tilde
- % percent sign
- | vertical bar
- @ at symbol
- + plus sign
- < less than
- _ underscore
- - minus sign
- > greater than
- ^ caret
- # number sign
- = equal to
- & ampersand
- $ dollar sign

CHARACTER SET

-
- / slash
- (left parenthesis
- * asterisk
- \ back slash
-) rightparenthesis
- ′ apostrophe
- : colon
- [left bracket
- " quotation mark
- ; semicolon
-] right bracket
- ! exclamation mark
- , comma
- { left flower brace
- ? Question mark
- . dot operator
- } right flower brace

CHARACTER SET

- \b blank space
- \t horizontal tab
- \v vertical tab
- \r carriage return
- \f form feed
- \n new line
- \\ Back slash
- \’ Single quote
- \" Double quote
- \? Questionmark
- \0 Null
- \a Alarm (bell)

TRIGRAPH CHARCTERS

- Some of the characters like {}, [], \, |, ~ and ^ are missing in the above keyboard. Hence practically it may not be possible to write a C program using this keyboard.

- To solve this problem C suggested to use combination of 3 characters to produce a single character called trigraph character.

- A trigraph is a sequence of three characters, the first two of which are question marks
- C supports the following 9 trigraph characters.

TRIGRAPH CHARCTERS

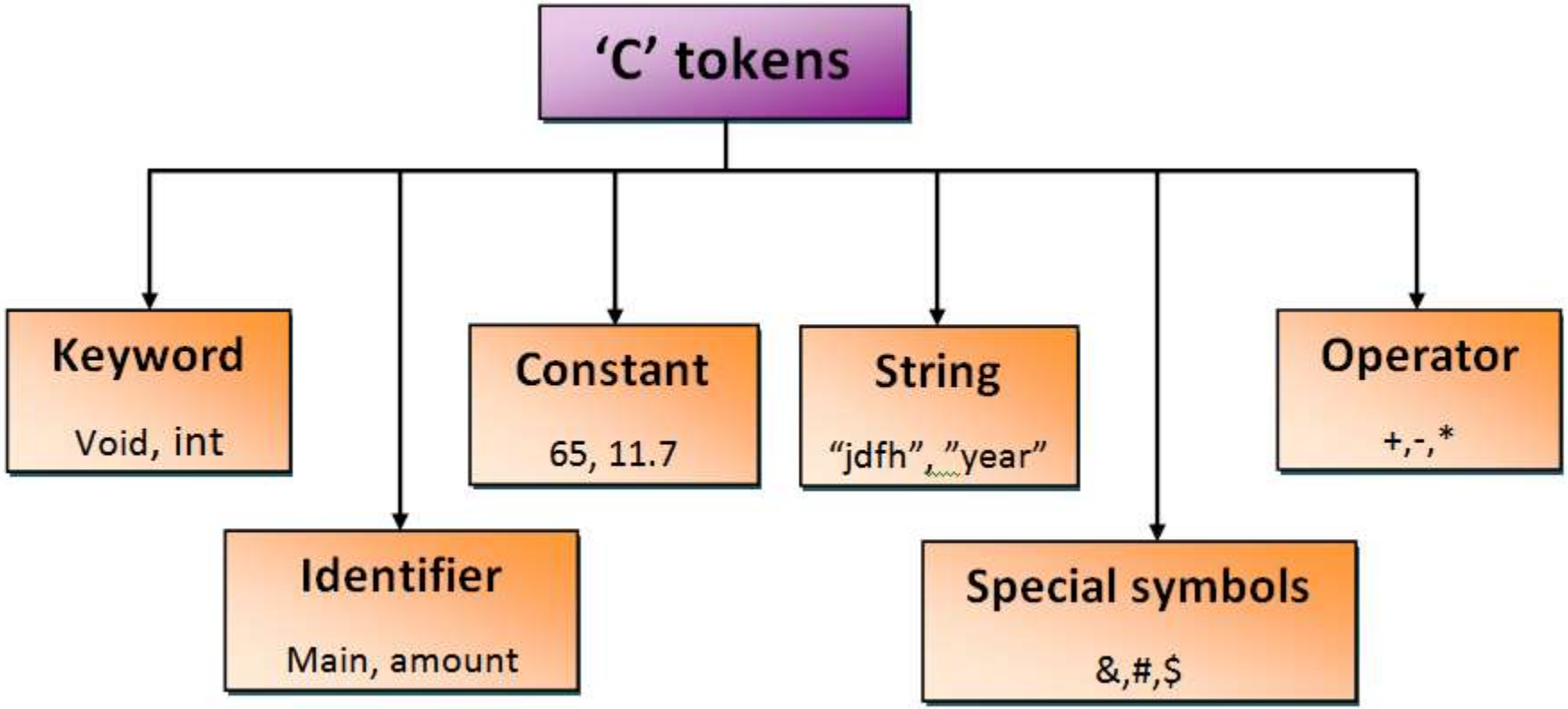
Trigraph Sequence	Translation
??=	#
??(	[
??)	]
??<	{
??>	}
??!	|
??/	\
??'	^
??-	~

C TOKEN

- Individual words and punctuation marks are called tokens.

- C has SIX types of tokens.

C TOKEN


'C' tokens
Keyword
Void, int
Identifier
Main, amount
Constant
65, 11.7
String
"jdfh", "year"
Special symbols
&,#,$
Operator
+,-,*