PODAR INTERNATIONAL SCHOOL, NANDED

CHAPTER: 5 INTRODUCTIONS TO C LANGUAGE

IMPORTANT POINTS:

1. Machine language is made of zeros (0) and ones(1)
2. 'C' is one of the oldest and most widely used programming language.
3. 'C' Designed and written by Dennis Ritchie in 1972 at AT & T's Bell Laboratories of USA
4. Process of converting high level language into machine language is called compilation.
5. C is structured programming language in which complex programs can be broken into modular form.
6. Constants are values which cannot be changed during the execution of a program.
7. An operator is symbol which instructs the compiler to perform a specific mathematical or logical operation.
8. In built c libraries are always inside angle brackets < >
9. getch() is the last statement of program
10. getch() function can hold the screen so that output can be seen.
11. A character combination which consist of a backslash (\) and a letter or combination of digits is called escape sequence.
12. Errors are mistake in program, which are traced by compiler.

STEPS TO LEARN THE C LANGUAGE

- Alphanumeric
- Constants
- Keywords
- Variables
- Instructions
- Programs

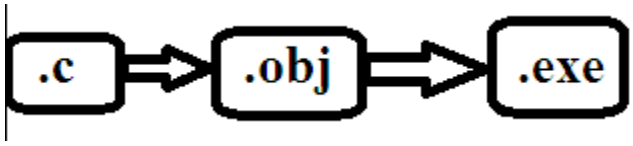
Features of C:

1. C has a rich set of built-in-functions
2. It has variety of data types

3. C is structured programming language in which complex programs can be broken into modular form.
4. C Programs are highly portable

HOW COMPILATION PROCESS OR EXECUTABLE FILE OF C PROGRAM IS DONE?

1. The process is divided into 2 steps:
    a. Compiling
    b. Linking
2. The 'c' compiler translates c program to machine language
3. The result of or output of complier is called object file (extension is .obj file)
4. The object file has information to aid the linker.
5. Linker combines different object file to produce the actual executable file with extension .exe



STEPS TO EXECUTE C PROGRAM:

1. Type program
2. Save file with .c extension
3. Press alt+F9 to complie code, It will produce object file
4. Press Ctrl+F9 to run code, It will produce an executable file.

KEYWORDS:

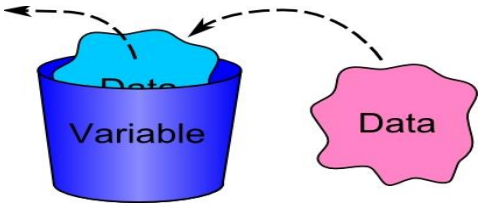
1. Keywords are reserved words
2. They have special meaning
3. Cannot be changed by user
4. There are 32 keywords

CONSTANTS

1. Constants are values that do not change.
2. Examples: 12, -2.5, "Trishaa", '$'. 3.142

VARIABLES:

1. It is a container to hold data.
2. Variables can store same type of data.
3. The values can be changed during execution of a program.



RULES FOR CONSTRUTING VARIABLE NAME:

1. The first character must be an alphabet or underscore.
2. No comma is allowed
3. No space is allowed
4. No special symbols are allowed
5. Variable name should not exceed 31 characters
6. Keywords cannot be used as variable name

DATA TYPE:

1. It specifies which type of data the variable can store.
2. The type variable decides how much space it will require in computer memory.
3. Syntax:
    a. Datatype variableName;
       Example: int watch_23;
    b. Datatype VariableName=Value;
       Example: char watch_23='P';
4. Datatypes with format specifier:
    a. int-------- %d (stores whole number may be positive or negative number)

b. char----------%c (stores a single character)
c. float----------%f (stores decimal number)
d. double-------%lf(this is small l= LONG and f- FLOAT) (stores decimal number with long range)
e. string----------%s (store a words and sentence)

OPERATORS: (refer text book page number : 60 and 61)

An operator is symbol which instructs the compiler to perform a specific mathematical or logical operation

1. Arithmetic operators [+,-,*,/,%]
2. Relational operators [==,!=,>,<,>=,<=]
3. Logical operators[&&, ||, !]
4. Assignment operators [=]
5. Increment/ Decrement operators[++,--]

RULES FOR WRITING C PROGRAM:

1. 'c' program must be written in lower case
2. All statements inside the main function should end with a semicolon [i.e. , ;)
3. Main() is the first function
4. All variables must be declared
5. Opening braces should have closing braces.

COMMENTS:

1. // This is single line comment
2. /* This is multi line comment
   Here it also its continued till compiler find */

C PROGRAM:

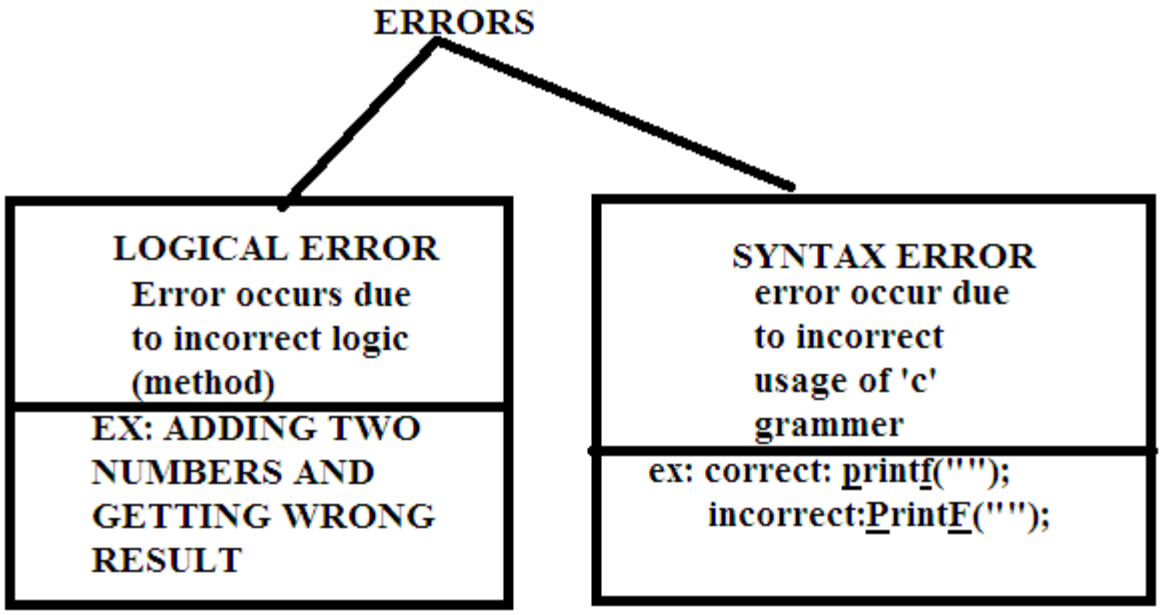
```
#include<stdio.h>
#include<conio.h>
void main()
{
    clrscr();
    printf("Example ");
    getch();
}
```

1. Here stdio.h and conio.h are preprocessor directives
2. #include <stdio.h> is called complier directive
3. #include<stdio.h> tells compiler to include a standard c library.
4. In built c libraries are always inside angle brackets < >
5. Using stdio.h for printf() statements
6. Using conio.h statements for clrscr() and getch ()
7. main() function always runs first
8. clrscr() is a predefined function which clears the previous output.
9. clrscr() must be at starting of the code.
10. printf() function is used to to print character, string , float, integer etc.,
11. getch() is a predefined function which accepts a character at the execution time.

ESCAPE SEQUENCE:

\a= _____ \b= _____
\f= _____ \n= _____
\r= _____ \t= _____
\v= _____

Errors



Program to print name, Date of birth [DOB] And mobile number

```
#include <stdio.h>
 int main()
  {
     printf("Name    : Alexandra Abramov\n");
     printf("DOB     : July 14, 1975\n");
     printf("Mobile : 99-9999999999\n");
     return(0);
  }
```

PROGRAM TO PRINT HELLO WORLD

```
#include <stdio.h>
 void main()
{                    /* Our first simple C basic program */
      printf("Hello World! ");
      getch();
}
```

Program to print hello world 5 time each on new line using escape sequence

```
#include <stdio.h>
 void main()
{
	printf("Hello World \n Hello World \n Hello World \n Hello World
	\n Hello World \n ");
	getch();
}
```

Program to print :

```
*
**
* **
* * * *
* * * * *
```

```
#include <stdio.h>
 void main()
{
	printf("* \n");
	printf("* *\n");
	printf("* *  *\n");
	printf("* * *  *\n");
	printf("* * * *  *\n");

	getch();
}
```

Write a program to store the marks of three subjects English, maths, science. Calculate the total marks and average.

```
#include <stdio.h>
 void main()
{
        float English,maths,science,total;
        float average;
          English=75;
        maths=85;
        science=80;
        total=English+maths+science;
        average=total/3;
        printf("\n Total= %f ",total);
        printf("\n Average=%f ", average);
        getch();
}
```

Write a program to store two numbers in variables, and print the remainder when the first number is divided by the second.

```
#include <stdio.h>
 void main()
{
        int first_num,sec_num,rem;
        first_num=7;
        sec_num=2;
        rem=first_num%sec_num;
        printf("\n Remainder is= %d ",rem);
        getch();
}
```

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