**DAY – 06**

C language was developed in 1972 by Dennis Ritchie.

· It took 3 years, 8 months for developing the C.

· Business package – Excel, Notepad

· Programs written in C are much faster & efficient.

· Highly Portable.

· Basic structure of C program:

· Documentation Section: /\* --description, author, DOC/DOM, Version \*/

/\*

§ Description: modules add,sub

§ int add (int val1, int val2); add is along addition of val1 with val2 and return the result to the main

§ Author: BT

§ DOC/DOM: 29/10/2024

§ Version: 0.1v

§ 1.0---- stable version –basing of the project

\*/

o Whenever we push the code it will become read only.

o Link Section ----- Including header files.

o Definition Section----- defining the prototype of function & macros.

o Global Declaration Section : Variable declaration, static, local

o Function Section----Every function has it’s own address.

o main()

{ Declaration part

Executable part

}

CONSTANTS, VARABLES & DATATYPES:

Character Set:

· Letters (A-Z, a-z)

· Digits (0-9)

· Special Characters (!, @, #, $, %, &….)

· White Spaces (blank spaces, tab, carriage return, new line\n, /r – same line first position)

CTOKENS: The smallest individual units in a program are known as Tokens.

They are:

§ Keyword --- Reserved word(32 reserved words)

§ Identifiers---- Variable name

§ Constants----The value doesn’t change at run time

§ Strings---- Collection of characters enclosed with double quotes

§ Special Symbols-------$, &,@.......

§ Operaters------ 1.Arthimentic Operaters: +,-,\*,%

§ 2. Relational Operaters: >,<, >=, <=,!=

§ 3. Assignment Opersters: +=.-=,\*=,%=,=,/=

§ Logical Operaters: &&, ||, !

§ Bitwise Operaters: <<, >>, &, |, ^, !

EX:

int a=10;

if( !a)

{ printf(“h”):

}

else {

printf(“N”);

Display 2 table by using bitwise operaters?

number = 5 # Change this to any number you want

for i in range(1, 11): # Generate the table from 1 to 10

a = number

b = i

result =0

o while b > 0:

if b & 1: # Check if the least significant bit is set

o result += a # Add 'a' if the current bit of 'b' is 1

a <<= 1 # Double 'a' (equivalent to a \* 2)

b >>= 1 # Halve 'b' (equivalent to b // 2)

print(f"{number} x {i} = {result}")

DATA TYPES:

· C language is rich in it’s datatypes. ANSI c supports the following data types.

o Primary datatypes

o User-defined datatypes

o Derived datatypes

1)Primary datatypes:

NAME SIZE RANGE OF VALUES

char 1 -128 TO 127

int 2 -32,768 to 32,767

float 4 3.4e -35 to 3.4e +38

double 8 1.7e -308 to 1.7e +208

2)User-defined datatypes: a)Structures

b)Unions

c)enum

3)Derived datatypes: a) Array

b)Function

MODIFIERS: The basic datatypes may have several modifiers preceding them to serve the needs of various situations. They are:

a)Signed

b)Unsigned

c)long

d)short

o May be applied to character and integer datatypes. However, the modifier long may also applied to double.

NAME SIZE RANGE OF VALUES

Unsigned char 1 0 to 255

Signed char 1 -128 to 127

Unsigned int 2 0 to 65535

Signed int 2 -31768 to 32767

Short int 2 -31768 to 32767

Long int 4 ------------------

Long double 10 ------------------

INCREMENT & DECREMENT:

o Pre-Increment------- ++a

o Post-Increment------ a++

o Pre- Decrement------ --a

o Post-Decrement------ a—

EX:

int a= 10;

int b= 20;

int c= a++;

++a;

c++;

b= ++c;

printf(“\n %d %d %d”, ++a, ++b, ++c);

OUTPUT: 13 12 13

TERENARY OPERATER: option1? (option2) : (option3)

o Option1 ----- Condition

o Option 2------ If the condition is true then it will execute

o Option 3----- If the condition if false then it will execute

EX: Greatest of three numbers using terenary operater

int a=10;

int b=20;

int c=30;

int d=40;

res = (a>b)?((a>c)? a : c) : ((b>c)? b : c);

printf(“\n %d”, res);

OUTPUT: 40

SIZEOF—OPERATER: It gives number of bits the datatype consumes.

EX: printf(“%d”, sizeof(int));