C

Programming

* **History of C Language :-**
* It is a Procedural Language.
* C is a object base Programming Language created by Dennis Ritchie of AT & T Bell Laboratory
* USA is 1972.
* **Advantage of C Language :-**
* C is a Small Language with very few words hardly 32.
* C is the Standard Development Language For PC many Operating System add package are written using the C Language.
* **Requirement for C Language :-**
* Operating System MS-Dos
* Unix
* Linux
* Quick C
* Microsoft ‘C’
* Turbo C 3.0, etc…
* C programs have to be written first compile to check the error compile on they have to be link to create.
* Execution(.ex) File.
* **C Program Structure :-**
* #include<stdio.h> :- Standard Input Output File.
  + printf() :- Print any String.
  + scanf() :- Value Enter Input.
* #include<conio.h> :- Console Input Output File.
  + clrscr() :- Clear Screen.
  + getch() :- Show Output.
* Void main() :- Do not return any value.

} Beginning of Program.

Statement;

}

* **Void Main()**
* Every C Program Start with Functionvoid main().
* All Statement in C ends with semicolon (;).
* {} Indicates the begin & end of a block Statement & Function.
* **Expense Sequence used in Printf().**
* \n :- New Line
* \t :- Horizontal Tab
* \a :- Alert
* \\ :- Back Slash
* \b :- Back Space
* \r :- Carriage Return
* \” :- Double Quote
* \f :- Form feed
* **Variable Declaration**
* Program use variables to store data.
* All Variable/Contents must have a name.
* **Rules for Variables/Constant Name**
* Maximum Length is 31 Characters.
* Variables contain Alphabets, Digits & Underscore (\_).
* They are Case Sensitive
* Must Start with an Alphabet or an Underscore.
* They must be Unique.
* **Data Type :-**

|  |  |  |
| --- | --- | --- |
| **Type** | **Size in Byte** | **Range** |
| Char | 1 | -128 to +127 |
| Int | 2 | -32768 to +32767 |
| Float | 4 | +3.4e-38 to 3.4e+38 |
| double | 8 | 1.7 e-308 to 1.7 e+308 |

* **Format Character**
* %c = Single Character
* %d = Integer
* %f = Floating Point
* %s = String
* %o = Octal Integer
* %x = Hexadecimal Integer
* **The #define Directive**

A # define is a pre-processor compiler Directive and not a statement. There for #define lines should not end with a semicolon symbolic constants are generally written is uppercase so that they are easily distinguished from lowercase variables name #define instructions are usually placed at the beginning before the main() function. Symbolic constants are not declared in declaration section. Prosecesseor directives are discussed in ch 14.

The #include Directive:

As mentioned earlier, C programs are divided into modules or funvtion. Some functions are written by users, like us, and many others are stord in the c library. Library functions are grouped category.wise and stord in different file known as header files. If we want to access the functions stored in the liberary, it is necessary to tell the compiler about the flies to be accessed.

#include<filename> eg.. # include<stdio.h>

Filename is the name of the library file that contains the required function definition. Pre-processor directives are placed at the beginning of a program.

Shortchat key:

Open = F3

Save =F2

Quit =Alt + x

Cut = Shift + Del

Copy = Ctrl + ins

Paste = Shift + ins

Clear = Ctrl + del

Compile = Alt + F9

Make = F9

Run = Ctrl + F9

Program Reset = Ctrl + F2

Close Program File = Alt + F3

New Program File = Alt + F + N

Zoom(Full Screen) = F5

File create in C:

C:\TURBOC3\BIN\PROJECT\NAME

Program Code

Enter Program

System Ready

Edit Source Program

Figure : Process of compiling and running a C program.

No

Yes

No

Yes

Logic & Data Errors

Execute Object Code

Input Data

System Library

Link with System Library

Stop

Correct Output

C Compiler

Syntax Errors

Compile Source Program

C character set:

Uppercase A to Z

Lowercase a to z

All decimal digits 0 to 9

Special Characters.

, Comma

. Period

; Semicolon

: Colon

? Question mark

‘ Apostrophe

“ Double quotation mark

! Exclamation Mark

| Vertical bar

/ Slash

\ Back Slash

~ Tilde

\_ Underscore

$ Dollar sign

% Percent sign

& Ampersand

^ Caret

\* Asterisk

- Minus sign

+ Plus sign

< Opening angle bracket

> Closing angle bracket

( Left Parenthesis

) Right Parenthesis

[ Left Bracket

] Right Bracket

{ Left brace

} Right brace

# Number Sign

White Spaces

Blank Space

Horizontal Space

Carriage Retune

New Line

Form Feed

Logical Operators

== Equal to

&& And

|| Or

!= Is not qual to

\0 Null char

ANSI C trigraph Sequences:

Trigraph Sequence

??=

??(

??)

??<

??>

??!

??/

??^

??\_

# Num sign

[ Left bracket

] Right bracket

{ Left bracket

} Right bracket

| Vertical bar

\ Back slash

^ Caret

~ Tilde

ANSI C Keywords:

auto

break

case

char

const

continue

default

do

double

else

enam

extern

float

for

goto

if

int

long

register

return

shout

signed

sizeof

static

steuct

switch

typedef

union

unsigned

void

volatile

while

Structure of C:

1. Hello World!.. print

#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

printf(“Hello world!”);

getch();

}

1. My name

#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

printf(“Femina”);

getch();

}

OLP: Femina

1. BioData

#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

printf(“\n first name= dhaval”);

printf(“\n middle name= pankajbhai”);

printf(“\n last name= leelawala”);

printf(“\n address=a-102,sai drishti residency”);

printf(“\n qulification= admct”);

getch();

}

1. Name in Star

#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

printf("\n \*\*\*\*\*\*\*\*");

printf(“\n \*Dhaval\*”)

printf("\n \*\*\*\*\*\*\*\*");

getch();

}

1. Name’s 1st  Letter

#include<stdio.h>

#include<conio.h>

void main()

{

clrscr();

printf("\n \* \* \* \* \* \*");

printf("\n \* \*");

printf("\n \* \*”);

printf("\n \* \*”);

printf("\n \* \* \* \* \* \*”);

getch();

}

1. Full Name Using Star:
2. Variable:

#include<stdio.h>

#include<conio.h>

void main()

{

int a,b,c;

a=10,b=20,c=30;

clrscr();

printf("\tP7\n\n No is :%d %d %d",a,b,c);

getch();

}

1. Float:

#include<stdio.h>

#include<conio.h>

void main()

{

float a;

a=10;

clrscr();

printf("No is:%.2f",a);

getch();

}

1. Char:

#include<stdio.h>

#include<conio.h>

void main()

{

char a='a';

clrscr();

printf("\n Name is: %c",a);

getch();

}

1. Sum:

#include<stdio.h>

#include<conio.h>

void main()

{

int a,b,sum;

a=10;

b=20;

clrscr();

sum=a+b;

printf("\n No1 is %d",a);

printf("\n No2 is %d",b);

printf("\n Addition is : %d",sum);

getch();

}

11) Operators:

#include<stdio.h>

#include<conio.h>

void main()

{

int a,b,sum,mul,divi,sub;

a=10;

b=2;

clrscr();

sum=a+b;

mul=a\*b;

divi=a/b;

sub=a-b;

printf("\n No1 is: %d",a);

printf("\n No2 is: %d",b);

printf("\n Addition= %d",sum);

printf("\n Multiphication= %d",mul);

printf("\n Division= %d",divi);

printf("\n Subtraction= %d",sub);

getch();

}

12) Area of Circel:

#include<stdio.h>

#include<conio.h>

void main()

{

int r;

float area;

r=5;

clrscr();

area=3.14\*r\*r;

printf("\n enter the value=%d",r);

printf("\n area=%.3f",area);

getch();

}

13) Area of Rectangular:

#include<stdio.h>

#include<conio.h>

void main()

{

int w,l; float area;

w=5; l=2;

clrscr();

area=w\*l;

printf("\n No1 value= %d",w);

printf("\n No2 value= %d",l);

printf("\n area=%.2f",area);

getch();

}

14) Simple Interest:

#include<stdio.h>

#include<conio.h>

void main()

{

int P,N,R;

float interest;

P=9,N=8,R=11;

clrscr();

interest=P\*N\*R/100;

printf("\n Enter the value P= %d",P);

printf("\n Enter the value N= %d",N);

printf("\n Enter the value R= %d",R);

printf("\n interest= %.2f",interest);

getch();

}

15) Swapping:

#include<stdio.h>

#include<conio.h>

void main()

{

int a=10,b=20,t;

t=a; a=b; b=t;

clrscr();

printf("\n value of a= %d",a);

printf("\n value of b= %d",b);

getch();

}

16) Time:

#include<stdio.h>

#include<conio.h>

void main()

{

int m,hours,mini;

mini=250;

clrscr();

hours=mini/60;

m=mini%60;

printf("\n H is= %d",hours);

printf("\n M is= %d",m);

getch();

}

17) Rs:

#include<stdio.h>

#include<conio.h>

void main()

{

int P,rupees,paisa;

paisa=150;

clrscr();

rupees=paisa/100;

P=paisa%100;

printf("\n rupees is: %d",rupees);

printf("\n paisa is: %d",P);

getch();

}

* **Scanf():**

In C programming language, scanf is a function that stands for Scan Formatted String. It reads data from stdin (standard input stream i.e. usually keyboard) and then writes the result into the given arguments.

* It accepts character, string, and numeric data from the user using standard input.
* Scanf also uses format specifiers like printf.

**Example type specifiers recognized by scanf:**

%d to accept input of integers.

%ld to accept input of long integers

%f to accept input of real number.

%c to accept input of character types.

%s to accept input of a string.

**Example:**

int var;  
scanf(“%d”, &var);

*The scanf will write the value input by the user into the integer variable****var.***

**Why &?**

While scanning the input, scanf needs to store that input data somewhere. To store this input data, scanf needs to known the memory location of a variable. And here comes the ampersand to rescue.

* & is also called as address of the operator.
* For example, &var is the address of var.

18) User Input:

#include<stdio.h>

#include<conio.h>

void main()

{

int no;

char name[10];

clrscr();

printf("\n Enter no:");

scanf("%d",&no);

printf("\n Enter name:");

scanf("%s", & name);

printf("\n No is: %d",no);

printf("\n Name is: %s", &name);

getch();

}

19)sf\_Time:

#include<stdio.h>

#include<conio.h>

void main() {

int min,h,m;

clrscr();

printf("enter the minutes");

scanf("%d", & min);

h=min/60; m=min%60;

printf("\n hours is%d",h);

printf("\n minutes is %d",m);

getch();

}

20)sf\_Rs :

#include<stdio.h>

#include<conio.h>

void main()

{

int rs, paisa, P;

clrscr();

printf("\n enter paisa");

scanf("%d",& paisa);

rs=paisa/100;

P=paisa%100;

printf("\n Rs is: %d",rs);

printf("\n P is: %d",P);

getch();

}

21) Operators

#include<stdio.h>

#include<conio.h>

void main()

{

int a,b,sum,mul,divi,sub;

clrscr();

printf("\n enter the no:");

scanf("%d",& a);

printf("\n enter the no:");

scanf("%d",& b);

sum=a+b;

mul=a\*b;

divi=a/b;

sub=a-b;

printf("\n no1 is:%d",a);

printf("\n no2 is:%d",b);

printf("\n addition:%d",sum);

printf("\n multiplication:%d",mul);

printf("\n division:%d",divi);

printf("\n subtration:%d",sub);

getch();

}

22) Area of circle:

#include<stdio.h>

#include<conio.h>

void main()

{

int r;

float area;

clrscr();

printf("\n enter the no:");

scanf("%d", & r);

area=3.14 \* r \* r;

printf("\n no is:%d",r);

printf("\n area:%f",area);

getch();

}

23) Area of Rectangular:

#include<stdio.h>

#include<conio.h>

void main()

{

int W,L;

float area;

clrscr();

printf("\n enter the Weight :");

scanf("%d", & W);

printf("\n enter the Height:");

scanf("%d", & H);

area=W \* H;

printf("\n Weight is: %d",W);

printf("\n Height is: %d",H);

printf("\n area: %f",area);

getch();

}

24) Simple Interest:

#include<stdio.h>

#include<conio.h>

void main()

{

int P,N,R;

float interest;

clrscr();

printf("Enter Principal Amount: ");

scanf("%d",&P);

printf("Enter Number of year: ");

scanf("%d",&N);

printf("Enter Rate of Interest: ");

scanf("%d",&R);

interest=P\*N\*R/100;

printf("\n Principal Amount: %d",P);

printf("\n Number of year: %d",N);

printf("\n Rate of Interest: %d",R);

printf("\n Interest: %f",interest);

getch();

}

25) Swapping:

#include<stdio.h>

#include<conio.h>

void main()

{

int a,b,t;

clrscr();

printf("\n no1:");

scanf("%d",&a);

printf("\n no2:");

scanf("%d",&b);

t=a; a=b; b=t;

printf("\n value of a:%d",a);

printf("\n value of b:%d",b);

getch();

}

26) Marksheet:

#include<stdio.h>

#include<conio.h>

void main()

{

int no,sub1,sub2,sub3,total;

float avg; char name[10];

clrscr();

printf("\n enter Rollno:");

scanf("%d",&no);

printf("\n enter name:");

scanf("%s",&name);

printf("\n enter sub1:");

scanf("%d",&sub1);

printf("\n enter sub2:");

scanf("%d",&sub2);

printf("\n enter sub3:");

scanf("%d",&sub3);

total=sub1+sub2+sub3;

avg=total/3;

printf("\n rollno is:%d",no);

printf("\n name is:%s",name);

printf("\n sub1 is:%d",sub1);

printf("\n sub2 is:%d",sub2);

printf("\n sub3 is:%d",sub3);

printf("\n total is:%d",total);

printf("\n average is:%f",avg);

getch();

}

27) Bill

#include<stdio.h>

#include<conio.h>

void main()

{

char name[10];

float no,rate,qty,total,disc,nettotal;

clrscr();

printf("\n enter id:");

scanf("%f",&no);

printf("\n enter P\_name:");

scanf("%s",&name);

printf("\n enter rate:");

scanf("%f",&rate);

printf("\n enter qty:");

scanf("%f",&qty);

total=rate\*qty;

disc=total\*0.20;

nettotal=total-disc;

printf("\n no is: %f",no);

printf("\n name is: %s",name);

printf("\n rate is: %f",rate);

printf("\n qty is: %f",qty);

printf("\n total is: %f",total);

printf("\n total is: %f",disc);

printf("\n total is: %f",nettotal);

getch();

}

28) Salary Silp: