C Programming Language Handbook

C has keywords

keywords are reserved words which carry special meaning

keywords are

switch	for	while	Do while
If	Else	Int	float
Char	Double	Case	long

printf() function is used to display a text to user on the output screen

scanf() function is used to take input from user

header file for printf() and scanf() is stdio.h

header file is a file that contains function definitions

extension of header file is .h

extension of c file is .c

main function is a function which has return type as int or void

if return type is int function main should return a integer value

if return type is void function main should return a float value

C program to display hello world on the output screen

```
#include<stdio.h>
int main()
{
printf(“Hello World”);
return 0;
}
```

Output

```
Hello World
```

C program to input a number and display its value

```
#include<stdio.h>
int main()
{
int c;
printf(“Enter a Number”);
scanf(“%d”,&c);
printf(“Number you entered is %d”,c);
}
```

Explanation of the above program

```
#include<stdio.h>
```

#include is a preprocessor directive

stdio.h is header file which contains function definitions for printf and scanf functions

```
int main()
```

main is a function from where execution of program starts

int is return type of main function

int is a dataype of a variable

int variable takes 2 bytes of memory

printf() is a function that prints the text on the Console Screen which is also called Output Screen

scanf() is a function that takes input from user from the Console Screen or Output Screen

scanf() function can take input as integer, float, char and double

scanf() function contains %d for integer variable, %f for float variable , %c for char variable
%ld is used for double datatype

scanf() function takes address of a variable as %d

%d is sued for integers

%c is used for char variable

%f is used for float variable

%ld is used for double variable

if we want to display a integer variable in printf function , function contains

%d is sued for integers

%c is used for char variable

%f is used for float variable

%ld is used for double variable

example of printf() statement to display int variable is

printf(“Value of a is %d”,ch);

example of scanf() statement to display int variable is

scanf(“%d”,&ch);

& operator is sued to take address of variable ch

printf function does not takes address of a variable but takes only name of variable

C program to take an int variable and display its value

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter Value for a “);
scanf(“%d”,&a);
printf(“Value of a is %d”,a);
return 1;
}
```

Output

```
Enter value for a 20
Value for a is 20
```

C program to take a float variable and display its value

```
#include<stdio.h>
int main()
{
float a;
printf(“Enter Value for a “);
scanf(“%f”,&a);
printf(“Value of a is %f”,a);
return 1;
}
```

Output

```
Enter Value for a
1.23
Value of a is 1.23
```

C program to take a char variable as input and display its value

```
#include<stdio.h>
```

```
int main()
{
char a;
printf(“Enter a Character”);
scanf(“%c”,&a);
printf(“Value of char variable a is %c”,a);
return 1;
}
```

C program to take a double variable as input and display its value

```
#include<stdio.h>
int main()
{
double a;
printf(“Enter a Double Variable “);
scanf(“%ld”,&a);
printf(“Value of Double Variable is %ld”,a);
return 1;
}
```

C program to input a string which is group of alphabets and display its value

```
#include<stdio.h>
int main()
{
char name[20];
printf(“Enter a string”);
scanf(“%s”,name);
printf(“String you entered is %s”,name);
return 1;
}
```

Output

```
Enter a string raman
String you entered is raman
```

C program to find area of square by taking side as input

```
#include<stdio.h>
int main()
{
int side,area;
printf(“Enter side of square “);
scanf(“%d”,&side);
area=side*side;
printf(“Area of square is %d”,area);
return 1;
}
```

Output

```
Enter side of square 10
area of square is 100
```

C program to find perimeter of square by taking side as input

```
#include<stdio.h>
int main()
```

```
{
int side,perimeter;
printf(“Enter side of square “);
scanf(“%d”,&side);
perimeter=4*side;
printf(“Perimeter of square is %d”,perimeter);
return 1;
}
```

C program to input length and breadth of rectangle and find area of rectangle

```
#include<stdio.h>
int main()
{
int length,breadth,area;
printf(“Enter length of rectangle “);
scanf(“%d”,&length);
printf(“Enter breadth of rectangle “);
scanf(“%d”,&breadth);
area=length*breadth;
```

```
printf(“Area of Rectangle is %d”,area);
return 1;
}
```

Output

```
Enter length of rectangle 10
Enter breadth of rectangle 10
Area of Rectangle is 100
```

C program to input length and breadth of rectangle and find perimeter of rectangle

```
#include<stdio.h>
int main()
{
int length,breadth,perimeter;
printf(“Enter Length of rectangle “);
scanf(“%d”,&length);
printf(“Enter breadth of rectangle “);
scanf(“%d”,&breadth);
```

```
perimeter=2*(length+breadth);
printf(“Perimeter of Rectangle is %d”,perimeter);
return 1;
}
```

Output

```
Enter Length of Rectangle 10
Enter breadth of rectangle 20
Perimeter of rectangle 60
```

C program to input width, depth and height and display its volume

```
#include<stdio.h>
int main()
{
int width,depth,height,volume;

printf(“Enter Width of Box “);
scanf(“%d”,&width);
```

```
printf(“Enter Depth of Box “);
scanf(“%d”,&depth);
printf(“Enter Height of Box “);
scanf(“%d”,&height”);
volume=width*depth*height;
printf(“Volume of Box is %d”,volume);
return 1;
}
```

Output

```
Enter Width of Box 10
Enter Depth of Box 20
Enter Height of Box 30
Volume of Box is 6000
```

C program to input radius of circle and find area of circle

```
#include<stdio.h>
int main()
```

```
{
float radius,area;
printf(“Enter Radius of Circle”);
scanf(“%f”,&radius);
area=3.14*radius*radius;
printf(“Area of Circle is %f”,area);
return 1;
}
```

C program to input radius of circle and find circumference of circle

```
#include<stdio.h>
int main()
{
float radius,circumference;
printf(“Enter Radius of Circle “);
scanf(“%f”,&radius);
circumference=2*3.14*radius;
printf(“Circumference of Circle is %f”,circumference);
return 1;
```

}

C program to demonstrate if statement and check whether a is equal to 10 or not

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a”);
scanf(“%d”,&a);
if(a==10)
{
printf(“Value of a is equal to 10”);
}
else
{
printf(“Value of a is not equal to 10 “);
}
return 1;
}
```

Output

Enter value of a 10

Value of a is equal to 10

C program to demonstrate ++ operator which means increment operator

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter Value of a “);
scanf(“%d”,&a);
printf(“Value of a is %d“,a);
a++;
printf(“Value of a after applying increment operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a is 10

Value of a after applying increment operator is 11

C program to demonstrate – operator which means decrement operator

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
printf(“Value of a is %d”);
a--;
printf(“Value of a after applying decrement operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a is 10

Value of a after applying increment operator is 9

C program to demonstrate += operator

+=2 operator increments value of a by 2

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter Value of a “);
scanf(“%d”,&a);
printf(“Value of a is %d”,a);
a+=2;
printf(“Value of a after applying += operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a is 10

Value of a after applying += operator is 12

C program to demonstrate -= operator

-=2 operator decrements the value of a by 2

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a ”);
scanf(“%d”,&a);
printf(“Value of a after applying -=2 operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a is 10

Value of a after applying -=operator is 8

C program to demonstrate *= operator

*=2 operator multiplies value of variable with 2

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
printf(“Value of a after applying *= operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a after applying *= operator is 20

C program to demonstrate /= operator

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
printf(“Value of a is %d”,a);
a/=2;
printf(“Value of a after applying /= operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a is 5

Value of a applying /=operator is 5

C program to demonstrate %= operator

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
printf(“Value of a is %d”,a);
a%=2;
printf(“Value of a after applying %= operator is %d”,a);
return 1;
}
```

Output

Enter value of a 10

Value of a is 10

Value of a after applying %= operator is 0

program to demonstrate if statement to check whether value of a is greater than 10 or not

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
if(a>10)
{
printf(“Value of a is greater than 10”);
}
else
{
```

```
printf(“Value of a is less than 10 or equal to 10”);
}
return 1;
}
```

Output

```
Enter value of a 11
Value of a is greater than 10
```

program to demonstrate if statement to check whether value of a is less than 10 or not

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
if(a<10)
{
```

```
printf(“Value of a is less than 10”);
}
else
{
printf(“Value of a is greater than 10 or equal to 10”);
}
return 1;
}
```

Output

```
Enter value of a 9
Value of a is less than 10
```

C program to demonstrate to check if statement whether value of a is greater than 10 or not

```
#include<stdio.h>
int main()
{
int a;
```

```
printf(“Enter Value of a “);
scanf(“%d”,&a);
if(a>=10)
{
printf(“Value of a is greater than 10 or equal to 10”);
}
else
{
printf(“Value of a is less than 10”);
}
return 1;
}
```

C program to demonstrate if statement to check whether value of a is less than 10 or equal to 10 or not

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
```

```
scanf(“%d”,&a);
if(a<=10)
{
printf(“Value of a is less than 10 or equal to 10 or not”);
}
else
{
printf(“Value of a is greater than 10”);
}
return 1;
}
```

C program to input a number and check whether it is not equal to 10

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter value of a “);
scanf(“%d”,&a);
```

```
if(a!=10)
{
printf(“Value of a is not equal to 10 “);
}
else
{
printf(“Value of a is equal to 10 “);
}
return 1;
}
```

Output

```
Enter value of a 10
Value of a is not equal to 10
```

C program to input temperature of water and check whether it is equal to Boiling Point of Water

```
#include<stdio.h>
int main()
```

```
{
int temp;
printf(“Enter temperature in celsius”);
scanf(“%d”,&temp);
if(temp==100)
{
printf(“Temperature is Boiling Point of Water”);
}
else
{
printf(“Temperature is not Boiling point of water”);
}
return 1;
}
```

Output

```
Enter temperature in celsius 100
Tempearture is Boiling Point of Water
```

C program to input age of a person and check whether the person is eligible to vote or not

```
#include<stdio.h>
int main()
{
int age;
printf(“Enter Age of Person “);
printf(“%d”,&age);
if(age>=18)
{
printf(“Person is eligible to vote “);
}
else
{
printf(“Person is not eligible to vote “);
}
return 1;
}
```

Output

Enter Age of Person 20

Person is eligible to vote

C program to input a char variable and check whether char variable is equal to a or b

```
#include<stdio.h>
int main()
{
char c;
printf(“Enter an Alphabet “);
scanf(“%c”,&c);
if((c==’a’) || (ch==’b’))
{
printf(“Character is equal to a or b “);
}
else
{
printf(“Character is not equal to a or b”);
}
return 1;
```

```
}
```

Output

```
Enter An Alphabet a
Character is equal to a or b
```

C program to check whether marks taken by user are between 80 and 90

```
#include<stdio.h>
int main()
{
int marks;
printf(“Enter marks of student”);
scanf(“%d”,&marks);
if((marks>=80) and (marks<=90))
{
printf(“Marks are between 80 and 90”);
}
else
```

```
{
printf(“Marks are not between 80 and 90”);
}
return 1;
}
```

Output

```
Enter marks of student 85
Marks are between 80 and 90
```

C program to check a character for a vowel

```
#include<stdio.h>
int main()
{
char ch;
printf(“Enter an Alphabet”);
scanf(“%c”,&ch);
if((ch==’a’) || (ch==’e’) || (ch==’i’) || (ch==’o’) || (ch==’u’))
```

```
{
printf(“Character %c is a vowel “,ch);
}
else
{
printf(“Character %c is not a vowel”,ch);
}
return 1;
}
```

Output

```
Enter An Alphabet a
Character a is vowel
```

C program to calculate grade of student based on marks

marks>=80 and marks<=100 grade is a

marks>=70 and marks<80 grade is b

marks>=60 and marks<70 grade is c

marks>60 grade is d

```
#include<stdio.h>
int main()
{
int marks;
char grade;
printf(“Enter marks of student”);
scanf(“%d”,&marks);
if((marks>=80) and ((marks<=100))
{
grade=’A’;
}
else if ((marks>=70) and (marks<80))
{
grade=’B’;
}
else if((marks>=60) and (marks<70))
{
grade=’c’;
```

```
}
else
{
grade='D';
}
printf("Grade of student is %c",grade);
return 1;
}
```

Output

```
Enter marks of student 90
Grade of student is D
```

C program to demonstrate switch case statement to check whether character is vowel or not

```
#include<stdio.h>
int main()
{
char ch;
```

```
printf(“Enter a Character “);
scanf(“%c”,&ch);
switch(ch)
{
case ‘a’: printf(“Character is Vowel”);
break;
case ‘e’: printf(“Character is Vowel”);
break;
case ‘i’ : printf(“Character is Vowel”);
break;
case ‘o’: printf(“Character is Vowel”);
break;
case ‘u’: printf(“Character is Vowel”);
break;
default: printf(“Character is not Vowel”);
break;
}
return 1;
}
```

C program to demonstrate switch statement to display Day of Week as per Number of Day

```
#include<stdio.h>
int main()
{
int day;
printf(“Enter Day in Number “);
scanf(“%d”,&day);
switch(day)
{
case 1: printf(“Monday”);
break;
case 2: printf(“Tuesday”);
break;
case 3: printf(“Wednesday”);
break;
case 4: printf(“Thursday”);
break;
case 5: printf(“Friday”);
break;
```

```
case 6: printf(“Saturday”);
break;
case 7: printf(“Sunday”);
break;
default: printf(“Enter a day between 1 and 7”);
}
```

C program to convert temperature in celsius to fahrenheit and fahrenheit to celsius

```
#include<stdio.h>
int main()
{
float temp;
float conv;
int ch;
printf(“1. Convert temperature from Celsius to Fahrenheit”);
printf(“2. Convert temperature from Fahrenheit to Celsius”);
if(ch==1)
{
printf(“Enter Temperature in Celsius “);
```

```
scanf(“%f”,&temp);
conv=(1.8*temp)+32;
printf(“Temperature in Fahrenheit is %f“,conv);
}
if(ch==2)
{
printf(“Enter Temperature in Fahrenheit “);
scanf(“%f”,&temp);
conv=(temp-32)/1.8;
printf(“Temperature in Fahrenheit is %f”,conv);
}
return 1;
}
```

Output

```
Enter Temperature in Celisus 40.0
Temperature in Fahrenheit is 104.0
```

C program to demonstrate for loop to print numbers from 1 to 10

```
#include<stdio.h>
int main()
{
int i;
for(i=1;i<=10;i++)
{
printf(“%d\n”,i);
}
return 1;
}
```

Output

1

2

3

4

5

6

7

8

9

10

Program to print sum of even numbers and odd numbers from 1 to 10

```
#include<stdio.h>
int main()
{
int i;
int sumeven=0,sumodd=0;
for(i=1;i<=10;i++)
{
if(i%2==0)
{
sumeven=sumeven+i;
}
else
{
```

```
sumodd=sumodd+i;
}
printf(“Sum of Even Numbers is %d”,sumeven);
printf(“Sum of Odd Numbers is %d”,sumodd);
return 1;
}
```

Output

```
Sum of Even Numbers is 30
Sum of Odd Numbers is 25
```

C program to check whether number is even or odd

```
#include<stdio.h>
int main()
{
int a;
printf(“Enter a Number to check whether number is even or odd“);
scanf(“%c”,&a);
```

```
if(a==2)
{
printf(“Number is Even “);
}
else
{
printf(“Number is Odd “);
}
return 1;
}
```

C program to check whether first number is divisible by second number or not

```
#include<stdio.h>
int main()
{
int a,b;
printf(“Enter First Number “);
scanf(“%d”,&a);
printf(“Enter Second Number “);
```

```
scanf(“%d”,&b);
if(a%b==0)
{
printf(“First Number is divisible by second number “);
}
else
{
printf(“First Number is not divisible by second number”);
}
return 1;
}
```

C program to demonstrate for loop from two numbers entered by user

```
#include<stdio.h>
int main()
{
int a,b;
int i;
printf(“Enter Value of a ”);
```

```
scanf(“%d”,&a);
printf(“Enter Value of b “);
scanf(“%d”,&b);
for(i=a;i<=b;i++)
{
printf(“%d”,i);
}
return 1;
}
```

C program to demonstrate while loop to display numbers from 1 to 10

```
#include<stdio.h>
int main()
{
int i;
i=1;
while(i<=10)
{
printf(“%d”,i);
```

```
i++;
}
return 1;
}
```

C Program to check for prime number using while loop

```
#include<stdio.h>
int main()
{
int i=2;
int a;
int prime=1;
printf(“Enter a Number”);
scanf(“%d”,&a);
while(i<=a/2)
{
if(a%i==0)
{
prime=0;
```

```
break;
}
}
if(prime==1)
{
printf(“Number is Prime”);
}
else
{
printf(“Number is Not Prime”);
}
return 1;
}
```

Output

```
Enter a Number 5
Number is prime
```

C program to find fibonicci series from 1 to to 144

```
#include<stdio.h>
int main()
{
int i,a,b,c;
a=1;
b=1;
for(i=1;i<=10;i++)
{
printf(“%d”,a);
printf(“%d”,b);
c=a+b;
a=b;
b=c;
}
return 1;
}
```

Program to print table of number from 1 to a number entered by user

```
#include<stdio.h>
int main()
{
int i=1;
int a,b;
printf(“Enter a number to print table of ”);
scanf(“%d”,&a);
printf(“Enter a number to print the terms ”);
scanf(“%d”,&b);
while(i<=b)
{
printf(“Product of Number is %d is %d”,i,a*i);
i++;
}
return 1;
}
```

C program to find factorial of number from 1 to 10

```
#include<stdio.h>
```

```
int main()
{
int fact=1;
int a,i;
printf(“Enter a number to print factorial of “);
scanf(“%d”,&a);
for(i=1;i<=5;i++)
{
fact=fact*i;
}
printf(“Factorial of a is %d”,fact);
}
return 1;
}
```

C program to run a do while loop

```
#include<stdio.h>
```

```
int main()
{
int i=11;
do
{
printf(“%d”,i)
i++;
}
while(i<=10);
```

Output : 11

C program to run a do while loop

```
#include<stdio.h>
int main()
{
int i=1;
do
{
```

```
printf(“%d\n”,i);
i++;
}while(i<=10);
return 1;
}
```

Output

```
1
2
3
4
5
6
7
8
9
10
```

C program to demonstrate break statement in for loop

```
#include<stdio.h>
int main()
{
int i;
for(i=1;i<=10;i++)
{
if(i==5)
{
break;
}
printf(“%d”,i);
}
}
```

Output

1

2

3

4

C program to demonstrate continue statement in for loop

```
#include<stdio.h>
int main()
{
int i;
for(i=1;i<=5;i++)
{
if(i==5)
{
continue;
}
printf(“%d”,i);
}
}
```

C program to create a userdefined function calc to calculate area of a rectangle

```
#include<stdio.h>
```

```
void calcarea(int length,int breadth)
{
int area;
area=length*breadth;
printf(“Area of Rectangle is “ + area);
}
int main()
{
int length,breadth;
printf(“Enter Length of Rectangle “);
scanf(“%d”,&length);
printf(“Enter Breadth of Rectangle “);
scanf(“%d”,&breadth);
calcarea(length*breadth);
return 1;
}
```

C program to calculate simpleinterest from principal amount,rate of interest and time in years

```
#include<stdio.h>
void calcsi(int p,int r,int t)
{
int si;
si=(p*r*t)/100;
printf(“Simple Interest is %d”,si);
}
int main()
{
int p,r,t;
p=1000;
r=20;
t=3;
calcsi(p,r,t);
return 1;
}
```

Output

Simple Interest is 600.0

C program to create a function which returns a value 1 for prime number and 0 for not a prime number

```
#include<stdio.h>
int checkprime(int a)
{
int i;
for(i=2;i<=a/2;i++)
{
if(a%i==0)
{
prime=0;
break;
}
}
if(prime==1)
{
printf(“Number is prime”);
}
else
```

```
{
printf(“Number is not prime”);
}
int main()
{
int a;
int prime=0;
printf(“\nEnter a number”);
scanf(“%d”,&a);
prime=checkprime(a);
if(a==1)
{
printf(“Number is prime”);
}
else
{
printf(“Number is not prime”);
}
return 1;
}
```

C program to create an array of 5 inegers and input values and display them

```
#include<stdio.h>
int main()
{
int arr[5];
int i,j;
for(i=0;i<5;i++)
{
printf(“\nEnter a number “);
scanf(“%d”,&arr[i]);
}
for(j=0;j<5;j++)
{
printf(“\nNumber is “,arr[i]);
}
return 1;
}
```

C program to create a structure and display it

```
#include<stdio.h>
struct employee
{
int ecode;
char name[20];
int esalary;
int edoj;
};
int main()
{
struct employee e;
printf(“\nEnter ecode”);
scanf(“%d”,&e.ecode);
printf(“\nEnter name”);
scanf(“%d”,e.name”);
printf(\nEnter Employee Salary “);
scanf(“%d”,&e.esalary);
printf(“\nEnter Employee Date of Joining “);
```

```
scanf(“%d”,&e.edoj);
printf(“\nEmployee Ecode %d”,e.ecode);
printf(“\nEmployee Name %s”,e.name);
printf(“\nEmployee Salary %d”,e.esalary);
printf(“\nEmployee Date of Joining %d”,e.edoj);
return 1;
}
```