Reader Group of College, SARGODHA CAMPUS

Department of BS IT - Term 1

Programming in C

Grand Assignment

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Simple. C program

Program no 1:

Write a program that display Hello world on screen.

```
#include<stdio.h>
#include<conio.h>
int main()
{
    printf("Hello Word");
    return 0;
}
```

Program no 2:

Write a program that inputs the radius of a circle from user and find its circumference using formula 2*3.14*r*r. (store the value of pi in a constant by using DEFINE directive)

```
#include<stdio.h>
#include<conio.h>
#define PI 3.14
int main()
{
    float r,c;
    printf("enter radius of circle:\n");
    scanf("%f",&r);
    c=PI*r*r;
    printf("%f is circumfarance",c);
    return 0;
```

```
}
```

Program no 3:

Write a program that take two integer from user and perform all mathematical operations.

```
#include<stdio.h>
#include<conio.h>
int main()
{
   int a,b;
   printf("enter two integer:\n");
   scanf("%d%d",&a,&b);
   printf("sum=%d\n",a+b);
   printf("sub=%d\n",a-b);
   printf("mul=%d\n",a*b);
   printf("Divide=%d\n",a/b);
   printf("Mode=%d\n",a%b);
       return 0;
}
```

Program no 4:

Write a program that take a number from user and perform all compound operations.

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

```
    int c;
    printf("enter a integer:\n");
    scanf("%d",&c);
    printf("%d\n",c+=2);
    printf("%d\n",c-=2);
    printf("%d\n",c*=2);
    printf("%d\n",c/=2);
    printf("%d\n",c%=2);
        return 0;
}
```

Program no 5

Write a program that explain the working of postfix and prefix increment operator (used as independent expression)

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int a,b,x,y;
    a=b=x=y=0;
    a++;
    b=a;
    ++x;
    y=x;
 printf("a=%d\nb=%d\n",a,b);
 printf("x=%d\ny=%d\n",x,y);
```

```
        return 0;
}
```

Program no 6

Write a program that explain the working of postfix and prefix increment operator (used as part of larger expression)

```
#include<stdio.h>
#include<conio.h>
int main()
{
   int a,b,x,y;
   a=b=x=y=0;
 b=a++;    //larger expration,bcz more than two operations
 y=++x;
 printf("a=%d\nb=%d\n",a,b);
 printf("x=%d\ny=%d\n",x,y);
        return 0;
}
```

Program no 7

Write a program that take two integer number from user and perform division on them.(type casting).

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

```
 printf("enter two numbers:\n");
 scanf("%d%d",&a,&b);
 float divide;
 divide=  a / (float) b;
  printf("%d is =%f",a,b,divide);
        return 0;
}
```

Program no 8

Write a program that take two floating point number from user and show the remainder (use explicit type casting).

```
#include<stdio.h>
#include<conio.h>
int main()
{
   int a,b;
 printf("enter two numbers:\n");
 scanf("%d%d",&a,&b);
 float divide;
 divide= (float) a / (float) b;
  printf("%f",divide);
        return 0;
}
```

Program no 9

Write a program that calculate the simple interest. User enter Amount , Rate of Interest and number of year. And program display Amount of Interest .

Formula..... interest =(amount* rate * time) /100

```
#include<stdio.h>
#include<conio.h>
int main()
{
   int intrest,a,r,t;
   printf("Enter Amount\n:");
   scanf("%d", &a);
   printf("Enter rate of intrest\n:");
   scanf("%d", &r);
   printf("Enter time or year\n:");
   scanf("%d", &t);
   intrest=(a*r*t)/100;
   printf("%d is simple intrest");

      return 0;
}
```

Program no 10

Write a program that inputs a character from user and display its ASCII code.

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

```
int main()
{
        char ch;
        printf("Enter a Chracter");
        scanf("%c",&ch);
    printf("%d is ASCII code of chracter ",ch);
        return 0;
}
```

Program no 11

Write a program that inputs two numbers from user , show on screen , swap their values and display again on screen. (using third variable)

```
#include<stdio.h>
#include<conio.h>
int main()
{
        int a,b,c;
        printf("Enter two numbers:");
        scanf("%d %d",&a&,b);
        c=a;
        a=b;
        b=c;
        printf("Value after swapping is %d %d",a,b);
        return 0;
}
```

Program no 12

Write a program that input two numbers from user , swap their values (without using third variable).

```
#include<stdio.h>
#include<conio.h>
int main()
{
	int a,b;
	printf("Enter two numbers:");
	scanf("%d %d",&a,&b);
	a=a+b;
	b=a-b;
	a=a-b;
	printf("%d %d",a,b);
	return 0;
}
```

Program no 13

Write a program that inputs the distance traveled and speed of a car. Program calculate and display the time required to reach the destination . (time = distance /speed)

```
#include<stdio.h>
#include<conio.h>
int main()
{
	int dis,sp;
```

```
        printf("Enter travel Distance");
        scanf("%d",&dis);
        printf("Enter speed of a Car");
        scanf("%d",&sp);
        int time;
        time= dis/sp;
        printf("%d is the time",time);
        return 0;
}
```

Program no 14

Write a program that inputs Base and Height of a triangle from user . calculate and displays the area of triangle. (area = 1⁄2 * base * height)

```
#include<stdio.h>
#include<conio.h>
int main()
{
        int base,height;
        float area;
        printf("Enter base and height of a triangle");
        scanf("%d %d",base,height);
        area=0.5*base*height;
        printf("%d is area",area);
        return 0;
}
```

Program no 15

Write a program that inputs time in seconds and convert it into HH:MM:SS format.

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int sec,hr,min,s;
    printf("Enter seconds");
    scanf("%d",sec);
    hr=sec/3600;
    min=sec/60;
    sec=sec%3600;
    s=sec%60;
    printf("Time in HH-MM-SS %d %d %d",hr,min,s);
    return 0;
}
```

Program no 16

Write a program that input temperature from the user in Celsius and converts it into

Fahrenheit using formula F= 9 / 5 * C + 32

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

```
    float cel,f;
    printf("Enter temp in celcius");
    scanf("%f",&cel);
    f=9/5*cel+32;
    printf("%f",f);
    return 0;
}
```

Program no 17

Write a program that input the height of a person in Inches and convert it in

centimeters (c = I * 2.54)

```
#include<stdio.h>
#include<conio.h>
int main()
{
    float h,c;
    printf("Enter height in inches");
    scanf("%f",&h);
    c=h*2.54;
    printf("%f is height in cm",c);
    return 0;
}
```

Program no 18

Write a program that inputs a three-digit-number from user and display in reverse

order (input 345 , output 543)

```
#include<stdio.h>
int main()
{
int n,num,temp;
printf("enter three_digit_number:\n");
scanf("%d",&n);
num=0;
while(n!=0)
{
temp=n%10;
num=num*10;
num=num+temp;
n=n/10;
}
printf("rev number is %d",num);
return 0;
}
```

Program no 19

Write a program that inputs a 5 digit number from user and display in reverse order.

```
#include<stdio.h>
int main()
{
int n,num,temp;
```

```
printf("enter three_digit_number:\n");
scanf("%d",&n);
num=0;
while(n!=0)
{
temp=n%10;
num=num*10;
num=num+temp;
n=n/10;
}
printf("rev number is %d",num);
return 0;
}
```

Program no 20

Write a program that inputs number of hours from user and convert it in Week: Days: Hours format.

```
#include<stdio.h>
int main()
{
int hours,days,weeks;
printf("Enter number of hours:\n");
scanf("%d",&hours);
weeks=hours/(24*7);
days=hours /24;
hours=hours-24*days;
```

```
printf("weeks=%d\ndays=%d\nhours=%d",weeks,days,hours);
return 0;
}
```

Simple IF Statement

1. Write a program that take a number from user and check whether it is even or odd.

```
#include<stdio.h>
int main()
{
int a;
printf("enter a numbers:");
scanf("%d",&a);
if(a%2==0)
printf("even");
if(a%2!=0)
printf("odd");
return 0;
}
```

2. Write a program that take a number from user and check whether it is positive, negative or zero.

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

```
printf("enter a numbers:");
scanf("%d",&a);
if(a>0)
printf("%d is positive",a);
if(a<0)
printf("%d is negative",a);
if(a==0)
printf("%d is zero",a);
return 0;
}
```

3. Write a program that take two numbers from user and display maximum number on screen.

```
#include<stdio.h>
int main()
{
int y,z;
printf("enter two numbers:\n");
scanf("%d%d",&y,&z);
if(y>z)
printf("%d is max",y);
if(z>y)
printf("%d is max",z);
return 0;
}
```

4. Write a program that take three numbers from user and display maximum number on screen.

```
#include<stdio.h>
int main()
{
int a,b,c;
printf("enter three numbers:\n");
scanf("%d%d%d",&a,&b,&c);
if(a>b&&a>c)
printf("%d is max",a);
if(b>a&&b>c)
printf("%d is max",b);
if(c>a&&c>b)
printf("%d is max",c);
return 0;
}
```

5. Write a program that take three numbers from user and display minimum

number on screen.

```
#include<stdio.h>
int main()
{
int a,b,c;
printf("enter three numbers:\n");
scanf("%d%d%d",&a,&b,&c);
```

```
if(a<b&&a<c)
printf("%d is min",a);
if(b<a&&b<c)
printf("%d is min",b);
if(c<a&&c<b)
printf("%d is min",c);
return 0;
}
```

6. Write a program that take 5 numbers from user and display Largest and Smallest integer .

```
#include<stdio.h>
int main()
{
int a,b,c,d,e;
int max,min;
printf("enter five numbers:\n");
scanf("%d%d%d%d%d",&a,&b,&c,&d,&e);
max=a;
if(b>max)
max=b;
if(c>max)
max=c;
if(d>max)
max=d;
if(e>max)
```

```
max=e;
printf("%d is max\n",max);
min=a;
if(b<max)
min=b;
if(c<max)
min=c;
if(d<max)
min=d;
if(e<max)
min=e;
printf("%d is min",min);
return 0;
}
```

IF ELSE

7. Write a program that inputs a year from user and display leap year or not.

```
#include<stdio.h>
int main()
{
int year;
printf("enter ayear:");
scanf("%d",&year);
```

```
if(year%4==0)
printf("year is leap");
else
printf("year is not leap");
return 0;
}
```

8. Write a program that input salary and grade of an employee. It adds 50% bonus if grade is greater then 15 , it adds 25% bonus if grade is 15 or less.

Display total salary.

```
#include<stdio.h>
int main()
{
int salary,grade,bonus;
int total_salary;
printf("enter a salary:\n");
scanf("%d",&salary);
printf("entar a grade:");
scanf("%d",&grade);
if(grade>15)
bonus=(salary*50)/100;
else
bonus=salary*25/100;
total_salary=salary+bonus;
printf("%d",total_salary);
```

```
return 0;
}
```

9. Write a program that inputs two integers. It determines and prints if the first number is a multiple of second number.

```
#include<stdio.h>
int main()
{
int a,b;
printf("enter two numbers:\n");
scanf("%d%d",&a,&b);
if(a%b==0)
printf("%d number is multiple of %d",a,b);
else
printf("%d isnumber is not multiple of %d",a,b);
return 0;
}
```

10. Write a program that take name of two students from user. It check and display whether both are same or not.

```
#include<stdio.h>
#include<string.h>
int main()
{
char a[10],b[10];
printf("enter two number:\n");
scanf("%s%s",&a,&b);
```

```
if(strcmp(a,b)==0)
printf("same name");
else
printf("not same name");
return 0;
}
```

IF ELSE IF

11.Write a program that inputs test marks of a student and displays his grade

according to the following criteria.

Marks Grade

> = 90 A

80 – 89 B

70-79 C

60-69 D

< 60 F

```
#include<stdio.h>
int main()
{
int marks;
printf ("enter marks:");
scanf("%d",&marks);
```

```
if(marks>=90)
printf("grade is A");
else if(marks>=80)
printf("grade is B");
else if(marks>=70)
printf("grade is C");
else if(marks>=60)
printf("grade is D");
else
printf("grade is F");
return 0;
}
```

12. Write a program that calculate the electricity bill. The rates of electricity per

unit are as follow.

Units < = 300 Rs 2 per unit

Units > 300 and <= 500 Rs 5 per unit

Units > 500 Rs 7 per unit

A line rent RS 150 is also added to the total bill and a surcharge of 5% extra if

the bill is exceeds RS . 2,000. Calculate total bill.

```
#include<stdio.h>
int main()
{
int unit,bill;
```

```
printf("enter unit consumed:\n");
scanf("%d",&unit);
if(unit>500)
{
bill=unit*7;
}
else if(unit>300)
{
bill=unit*5;
}
else
{
bill=unit*2;
}
bill=bill+150;
int extrabill=0;
int totalbill;
if(bill>2000)
{
extrabill=(bill*5)/100;
}
totalbill=bill+extrabill;
printf("%d",totalbill);
```

```
return 0;
}
```

13. Write a program that inputs radius and user's choice . it calculates area of circle if user enters 1 as choice. It calculates circumference if the user enters 2

as choice.

```
#include<stdio.h>
#define PI 3.141
int main()
{
int choice;
float radius,area,circumfrence;
printf("enter a choice 1 area and 2 for circumferencr:\n");
scanf("%d",&choice);
printf("enter a radius:\n");
scanf("%f",&radius);
if(choice==1)
{
area=PI*radius*radius; //area=PI*r*r
printf("%f",area);
}
else if(choice==2)
{
circumfrence=2*PI*radius; //cir=2*PI*r
printf("%f",circumfrence);
```

```
}
else
printf("invalid input");
return 0;
}
```

NESTED IF ELSE

14. Write a program that take 3 integers from user. And display smallest integer.

```
#include<stdio.h>
int main()
{
int a,b,c;
printf("enter three numbers:\n");
scanf("%d%d%d",&a,&b,&c);
if(a<b)
{
if(a<c)
printf("%d is smaller",a);
else
printf("%d is smaller",c);
}
else
{
```

```
if(b<c)
printf("%d is smaller",b);
else
printf("%d is smaller",c);
}
return 0;
}
```

15. Write a program that take three numbers fro user. And display whether all are equal or not.

```
#include<stdio.h>
int main()
{
int x,y,z;
printf("enter three numbers:\n");
scanf("%d%d%d",&x,&y,&z);
if(x==y)
{
if(x==z)
printf("numbers are equall");
else
printf("number are different");
}
else
printf("number are different");
return 0;
```

```
}
```

COMPOUND CONDITION

16. Write a program that inputs three number from user and display maximum number using logical operator.

```
#include<stdio.h>
int main()
{
int a,b,c;
printf("enter three numbers:\n");
scanf("%d%d%d",&a,&b,&c);
if(a>b&&a>c)
{

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printf("%d is max",a);

}
if(b>a&&b>c)
{

printf("%d is max",b);
```

```
}
else
{
printf("%d is max",c);
}
return 0;
}
```

17.Write a program that inputs a character from user and display whether it is Vowel or not using logical operator.

```
#include<stdio.h>
int main()
{
char n;
printf("enter a chararacter:");
scanf("%c",&n);
if(n=='a'||n=='e'||n=='i'||n=='o'||n=='u')
printf("you enter vowel");
else
printf("you enter a consonent");
return 0;
}
```

18. Write a program that allows the user to enter any character through the key board and determines whether it is a capital letter, small case letter, a digit or

a special symbol.

```
#include<stdio.h>
int main()
{
char input;
printf("enter any character:\n");
scanf("%c",&input);
if(input>='A'&&input<='Z')
printf("you enter capital letter");
else if(input>='a' && input<='z')
printf("you enter small letter");
else if(input>='0' && input<='9')
printf("you enter a digit");
else
printf("you enter special symbol");
return 0;
}
```

19.Write a program that inputs a number from user and display even or odd using not operator.

```
#include<stdio.h>
int main()
{
int num;
printf("enter a number:");
scanf("%d",&num);
if(!(num%2==0))
```

```
printf("you enter odd number");
else
printf("you enter even number");
return 0;
}
```

SWITCH

20. Write a program that inputs number of week's day and displays the name of the day. 1 Friday 2 Saturday 3 Sunday .....

```
#include<stdio.h>
int main()
{
int days;
printf("enter number of day weeks:\n");
scanf("%d",&days);
switch(days)
{
case 1:
printf("friday");
break;
case 2:
printf("saturday");
break;
case 3:
printf("sunday");
```

```
break;
case 4:
printf("monday");
break;
case 5:
printf("tuesday");
break;
case 6:
printf("wednesday");
break;
case 7:
printf("thursday");
break;
default:
printf("valid input");
}
return 0;
}
```

21. Write a program that inputs a character from user and display whether it is vowel or consonant.

```
#include<stdio.h>
int main()
{
char c ;
printf("enter an alphabet:\n");
```

```
scanf("%c",&c);
switch(c)
{
case 'a':
printf("you enter a vowel");
break;
case 'e':
printf("you enter a vowel");
break;
case 'i':
printf("you enter a vowel");
break;
case 'o':
printf("you enter a vowel");
break;
case 'u':


printf("you enter a vowel");
break;
default:
printf("you enter consonent");
}
return 0;
```

```
}
```

22. Write a program that input 2 numbers for user and a symbol (+,-,/,*,%). It perform operation on numbers according to operator , and show results.

```
#include<stdio.h>
int main()
{
int num1,num2 ;
char op;
printf("enter two numbers:\n");
scanf("%d%d",&num1,&num2);
printf("enter operator:\n");
scanf(" %c",&op);

switch(op)
{
case '+':
printf("%d+%d=%d",num1,num2,num1+num2);
break;
case '-':
printf("%d-%d=%d",num1,num2,num1-num2);
break;
case '*':
printf("%d*%d=%d",num1,num2,num1*num2);
break;
```

```
case '/':
printf("%d/%d=%d",num1,num2,num1/num2);
break;
case '%':
printf("%d%%%d=%d",num1,num2,num1%num2);
break;
default:
printf("invalid input") ;

}
```

CONDITIONAL OPERATOR

23. Write a program that inputs marks of a student and display " Pass" if marks are more then 40 and display :"Fail" otherwise .

```
#include<stdio.h>
int main()
{
int marks;
printf("enter marks of std:");
scanf("%d",&marks);
(marks>40)?printf("you are pass"):printf("you are fail");
return 0;
}
```

24.Write a program that take a number fro m user and display whether it is divisible by three or not.

```
#include<stdio.h>
int main()
{
int num;
printf("enter a number:");
scanf("%d",&num);
(num%3==0)?printf("number is divisible "):printf("number is not divisible");
return 0;
}
```

WHILE LOOP

1. Write a program that display counting from 1 to 10 .

```
#include<stdio.h>
int main()
{
int a;
a=1;
while(a<=10)
{
printf("%d\n",a);
a++;
}
return 0;
```

```
}
```

2. Write a program that display first 5 numbers and their sum.

```
#include<stdio.h>
int main()
{
int a,sum;
sum=0;
a=1;
while(a<=5)
{
printf("%d\n",a);
sum=sum+a;
a++;
}
printf("%d is total sum",sum);
return 0;
}
```

3. Write a program that display first 5 numbers and their squares.

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

a=1;
```

```
while(a<=5)
{
printf("%d\t%d\n",a,a*a);
a++;
}
return 0;
}
```

4. Write a program that take a number from user and display its table

```
#include<stdio.h>
int main()
{
int n,a;
printf("enter a number:\n");
scanf("%d",&a);
n=1;
while(n<=10)
{
printf("%d*%d=%d\n",a,n,a*n);
n++;
}
return 0;
}
```

5. Write a program that inputs a number from user and display the sum of its digits.

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

```
int main()
{
int num,digit;
printf("enter three number digit:\n");
scanf("%d",&num);
int sum=0;
while(num>=1)
{
digit=num%10;
sum=sum+digit;
num=num/10;

}
printf("%d",sum);
return 0;
}
```

6. Write a program that input a number from user and display its factorial.

```
#include<stdio.h>
int main()
{
int num,fact=1;
printf("enter a number:\n");
scanf("%d",&num);
```

```
while(num>=1)
{
fact=fact*num;
num--;
}
printf("%d",fact);
return 0;
}
```

7. Write a program that display the sum of following series 1+ 1⁄2+ 1⁄4 + 1/6 +1/8+....+1/100.

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

int num=2;
float sum=1;
while(num<=100)
{
sum=sum+1.0/num;
num=num+2;
}
printf("%f",sum);
return 0;
}
```

8. Write a program that inputs a positive number. It then display the sum of all odd numbers and sum of all even numbers from 1 to number entered by user.

```
#include<stdio.h>
int main()
{
int n,esum=0,osum=0,count=1;
printf("enter a positive number:\n");
scanf("%d",&n);
while(count<=n)
{
if(count%2==0)
{
esum=esum+count;
}
else
{
osum=osum+count;
}
count++;
}

printf("%d is esum\n%d is osum",esum,osum);

return 0;
```

```
}
```

Program no 9:

Write a program that take a number from user and check whether it is ARMSTRONG number or not. (370 , 371 are Armstrong numbers)

```
#include<stdio.h>
int main()
{
int n,temp,sum=0,num;

printf("enter a number:\n");
scanf("%d",&n);
num=n;
while(num!=0)
{
temp=num%10;
sum=sum+(temp*temp*temp);
num=num/10;
}
if(n==sum)
printf("Armstrong");
else
printf("not arm strong");
return 0;
}
```

10. Write a program that take starting and ending point from user and display all numbers

between them.

```
#include<stdio.h>
int main()
{
int s,e;
printf("enter starting number:");
scanf("%d",&s);
printf("enter ending number:");
scanf("%d",&e);
s=s+1;
while(s<e)
{
printf("%d\n",s);
s++;
}
return 0;
}
```

11. Write a program that inputs a number from user and display n Fibonacci terms. (if user

enter 5 , program display first five Fibonacci numbers)

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

```
int n,a=0,b=1,next,count=1;

printf("enter fibonacci numbers you want to print:\n");
scanf("%d",&n);
//fibonacci =sum of last two numbers
while(count<=n)
{
printf("%d\t",a);
next=a+b;
a=b;
b=next;
count++;

}
return 0;
}
```

DO WHILE LOOP

12. Write a program that displays back counting from 10 to 1 .

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

```
int count=10;
do
{
printf("%d\t",count);
count--;

}
while(count>=1) ;
return 0;
}
```

13. Write a program that take 2 numbers from user and display the result of first number

raised power second.(first= 2, second= 3 , answer=8)

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

int num1,num2;
int power=1;

printf("enter two numbers:\n");
scanf("%d%d",&num1,&num2);
do
{
power=power*num1;
```

```
num2--;
}
while(num2!=0);
printf("%d",power);
return 0;

}
```

14. Write a program that inputs a number from user and check whether it is Palindrome number or not. (121,626, 62526, 131,222).

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

int n,temp,rev=0,num;
printf("enter a number:\n");
scanf("%d",&n);
num=n;
do
{
temp=num%10;
rev=rev*10;
rev=rev+temp;
num=num/10;
}
while(num!=0);
```

```
if(rev==n)
printf("Palindrome");
else
printf("not Palindrome");
return 0;
}
```

FOR LOOP

15. Write a program that display the sum of following series. 1^2 +2^2 +3^2 + ...+10^2.

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

int count=1,sum=0,sqa;
for (count;count<=10;count++)
{
sqa=count*count;
sum=sum+sqa;
}

printf("%d is sum of aquare of series",sum);

return 0;
```

```
}
```

16. Write a program that take a number from user and check whether it is prime or not.

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

int n,c;
printf("enter a number:\n");
scanf("%d",&n);
int flag=0;
for(c=2;c<n;c++)
if(n%c==0)
flag=1;
if(n==0||n==1)
printf("not prime");
else
{
if(flag==0)
printf("prime");
else
printf("not prime");
}
return 0;
}
```

17. Write a program that take 2 numbers from user and display their GCD.

```
#include <stdio.h>
int main()
{
int n1, n2, c, gcd;
printf("Enter two integers: ");
scanf("%d %d", &n1, &n2);
for(c=1; c <= n1 && c <= n2; c++)
{
// Checks if i is factor of both integers
if(n1%c==0 && n2%c==0)
gcd = c;
}
printf("G.C.D of %d and %d is %d", n1, n2, gcd);
return 0;
}
```

NESTED LOOP

18.

1

1 2

1 2

1 2 3

1 2 3 4

1 2 3 4 5

```
#include<stdio.h>
int main()
{
int i,j;
for(i=1;i<=5;i++)
{
for(j=1;j<=i;j++)
printf("%d",j);
printf("\n");
}

return 0;
}
```

19.

A

A B

A B C

A B C D

A B C D E

```
#include<stdio.h>
int main()
{
char i,j;
```

```
for(i='A';i<='E';i++)
{
for(j='A';j<=i;j++)
printf("%c",j);
printf("\n");
}
return 0;
}
```

20.

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1

```
#include<stdio.h>
int main()
{
int i,j;
for(i=5;i>=1;i--)
{

for(j=1;j<=i;j++)
printf("%d",j);
printf("\n");
```

```
}
return 0;
}
```

21.

1

1 2 3

1 2 3 4 5

1 2 3

1

```
#include <stdio.h>

int main()
{
int row,space,column;
for(row=0;row<=3;row++)
{
for(space=1;space<=3-row;space++)
printf(" ");
for(column=1;column<=2*row-1;column++)
printf("%d",column);
printf("\n");
}

for(row=3-1;row>=1;row--)
```

```
{
for(space=1;space<=3-row;space++)
printf(" ");
for(column=1;column<=2*row-1;column++)
printf("%d",column);
printf("\n");
}
return 0;

}
```

22.

```
*
* * *
* * * * *
* * *
*
#include <stdio.h>
int main()
{
int row,space,column;
for(row=0;row<=3;row++)
{
for(space=1;space<=3-row;space++)
printf(" ");
```

```
for(column=1;column<=2*row-1;column++)
printf("*");
printf("\n");
}
for(row=3-1;row>=1;row--)
{
for(space=1;space<=3-row;space++)
printf(" ");
for(column=1;column<=2*row-1;column++)

printf("*");
printf("\n");
}
return 0;
}
```

23.

@
@@
@@@
@@@@
@@@@@

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

```
{
int row,space,column;
for(row=1;row<=5;row++)
{
for(space=1;space<=5-row;space++)
printf(" ");
for(column=1;column<=row;column++)
printf("@");
printf("\n");
}
return 0;
}
```

24.

1

2 4

3 6 9

2 4

1

```
#include<stdio.h>
int main()
{
int i, j;
for(i=1;i<=3;i++)
{
```

```
for(j=1;j<=i;j++)
printf("%d",i*j);
printf("\n");
}
for(i=3-1;i>=1;i--)
{
for(j=1;j<=i;j++)
printf("%d",i*j);
printf("\n");
}
return 0;
}
```

25.

```
@           @
  @       @
    @   @
      @ @
        @
```

```
#include<stdio.h>
int main()
{
int sp = 9;
for ( int i=0;i<=5;i++) {
for ( int j=0;j<=i;j++) { printf(" "); }
```

```
printf("@");
for ( int k=sp; k>0; k--) { printf(" "); }
sp -= 2;
if ( i != 5) {

printf("@");
}
printf("
\n");

}
}
```

Arrays

Program no 1:

Write a program that take 5 numbers from user in array, calculate their sum and average.

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
int ary[5],i,sum=0;
float avg;
for(i=0;i<5;i++)
{
printf("enter number %d=",i+1);
```

```
scanf("%d",&ary[i]);
}
for(i=0;i<5;i++)
{
sum=sum+ary[i];
}
printf("sum=%d\n",sum);
avg=(float)sum/5;
printf("avg=%f",avg);
return 0;
}
```

Program no 2:

Write a program that inputs current day and month from user. It then calculate and displays the total number of days in current year till the date entered.

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
int month[12]={31,29,31,30,31,30,31,31,30,31,30,31};
int d,m,i,total=0;
printf("enter current day:\n");
scanf("%d",&d);
printf("enter current month:\n");
scanf("%d",&m);
```

```
for(i=m;i<12;i++)
{
total=total+month[i];
}
total=total+(month[m-1]-d);
printf("total=%d",total);
return 0;
}
```

Program no 3:

Write a program that take 10 numbers from user and display maximum number.

```
#include<stdio.h>
int main()
{
int ary[10];
int i,max;
for(i=0;i<10;i++)
{
printf("enter number %d=",i+1);
scanf("%d",&ary[i]);
}
for(i=0;i<10;i++)
{
max=ary[0];
if(ary[i]>max)
```

```
max=ary[i];
}
printf("max=%d",max);
return 0;
}
```

Program no 4:

Write a program that take 10 numbers from user and display minimum number.

```
#include<stdio.h>
int main()
{
int ary[10];
int i, min;
for(i=0;i<10;i++)
{
printf("enter number %d=",i+1);
scanf("%d",&ary[i]);
}
for(i=0;i<10;i++)
{
min =ary[0];
if(ary[i]< min)
min =ary[i];
}
```

```
printf("min =%d", min);
return 0;
}
```

Program no 5:

Write a program that initialize an array. Take a number from user and searches the number in array.

```
#include<stdio.h>
int main()
{
int ary[10];
for(i=0;i<10;i++)
{
printf("enter number %d=",i+1);
scanf("%d",&ary[i]);
}
int i,search;i=-1;
printf("enter number to search:\n");
scanf("%d",&search);
for(i=0;i<10;i++)
{
if(ary[i]==search)

{
i=1;
break;
```

```
}
}
if(i==1)
printf("found");
else
printf("not found");
return 0;
}
```

Program no 6:

Write a program that initialize an array. Take a number from user and searches the number in array.

```
#include<stdio.h>
int main()
{
    int ary[10],c;
    for(c=0;c<10;c++)
    {
    printf("enter number %d=",c+1);
    scanf("%d",&ary[c]);
    }
    int search;
    printf("enter number to search:\n");
    scanf("%d",&search);
    int s=0,e=9,mid,i=-1;
    while(s<=e)
```

```
    {
        mid=(s+e)/2;
        if(ary[mid]==search)
        {
            i=mid;
            break;
         }
        else if(ary[mid]>search)
        e=mid-1;
        else
        s=mid+1;
    }
    if(i==-1)
    printf("not found");
    else
    printf("found");
    return 0;
}
```

Program no 7

Write a program that input in array and sort using selection sort (arrange it).

```
#include<stdio.h>
int main()
{
int ary[10];
```

```
int i,j,temp;
for(i=0;i<10;i++)
{
printf("enter number %d=",i+1);
scanf("%d",&ary[i]);
}
for(i=0;i<10;i++)
{
for(j=i;j<10;j++)
if(ary[i] > ary[j])
{
temp=ary[i];
ary[i]=ary[j];
ary[j]=temp;
}
}
printf("sorting data:\n");
for(i=0;i<10;i++)
printf("\n %d\t ",ary[i]);
return 0;
}
```

Program no 8:

Write a program that input in array and sort using bubble sort.

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

```
int main()
{
  int array[100], n, c, d, swap;

  printf("Enter number of elements\n");
  scanf("%d", &n);

  printf("Enter %d integers\n", n);

  for (c = 0; c < n; c++)
    scanf("%d", &array[c]);

  for (c = 0 ; c < n - 1; c++)
  {
    for (d = 0 ; d < n - c - 1; d++)
    {
      if (array[d] > array[d+1])
              /* For decreasing order use '<' instead of '>' */
      {
        swap       = array[d];
        array[d]   = array[d+1];
        array[d+1] = swap;
      }
    }
```

```
  }

  printf("Sorted list in ascending order:\n");

  for (c = 0; c < n; c++)
     printf("%d\n", array[c]);

  return 0;
}
```

Program no 9

Write a program that read the temperature of a week. And display the maximum, minimum, average temperature of the week.

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
float ary[7],sum=0,avg;
int i,max,min;
for(i=0;i<7;i++)
{
printf("enter temperature reading of the day %d=",i+1);
scanf("%f",&ary[i]);
}
max=ary[0];
min=ary[0];
```

```
for(i=0;i<7;i++)
{
if(ary[i]>max)
{
max=ary[i];
}
if(ary[i]<min)
{
min=ary[i];
}

}
printf("\nMaximim temprature=%d\n",max);
printf("\nMinimum temprature=%d\n",min);
for(i=0;i<7;i++)
sum=sum+ary[i];
avg=sum/7.0;
printf("\navg temprature=%.2f",avg);
return 0;
}
```

Program no 10

Write a program that take 10 numbers from user and display their Mean .(Average).

```
#include<stdio.h>
int main()
{
int ary[10];
int i,sum=0;
float avg;
for(i=0;i<10;i++)
{
printf("enter number %d=",i+1);
scanf("%d",&ary[i]);
}
for(i=0;i<10;i++)
{
sum=sum+ary[i];
}
avg = (float)sum/10;
printf("mean = %f",avg);
return 0;
}
```


Program no 11

Write a program that take 10 numbers from user and display their Median .(middle value from sorted array) .

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

```
{
int ary[10];
int i,j,temp;
float median;
for(i=0;i<10;i++)
{
printf("enter number %d=",i+1);
scanf("%d",&ary[i]);
}
for(i=0;i<10;i++)
{
for(j=i;j<10;j++)
{
if(ary[i] > ary[j])
{
temp=ary[i];
ary[i]=ary[j];
ary[j]=temp;
}
}
}
printf("\n sorted values are:");
for(i=0;i<10;i++)
printf("\n%d\t",ary[i]);
```

```
// if number of elements are even
if(10%2 == 0)
median = ((ary[(10-1)/2] + ary[10/2])/2.0);
// if number of elements are odd
else
median = ary[10/2];
printf("\n median=%f",median);
return 0;
}
```

Program no 12

Write a program that take 10 numbers from user and display their Mode .

(most repeated value)

```
#include<stdio.h>
int main ()
{
int arr[10];
int a,b,count,max_count=0;
for(a=0;a<9;a++)
{
printf("Enter the %d Number :",a);
scanf("%d",&arr[a]);
}
for(a=0;a<9;a++)
```

```
{
count=1;
for(b=a+1;b<9;b++)
{
if(arr[a]==arr[b])
count++;
}
if(count>max_count)
max_count=count;
}
printf("Maximum Repeated value is:");
for(a=0;a<9;a++)
{
count=1;
for(b=a+1;b<9;b++)
{
if(arr[a]==arr[b])
count++;
}
if(count==max_count)
printf("\n%d\t%d",arr[a],max_count);
}
return 0;
}
```

2D Arrays

Program no 13

Write a program that declare a 4 x 4 array. Take input from user . find maximum , minimum from array.

```
#include<stdio.h>
int main()
{
int ary[4][4];
int i,j,max,min;
for(i=0;i<4;i++)
{
for(j=0;j<4;j++)
{
printf("enter number");

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scanf("%d",&ary[i][j]);
}
}
max=ary[0][0];
min=ary[0][0];
for(i=0;i<4;i++)
```

```
{
for(j=i;j<4;j++)
{
if(ary[i][j]>max)
max=ary[i][j];
if(ary[i][j]<min)
min=ary[i][j];

}
}
printf("\nMaximum=%d\nMinimum=%d",max,min);
return 0;
}
```

Program no 14

Write a program that take input in two matrices of size 3 by 4. Perform subtraction and addition on them.

```
#include<stdio.h>
int main()
{
int a[3][4],b[3][4],c[3][4];
int i,j;
printf("enter first matrix:\n");
for(i=0;i<3;i++)
{
for(j=0;j<4;j++)
```

```
scanf("%d",&a[i][j]);
}
printf("enter second matrix:\n");
for(i=0;i<3;i++)
{
for(j=0;j<4;j++)
scanf("%d",&b[i][j]);
}
printf("Sum is\n");
for(i=0;i<3;i++)
{
for(j=0;j<4;j++){
c[i][j]=a[i][j] + b[i][j];
printf("%d",c[i][j]);
}
printf("\n");
}
printf("Sub is\n");
for(i=0;i<3;i++)
{
for(j=0;j<4;j++){
c[i][j]=a[i][j] - b[i][j];
printf("%d",c[i][j]);
}
```

```
printf("\n");
}

return 0;
}
```

Program no 15

Write a program that take input in two matrices of size 3 by 4. Perform Multiplication on them.

```
#include<stdio.h>
int main()
{
int a[3][4],b[3][4],c[3][4];
int i,j;
printf("enter first matrix:\n");
for(i=0;i<3;i++)
{
for(j=0;j<4;j++)
scanf("%d",&a[i][j]);
}
printf("enter second matrix:\n");
for(i=0;i<3;i++)

{
for(j=0;j<4;j++)
scanf("%d",&b[i][j]);
```

```
}
printf("multiply  is\n");
for(i=0;i<3;i++)
{
for(j=0;j<4;j++){
c[i][j]=a[i][j] * b[i][j];
printf("%d",c[i][j]);
}
printf("\n");
}
return 0;
}
```

Structure

Program no 1

Write a program that declare a structure to store roll no,marks,average,grade.Take input of 5 students. And disply topper student on screen.

```
#include <stdio.h>
#include <stdlib.h>;
#include <conio.h>
struct student
        {
                int roll, marks;
                char grade;
                float avg;
```

```
        };
int main ()
{
        student s[5];
        int i;
        for (i=0;i<5;i++)
        {
                printf("Enter roll number:");
                scanf("%d",&s[i].roll);
                printf("Enter marks:");
                scanf("%d",&s[i].marks);
                printf("Enter grade:\n");
                s[i].grade=getche();
                printf("\nEnter avg:");
                scanf("%f",&s[i].avg);
        }
        int max;
        max=0;
        for (i=1;i<5;i++)
        {
                if (s[i].marks > s[max].marks)
                {
                        max=i;
                }
```

```
    }
    printf("topper student:\n");
    printf("\nRoll number:%d\n",s[max].roll);
    printf("\nMarks:%d\n",s[max].marks);
    printf("\nGrade:%c\n",s[max].grade);
    printf("\naverage:%f\n",s[max].avg);
    return 0;
}
```

Program no 2

Write a program that declare a structure to store employer number, name,hours worked,and hourly rate ,and gross pay. The program then inputs the employer number,name,hours worker and hourly rate from user and disply gross pay with all other information.

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
struct employee
    {
        int number, grosspay, hours, hourlyrate;
        char name[50];
    }e1;
int main ()
{
        printf("Enter name:\n");
        gets(e1.name);
```

```
        printf("Enter number:");
        scanf("%d",&e1.number);
        printf("\nEnter grosspay:");
        scanf("%d",&e1.grosspay);
        printf("\nEnter hours worked:\n");
        scanf("%d",&e1.hours);
        printf("\nEnter hourly rate:");
        scanf("%d",&e1.hourlyrate);
    printf("\nEmployee name:%c\n",e1.name);
    printf("\nEmployee Number:%d\n",e1.number);
    printf("\nEmployee gross pay:%d\n",e1.grosspay);
    printf("\nEmployee hours worked:%d\n",e1.hours);
    printf("\nEmployee hourly rate:%d\n",e1.hourlyrate);
    return 0;
}
```

Program no 3

Write a program that declare a structure to store roll no,5 student marks, and average.Take input in marks and roll no. And disply average on screen.

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
struct student
    {
        int roll;
```

```
        int marks[5];
        float avg;
    };
int main ()
{
    student s;
    printf("Enter roll number:\n");
    scanf("%d",&s.roll);
    int i,sum;
    for (i=0;i<5;i++)
    {
        printf("\nEnter subject mark %d:\n",i+1);
        scanf("%d",&s.marks[i]);
        sum =sum + s.marks[i];
    }
    s.avg=sum/5;
    printf("Average is:%f",s.avg);
    return 0;
}
```

Program no 4

Write a program that declare a structure to store id ,pages ,price of a book.program input data of 5 books and display the most costly book on screen.

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

```
struct book
	{
		int id, pages, price;
	};
int main ()
{
	struct book b[5];
	int i;
	for (i=0;i<5;i++)
	{
		printf("Enter id:");
		scanf("%d",&b[i].id);
		printf("Enter price:");
		scanf("%d",&b[i].price);
		printf("Enter pages:\n");
		scanf("%d",&b[i].pages);
	}
	int max;
	max=0;
	for (i=1;i<5;i++)
	{
		if (b[i].price > b[max].price)
		{
			max=i;
		}
	}
	printf("\n%d is the id of book\n",b[max].id);
	printf("\n%d is the price of book\n",b[max].price);
	printf("\n%d are the pages of book\n",b[max].pages);
	return 0;
```

}

Program no 5

Write a program that declare a structure player to store name ,score,wickets,catches,matches,take input of 5 players from user and display the best bolwer name,best batsman name,and best fielder name on screen.

```
#include<stdio.h>
struct cricketer
{
   int runs,wickets,catches,matches;
   char name[25];
}player[100],t;

int main()
{
   int i,j,n;
   printf("Enter the no of cricket players\n");
   scanf("%d",&n);
   printf("Enter player info as name ,  matches  ,  catches  , wickets taken , runs scored\n");
   for(i=0;i<n;i++)
   {
     scanf("%s                                                %d %d",&player[i].name,&player[i].wickets,&player[i].runs,&player[i].catches, &player[i].matches);
   }
//for best bowler
   for(i=0;i<n;i++)
```

```
{
   for(j=0;j<n-1;j++)
   {
      if(player[j].catches>player[j+1].catches)
      {
         if(player[j].wickets>player[j+1].wickets){
            player[j].name;
                        }

      }
   }
}
printf("BEST BOWLER IS");
printf("&s",player[j].name);
//for best BATSMAN
for(i=0;i<n;i++)
{
   for(j=0;j<n-1;j++)
   {
      if(player[j].matches>player[j+1].matches)
      {
         if(player[j].runs>player[j+1].runs){
            player[j].name;
                        }

      }
   }
```

```
    }
    printf("BEST BATSMAN IS");
    printf("&s",player[j].name);
    return 0;
}
```

Functions

Program no 1

Write a program that displays a message "Programming makes like easy!" using function.

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

        return 0;
}
void msg()
{
        printf("programing makes like easy:");
}
```

Program no 2

Write a program that displays first 5 number on screen using function.

```
#include<stdio.h>
void no(void);
int main()
{
        no();
        return 0;
```

```
}
void no()
{
        int n;
        for(n=1;n<=5;n++)
        {
                printf("%d\n",n);
        }
}
```

Program no 3

Write a program that displays back counting from 10 to 1 using function.

```
#include <stdio.h>
void no();
int main()
{
        no();
        return 0;
}
void no()
{
        int n;
        for(n=10;n>=1;n--)
        {
                printf("%d\n",n);
```

```
    }
}
```

PASSING PARAMETERS TO FUNCTIONS

Program no 4

4. Write a program that input a number in main function, passes to function. Function check whether it is even

or odd.

```
#include <stdio.h>
void no(int);
int main()
{
    int n;
    printf("enter a number:\n");
    scanf("%d",&n);
    no(n);
    return 0;
}
void no(int m)
{
    if(m%2==0)
    printf("even");
    if(m%2!=0)
    printf("odd");
}
```

Program no 5

Write a program that input 2 numbers from user , passes them to a function. Function display maximum

number on screen.

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

```
void max(int,int);
int main()
{
        int a,b;
        printf("enter two numbers:\n");
        scanf("%d%d",&a,&b);
        max(a,b);
        return 0;
}
void max(int m,int n)
{
        if(m>n)
        printf("%d is max",m);
        else
        printf("%d is max",n);
}
```

Program no 6

Write a program that input a number from user, passes it to a function. Function display its table.

```
#include <stdio.h>
void table(int);
int main()
{
        int n;
        printf("enter a number:\n");
        scanf("%d",&n);
        table(n);
    return 0;
}
void table(int m)
{
```

```
        int c;
        for(c=1;c<=10;c++)
        {
        printf("%d * %d = %d\n",m,c,m*c);
        }
}
```

Program no 7

Write a program that inputs a number from user, passes to a function. Function display its factorial.

```
#include<stdio.h>
void fact(int);
int main()
{
        int n;
        printf("enter a number\n:");
        scanf("%d",&n);
        fact(n);
        return 0;
}
void fact(int m)
{
        int f=1;
        while(m>0)
        {
                f=f*m;
                m--;
        }
        printf("%d",f);
}
```

Program no 8

Write a program that inputs 2 number and 1 operator, passes them to a function. Function perform the operations according to operator. (calculator working)

```
#include <stdio.h>
void rev(int);
int main()
{
	int n;
	printf("enter a number");
	scanf("%d",&n);
	rev(n);
	return 0;
}
void rev(m)
{
	int r;
	int temp;
	while(m!=0)
	{
		temp=m%10;
		r=(r*10)+temp;
		m=m/10;
	}
	printf("%d",r);
}
```

Program no 9

Write a program that inputs a number from user and a character, passes them to a function. Function display the square of that symbol.

```
#include<stdio.h>
#include<conio.h>
void pat(int,char);
int main()
```

```
{
int a;
char sym;
printf("Enter a symbol\n");
scanf("%c",&sym);
printf("Enter a number to print a symbol in matrix");
scanf("%d",&a);
pat(a,sym);
return 0;
}
void pat (int a,char sym)
{
printf("\n");
int i,j;
for(i=1;i<=a;i++)
{
for(j=1;j<=a;j++)
{
printf("%c",sym);k
}
printf("\n");
}
}
```

Program no 10:

Write a program that inputs a number from user, passes to a function. Function display whether it is prime

or not.

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

```
int n;
printf("Enter a number");
scanf("%d",&n);
prime(n);
return 0;
}
void prime(int n)
{
int flag=0,c;
for(c=2;c<n;c++)
{
if(n%c==0)
flag=1;
break;
}
if(n==0||n==1)
{
printf("Not prime");
}
else
{
if(flag==0)
printf("Prime");
else
printf("Not prime");
}
}
```

Program no 11:

Write a program that inputs a number from user, passes to a function. Function check whether it is Fibonacci

or not.

```
#include<stdio.h>
void fab(int);
int main()
{
int n;
printf("Enter a number");
scanf("%d",&n);
fab(n);
return 0;
}
void fab(int n)
{
int t1,t2,nt;
t1=0;
t2=1;
if(n==t1||n==t2)
printf("Fibonccai");
nt=t1+t2;
while(nt<=n)
{
if(nt==n)
printf("Fibonccai");
t1=t2;
t2=nt;
nt=t1+t2;
}
}
```

Program no 12:

Write a program that input a number from user, passes to a function. Function display the number in reverse order. (1234 , output= 4321)

```
#include<stdio.h>
#include<conio.h>
void reverse(int);
int main()
{
int n;
printf("Enter a number");
scanf("%d",&n);
reverse(n);
return 0;
}
void reverse(int n)
{
int rev=0,temp;
while(n!=0)
{
temp=n%10;
rev=rev*10;
rev=rev+temp;
n=n/10;
}
printf("%d",rev);
}
```


PASS BY REFERENCE

Program no 13:

Write a program that inputs two integer from user, passes them to a function. Function swap the values.

```
#include<stdio.h>
#include<conio.h>
void swap (int&a,int&b);
```

```
int main()
{
int a,b;
printf("Enter value of a\n");
scanf("%d",&a);
printf("Enter value of b\n");
scanf("%d",&b);
swap(a,b);
return 0;
}
void swap (int &a,int &b)
{
int c;
c=a;
a=b;
b=c;
printf("Value of a after swaping are %d\n",a);
printf("Value of b after swaping are %d",b);
}
```

RETURN VALUE BY FUNCTION

Program no 14:

Write a program that inputs base and height of a triangle in main function. Passes them to a function. Then function finds the area of triangle and return it to main function. Main displayed on screen .

```
#include<stdio.h>
#include<conio.h>
float area ( float ,float);
```

```
int main()
{
float height,base,c;
printf("Enter height");
scanf("%f",&height);
printf("Enter base of a tringle");
scanf("%f",&base);
c=area(height,base);
return 0;
}
float area(float height ,float base)
{
float a;
a=0.5*base*height;
printf("%f",a);
return a;
}
```

Program no15:

Write a program that inputs two number from user, passes them to a function. Function calculate GCD and return to main function. Main function display the gcd of numbers.

```
#include<stdio.h>
int gcd (int,int);
int main()
{
int a,b,c;
printf("Enter two numbers");
scanf("%d%d",&a,&b);
```

```
c=gcd(a,b);
printf("%d is gcd",c);
return 0;
}
int gcd (int a,int b)
{
int m,gcd;
if(a>b)
m=a;
else
m=b;
int i;
for(i=1;i<=m;i++)
{
if(a%i==0&&b%i==0)
{
gcd=i;
}
}
return gcd;
}
```

ARRAY AS PARAMETERS OF FUNCTION

Program no 16

Write a program that take 5 numbers from user, store them in array, pass array to a function. Function display the maximum number on screen.

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

```
#include<conio.h>
int max (int ary[5]);
int main()
{
	int ary[5];
	int i;
	for(i=0;i<5;i++)
	{
		printf("enter number %d:",i+1);
		scanf("%d",&ary[i]);
	}
	max(ary);

	return 0;
}
int max(int ary[5])
{
	int i;
	int max=ary[0];
	for(i=0;i<5;i++)
	{
```

```
            if(ary[i]>max)
            max=ary[i];
        }
        printf("max=%d",max);
}
```

Program no 18

Write a program that take input 10 numbers in array , passes it to function. Function sort the array.

```
#include<stdio.h>
#include<conio.h>
int sort (int ary[10]);
int main()
{
        int ary[10],i;
        for(i=0;i<10;i++)
        {
                printf("enter number:");
                scanf("%d",&ary[i]);
        }
        sort(ary);
        return 0;
```

```
}
int sort (int ary [10])
{
	int i,j,swap;
	for(i=0;i<10;i++)
	{
		for(j=i;j<10;j++)
		{
			if(ary[i]>ary[j])
			{
				swap=ary[i];
				ary[i]=ary[j];
				ary[j]=swap;
			}
		}
	}
	printf("sorting data:\n");
	for(i=0;i<10;i++)
	printf("\n%d\t",ary[i]);
}
```

Recurison

Program 21:

```
#include<stdio.h>
#include<conio.h>
int fact (int);
int main()
{
	int n,f;
	printf("enter a number for factroial:\n");
	scanf("%d",&n);
	f=fact (n);
	printf("factorial=%d",f);
	return 0;
}
int fact (int n)
{
	if(n>0)
	{
		return n * fact ( n-1 );
	}
	else
	{
		return 1;
	}
};
```

Program 22:

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

```
int pow (int,int);
int main()
{
        int a,b,c;
        printf("enter a number:\n");
        scanf("%d",&a);
        printf("enter a number:\n");
        scanf("%d",&b);
        c=pow(a,b);
        printf("%d",c);
        return 0;
}
int pow ( int n,int m)
{
        if(m>0)
        {
          return n * pow ( n , m-1);
        }
        else
        {
                return 1;
        }
}
```

Program 23:

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

```
        int n,c;
        printf("enter a number:\n");
        scanf("%d",&n);
        c=backcount(n);
        printf("%d",c);
        return 0;
}
int backcount (int n)
{
        if(n>1)
        {
                printf("%d\n",n);
           backcount ( n-1);
        }

}
```

Program 24:

```
#include<stdio.h>
#include<conio.h>
int sum (int);
int main()
{
        int n,c;
        printf("enter a number:\n");
        scanf("%d",&n);
        c=sum(n);
        printf("sum=%d",c);
        return 0;
}
```

```
int sum (int n)
{
        if(n>0)
        {
                printf("%d\n",n);
          return n + sum ( n-1);
        }
        else
        return 0;

}
```

Program 25:

```
#include<stdio.h>
#include<conio.h>
int fab (int);
int main()
{
        int n,c;
        printf("enter a number of trems you want to find:\n");
        scanf("%d",&n);
        c=fab (n);
        printf("%d is the term",c);
        return 0;
}
int fab (int n)
{
        if(n==0)
        return 0;
        else if(n==1)
```

```
        return 1;
        else
        {
                return(fab(n-1)+fab(n-2));
        }
        return 0;

}
```

File handling

Program 1

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
int main()
{
        FILE *f;
        f = fopen("merifile.txt","w");
        if (f == NULL)
        {
                printf("error");
        }
        else
        {
                int n;
                for(n=1;n<=10;n++)
```

```
            {
                fprintf(f,"%d",n);
            }
            printf("data entered");
        }
        fclose(f);
        getch();
        return 0;
}
```

Program 2

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
int main()
{
        FILE*p;
        p = fopen("cities.txt","w");
        if (p == NULL)
        {
            printf("error");
        }
        else
        {
```

```
            char cities[80];
            printf("Enter cities:\n");
            char c;
            for (c=0;c<80;c++)
            {
                  scanf("%c",&cities[c]);
                  putc(cities[c],p);
            }
      }
      fclose(p);
      getch();
      return 0;
}
```

Program 3

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

// a struct to read and write
struct person
{
      int wickets;
   char name[20];
```

```
    int matches;
    int scores;
};
int main ()
{
    FILE *f;
        f = fopen ("person.text", "w");
    if (f == NULL)
    {
        printf("\nError opend file\n");
        exit (1);
    }
    struct person input1 = {25,"babar",17,265};
    fwrite (&input1, sizeof(struct person),25, f);
    if(fwrite != 0)
        printf("contents to file written successfully !\n");
    else
        printf("error writing file !\n");
    fclose (f);
    return 0;
}
```

Program no 4

```
#include <stdlib.h>
```

```
#include <stdio.h>

int countWords(FILE *f)
{
  int count = 0;
  char ch;
  while ((ch = fgetc(f)) != EOF)
  {
     if (ch == '\n')
        count++;
  }
  return count;
}
int main(void)
{

  int wordCount = 0;
  FILE *rFile = fopen("wrds.txt", "r");
  wordCount += countWords(rFile);
  printf("%d", wordCount);
  return 0;
}
```

Program 5

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
int main()
{
	FILE*f;
	f = fopen("merifile.txt","r");
	if (f == NULL)
	{
		printf("error");
	}
	else
	{
		char a;
		int count =0;
		a = fgetc(f);
		while(a != EOF)
		{
			count++;
			printf("%c",a);
			a = fgetc(f);
		}
		printf("total characters in file is %d",count);
```

```
    }
    fclose(f);
    getch();
    return 0;
}
```

Program 6

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
int main()
{
    FILE*f,*q;
    f = fopen("merifile.txt","r");
    q = fopen("merifile01.txt","w");
    if (f == NULL || q == NULL)
    {
        printf("error");
        exit(1);
    }
    else
    {
        char a;
        a = fgetc(f);
```

```
        while(a != EOF)
        {
            fprintf(q,"%c",a);
            a = fgetc(f);
        }
        printf("data transfered");
    }
    fclose(f);
    fclose(q);
    getch();
    return 0;
}
```

Program 7

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
   FILE * fPtr;
   char ch;
   fPtr = fopen("data.txt", "r");
   if(fPtr == NULL)
   {
      printf("Unable to open file.\n");
```

```
        exit(EXIT_FAILURE);
    }
    printf("File opened successfully\n\n");
    do
    {
        ch = fgetc(fPtr);
        putchar(ch);
    } while(ch != EOF);
    fclose(fPtr);
    return 0;
}
```

Program 8

```
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>
int main()
{
        FILE*f;
        f = fopen("random.txt","w");
        if (f == NULL)
        {
                printf("error");
        }
```

```
        else
        {
                int c,n;
                for (c = 1; c <= 100; c++)
                {
                        n = rand() % 100 + 1;
                        fprintf(f,"%d\n",n);
                }
        }
        fclose(f);
        getch();
        return 0;
}
```

Program 9

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
int main()
{
        FILE*p,*q,*r;
        int n;
        p = fopen("random.txt","r");
        q = fopen("even.txt","w");
```

```
    r = fopen("odd.txt","w");
    n = getc(p);
    while (n != EOF)
    {
        if (n % 2 == 0)
            putc(n,q);
        else if(n % 2 != 0)
            putc(n,r);
            n=getc(p);
    }
    fclose(p);
    fclose(q);
    fclose(r);
    getch();
    return 0;
```

Program 10

```
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>
int main()
{
    FILE*p;
    p = fopen("Table.txt","w");
```

```
    if (p == NULL)
    {
        printf("error");
    }
    else
    {
        int n;
        printf("Enter a number");
        scanf("%d",&n);
        int c;
        for (c=1;c<=10;c++)
        {
            fprintf(p,"%d x %d = %d",n,c,n*c);
        }
        fclose(p);
    }
    getch();
    return 0;
}
```