

COMPUTER PROGRAMMING LAB LIST OF PROGRAMS AND CODING



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Area and Circumference of a Circle

```
#include<stdio.h>
#include<conio.h>
main()
{
    float area,c,r;
    clrscr();
    printf("Enter the radius of the circle ");
    scanf("%f",&r);
    area=3.14*r*r;
    c=2*3.14*r;
    printf("Circumference of the circle is %3.2f",c);
    printf("\nArea of the circle is %3.2f",area);
    getch();
}
```

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Switch Case

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,c,n;
    clrscr();
    printf("Enter the numbers");
    scanf("%d%d",&a,&b);
    printf("Enter 1 to add\nEnter 2 to subtract\nEnter 3 to multiply the
two numbers");
    scanf("%d",&n);
    switch(n)
    {
        case 1:c=a+b;
            printf("Sum = %d",c);
            break;
        case 2:c=a-b;
            printf("Difference = %d",c);
            break;
        case 3:c=a*b;
            printf("Product = %d",c);
            break;
        default:printf("INVALID CHOICE");
    }
    getch();
}
```

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Ascending and Descending Order

```
#include<stdio.h>
#include<conio.h>
main()
{
    int a[50],n,max,min,i,j;
    clrscr();
    printf("Please enter the number of terms you want");
    scanf("%d",&n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    printf("Descending Order");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            if(a[i]>a[j])
            {
                max=a[i];
                a[i]=a[j];
                a[j]=max;
            }
        }
    }
    for(j=0;j<n;j++)
    {
        printf("\n%d",a[j]);
    }
    printf("\nAscending Order");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            if(a[i]<a[j])
            {
                min=a[i];

```

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```
        a[i]=a[j];
        a[j]=min;
    }
}
}
for(j=0;j<n;j++)
{
    printf("\n%d",a[j]);
}
getch();
}
```

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Call by Reference

```
#include<stdio.h>
#include<conio.h>
void main ()
{
clrscr();
int a,k;
int fact (int &n);
printf ("enter a value n");
scanf("%d" ,&a);
printf("The given number is %d",a);
k=fact(a);
printf("\nusing call by reference the factorial is %d",a);
getch();
}
int fact(int &a)
{
int i,c=1;
for(i=1;i<=a;i++)
c=c*i;
a=c;
return c;
}
```

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Call by Value

```
#include<stdio.h>
#include<conio.h>
void main ()
{
clrscr();
int a,k;
int fact (int n);
printf ("enter a value n");
scanf("%d" ,& a);
k=fact(a);
printf("using call by value the factorial of % d is %d",a,k);
getch();
}
int fact(int a)
{
int i,c=1;
for(i=1;i<=a;i++)
c=c*i;
a=c;
return c;
}
```


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Electricity Bill

```
#include<stdio.h>
#include<conio.h>
struct elecbill
{
    int pu,pru,amt,uc;
}
main()
{
    struct elecbill e;
    clrscr();
    printf("Enter the present and previous unit");
    scanf("%d %d",&e.pu,&e.pru);
    e.uc=e.pu-e.pru;
    if(e.uc<=100)
        e.amt=e.uc*1;
    else
    {
        if(e.uc<=200)
            e.amt=100+(e.uc-100)*2;
        else
        {
            if(e.uc<=300)
                e.amt=300+(e.uc-300)*5;
            else
                e.amt=600+(e.uc-300)*5;
        }
    }
    printf("Units consumed=%d",e.uc);
    printf("\nAmount=Rs.%d",e.amt);
    getch();
}
```

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Employee Paylist

```
#include<stdio.h>
#include<conio.h>
struct employee
{
    char name[50];
    int id,bp,hra,da,cca,net;
    char place[50];
}
main()
{
    struct employee s[50];
    int n,i;
    clrscr();
    printf("Enter the number of employees");
    scanf("%d",&n);
    for(i=0;i<n;i++)
    {
        printf("Enter the employee %d payment details(name,id,basic
pay,hra,da,cca)\n",i+1);
        scanf("%s %d %d %d %d
%d",s[i].name,&s[i].id,&s[i].bp,&s[i].hra,&s[i].da,&s[i].cca);
        s[i].net=s[i].bp+s[i].hra+s[i].da+s[i].cca;
    }
    for(i=0;i<n;i++)
    {
        printf("Employee %d payslip\n",i+1);
        printf("Name:%s\nId:%d\nBasic
Pay:%d\nHra:%d\nDa:%d\nCCA:%d\nNetpay:%d\n\n",s[i].name,s[i].id,s[i].bp
,s[i].hra,s[i].da,s[i].cca,s[i].net);
    }
    getch();
}
```

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Factorial of a number

```
#include<stdio.h>
#include<conio.h>
int fact(int);
void main()
{
    int a,c;
    clrscr();
    printf("Enter the number to find the factorial");
    scanf("%d",&a);
    c=fact(a);
    printf("The factorial of %d is %d",a,c);
    getch();
}
int fact(int x)
{
    int i,f=1;
    for(i=1;i<=x;i++)
    f*=i;
    return(f);
}
```

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Factorial using Recursion

```
#include<stdio.h>
#include<conio.h>
int fact(int x)
{
    if (x==1)
        return 1;
    else
        return(x*fact(x-1));
}
void main()
{
    int a,c;
    clrscr();
    printf("Enter the number:");
    scanf("%d",&a);
    c=fact(a);
    printf("%d factorial is %d",a,c);
    getch();
}
```

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Fibonacci Series

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a=0,b=1,c,i,n;
    clrscr();
    printf("Pls enter the no of terms you want");
    scanf("%d",&n);
    printf("The Fibonacci series for %d terms is as follows",n);
    for(i=1;i<=n;i++)
    {
        c=a+b;
        printf("\n%d",a);
        a=b;
        b=c;
    }
    getch();
}
```

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MATRIX-Subtraction

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50][50],b[50][50],c[50][50],d[50][50],n,m,i,j;
    clrscr();
    printf("Enter the order m x n of the matrix");
    scanf("%d %d",&m,&n);
    printf("Enter the matrix A");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("Enter the matrix B");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    printf("MATRIX of A\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("%d\t",a[i][j]);
        }
        printf("\n");
    }
    printf("MATRIX of B\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
```

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```
{
    printf("%d\t",b[i][j]);
}
printf("\n");
}
printf("DIFFERENCE of two MATRICES\n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
    d[i][j]=a[i][j]-b[i][j];
    printf("%d\t",d[i][j]);
}
printf("\n");
}
getch();
}
```

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MATRIX-Addition

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50][50],b[50][50],c[50][50],d[50][50],n,m,i,j;
    clrscr();
    printf("Enter the order m x n of the matrix");
    scanf("%d %d",&m,&n);
    printf("Enter the matrix A");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("Enter the matrix B");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    printf("MATRIX of A\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("%d\t",a[i][j]);
        }
        printf("\n");
    }
    printf("MATRIX of B\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
```


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```
{
    printf("%d\t",b[i][j]);
}
printf("\n");
}
printf("SUM of two MATRICES\n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
    c[i][j]=a[i][j]+b[i][j];
    printf("%d\t",c[i][j]);
}
printf("\n");
}
getch();
}
```

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MATRIX-Multiplication

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50][50],b[50][50],c[50][50],d[50][50],n,m,n1,m1,i,j;
    clrscr();
    printf("Enter the order of the matrix A and order of matrix B");
    scanf("%d %d %d %d",&m,&n,&m1,&n1);
    printf("Enter the matrix A");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("Enter the matrix B");
    for(i=0;i<m1;i++)
    {
        for(j=0;j<n1;j++)
        {
            scanf("%d",&b[i][j]);
        }
    }
    printf("MATRIX of A\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("%d\t",a[i][j]);
        }
        printf("\n");
    }
    printf("MATRIX of B\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
```

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```
{
    printf("%d\t",b[i][j]);
}
printf("\n");
}
printf("Product of two MATRICES\n");
for(i=0;i<m;i++)
{
for(j=0;j<n1;j++)
{
    for(int k=0;k<n;k++)
    {
        c[i][j]+=a[i][k]*b[k][j];
    }
    printf("%d\t",c[i][j]);
}
printf("\n");
}
getch();
}
```

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MATRIX-Transpose

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50][50],n,m,i,j;
    clrscr();
    printf("Enter the order m x n  of the matrix");
    scanf("%d %d",&m,&n);
    printf("Enter the matrix A");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            scanf("%d",&a[i][j]);
        }
    }
    printf("MATRIX of A\n");
    for(i=0;i<m;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("%d\t",a[i][j]);
        }
        printf("\n");
    }
    printf("TRANSPOSE MATRIX of A\n");
    for(i=0;i<n;i++)
    {
        for(j=0;j<m;j++)
        {
            printf("%d\t",a[j][i]);
        }
        printf("\n");
    }
    getch();
}
```

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Greatest of 3 numbers using branching statement

```
#include<stdio.h>
#include<conio.h>
main()
{
    int a,b,c,max=0,min=0;
    clrscr();
    printf("Please enter three numbers");
    scanf("%d %d %d",&a,&b,&c);
    if(a>b && a>c)
    max=a;
    if(b>c && b>a)
    max=b;
    if(c>b && c>a)
    max=c;
    if(a<b && a<c)
    min=a;
    if(b<c && b<a)
    min=b;
    if(c<b && c<a)
    min=c;
    printf("Largest number is %d",max);
    printf("\nSmallest number is %d",min);
    getch();
}
```

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Computing nCr

```
#include<stdio.h>
#include<conio.h>
void main ()
{
clrscr();
int n,k,r,c,a;
float ncr;
int fact (int x);
printf ("enter a value n and r in nCr");
scanf("%d%d" ,&n,&r);
k=fact(n);
c=n-r;
a=fact(r);
ncr=((float)k)/((float)c*(float)a);
printf("nCr = %3.2f",ncr);
getch();
}
int fact(int x)
{
int i, c=1;
for(i=1;i<=x;i++)
c=c*i;
return c;
}
```

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Odd and Even Numbers

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[50],n,i,e=0,o=0;
    clrscr();
    printf("Pls enter the no of terms you want");
    scanf("%d",&n);
    printf("Pls enter %d terms",n);
    for(i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
    }
    for(i=0;i<n;i++)
    {
        if(a[i]%2==0)
            e++;
        else
            o++;
    }
    printf("\nThere are %d even numbers and %d odd numbers",e,o);
    getch();
}
```

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Palindrome

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
    char a[50],b[50],ch,c[50];
    int i,k;
    clrscr();
    printf("Pls enter the string to check whether it is a Palindrome ");
    scanf("%s",a);
    strcpy(b,a);
    strcpy(c,a);
    k=strlen(a);
    for(i=0;i<k/2;i++)
    {
        ch=b[k-i-1];
        b[k-i-1]=a[i];
        a[i]=ch;
    }
    if(strcmp(a,b))
    printf("%s is not a Palindrome",c);
    else
    printf("%s is a Palindrome",c);
    getch();
}
```


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Pointer to Array

```
#include<stdio.h>
#include<conio.h>
main()
{
    int *p,sum=0,i;
    int x[5]={5,10,15,20};
    clrscr();
    i=0;p=x;
    printf("Element Value Address\n");
    while(i<5)
    {
        printf("x[%d]    %d    %u\n",i,*p,p);
        sum+=*p;
        i++;
        p++;
    }
    printf("\nSum=%d \n",sum);
    getch();
}
```

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Pointer to Function

```
#include<stdio.h>
#include<conio.h>
main()
{
    int *ptr;
    int a;
    clrscr();
    printf("Enter the number");
    scanf("%d",&a);
    ptr=&a;
    *ptr+=10;
    printf("The value in pointer is %u",*ptr);
    getch();
}
```

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Pointer to Structure

```
#include<stdio.h>
#include<conio.h>
struct details
{
    char name[50];
    int rollno;
    char place[50];
}
main()
{
    struct details *ptr;
    clrscr();
    printf("Enter the name,rollno and place");
    scanf("%s%d%s",ptr->name,&ptr->rollno,ptr->place);
    printf("Name = %s\nRoll no = %d\nPlace = %s",ptr->name,ptr-
>rollno,ptr->place);
    getch();
}
```

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Prime Number

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,i,f=0;
    clrscr();
    printf("Enter the number");
    scanf("%d",&a);
    for(i=2;i<=a/2;i++)
    {
        if(a%i==0 && a!=1)
        {
            f++;
            break;
        }
    }
    if(a!=1)
    {
        if(f==0)
            printf("%d is a Prime number",a);
        else
            printf("%d is not a Prime number",a);
    }
    getch();
}
```

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Swapping 2 Numbers (Using a Temporary Variable)

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,c;
    clrscr();
    printf("Enter the numbers");
    scanf("%d%d",&a,&b);
    c=a;
    a=b;
    b=c;
    printf("After Swapping a=%d and b=%d",a,b);
    getch();
}
```

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Students Information (Structure)

```
#include<stdio.h>
#include<conio.h>
struct student
{
    char name[50];
    int id;
    char place[50];
    int total10;
    int total12;
}
main()
{
    struct student s[50];
    int n,i;
    clrscr();
    printf("Enter the number of students");
    scanf("%d",&n);
    for(i=0;i<n;i++)
    {
        printf("Enter the student %d details(Name,id,place,10th total,12th
total)",i+1);
        scanf("%s %d %s %d
%d",s[i].name,&s[i].id,s[i].place,&s[i].total10,&s[i].total12);
    }
    for(i=0;i<n;i++)
    {
        printf(" Student %d details\n",i+1);
        printf("%s %d %s %d
%d\n",s[i].name,s[i].id,s[i].place,s[i].total10,s[i].total12);
    }
    getch();
}
```

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Students Grading

```
#include<stdio.h>
#include<conio.h>
main()
{
    int sum=0;
    int a[5];
    float avg=0;
    char grade;
    clrscr();
    printf("Enter your marks for 5 subjects");
    for(int i=0;i<5;i++)
    {
        scanf("%d",&a[i]);
        sum=sum+a[i];
    }
    avg=(float)sum/500.0;
    avg=avg*100;
    if(avg>=95 && avg<=100)
        grade='S';
    else if(avg>=85 && avg<95)
        grade='A';
    else if(avg>=75 && avg<85)
        grade='B';
    else
        grade='C';
    printf("Your grade is %c",grade);
    getch();
}
```

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Sum of Digits

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,sum=0;
    clrscr();
    printf("Enter the number");
    scanf("%d",&a);
    while(a>=1)
    {
        b=a%10;
        sum+=b;
        a=a/10;
    }
    printf("Sum of the digits is %d",sum);
    getch();
}
```


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Sum of Numbers

```
#include<stdio.h>
#include<conio.h>
main()
{
    int a[50],n,sum=0;
    clrscr();
    printf("Enter the number of terms");
    scanf("%d",&n);
    printf("Enter %d numbers",n);
    for(int i=0;i<n;i++)
    {
        scanf("%d",&a[i]);
        sum=sum+a[i];
    }
    printf("Sum of %d terms is %d",n,sum);
    getch();
}
```

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Swapping Numbers(Without Temporary Variable)

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b;
    clrscr();
    printf("Enter the numbers");
    scanf("%d",&a);
    b=a;
    scanf("%d",&a);
    printf("After Swapping a=%d and b=%d",a,b);
    getch();
}
```

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Counting Vowels and Consonants

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,i=0;
    char c;
    a=0;
    clrscr();
    printf("Enter the String\n");
    c=getchar();
    while(c!='\n')
    {
        if(c!=' ')
        {
            if(c=='a' || c=='e' || c=='i' || c=='o' || c=='u' || c=='A' || c=='E' || c=='I' || c=='
O' || c=='U')
                a++;
            else
                i++;
        }
        c=getchar();
    }
    printf("No of vowels is %d and consonants is %d",a,i);
    getch();
}
```