Important Practical Programs for CP

1. Write a program to read Title, Author and Price of 5 books using array of

structures. Display the records in ascending order of Price.

2. Implement a program to perform addition of two matrices.

#include <stdio.h>

int main()

{

    int m, n, c, d, first[10][10], second[10][10], sum[10][10];

    printf("Enter the number of rows and columns of matrix\n");

    scanf("%d%d", & m, & n);

    printf("Enter the elements of first matrix\n");

    for (c = 0; c < m; c++)

    {

        for (d = 0; d < n; d++)

        {

        scanf("%d", & first[c][d]);

        }

    }

    printf("Enter the elements of second matrix\n");

     for (c = 0; c < m; c++)

    {

        for (d = 0; d < n; d++)

        {

        scanf("%d", &second[c][d]);

        }

    }

     printf("Sum of the matrix is \n");

    for (c = 0; c < m; c++)

    {

        for (d = 0; d < n; d++)

        {

            sum[c][d] = first[c][d] + second[c][d];

            printf("%d\t", sum[c][d]);

        }

        printf("\n");

    }

    return 0;

}

3. Write a program to check whether a word is palindrome or not.

#include<stdio.h>

#include<string.h>

int main()

{ char s1[25];

int i,j,f=1;

printf("enter the string\n");

gets(s1);

i=0;

j=strlen(s1)-1;

while(i<j)

{

if(s1[i]!=s1[j])

{

f=0;

break;

}

i++;

j--;

}

if(f==0)

printf("string %s is not a palindrome\n",s1);

else

printf("string %s is a palindrome\n",s1);

return 0;

}

4. Implement a program to find transpose of a matrix.

#include<stdio.h>

void read(int a[10][10],int r, int c)

{

int i,j;

for(i=0;i<r;i++)

{

 for(j=0;j<c;j++)

 {

 scanf("%d",&a[i][j]);

 }

}

}

void display(int a[10][10],int r, int c)

{

int i,j;

for(i=0;i<r;i++)

{

 for(j=0;j<c;j++)

 {

 printf("%d ",a[i][j]);

 }

 printf("\n");

}

}

void transpose(int a[10][10],int t[10][10],int r,int c)

{int i,j;

for(i=0;i<c;i++)// t will have c no of rows

{

for(j=0;j<r;j++)// t will have r no of cols

t[i][j]=a[j][i];

}

}

int main()

{

int a[10][10],t[10][10],r,c;

 //original a will have r rows and c col

 // transpose t will have c rows and r cols

printf("Enter the number of rows and cols\n");

scanf("%d%d",&r,&c);

printf("enter elements in original matrix\n");

read(a,r,c);

transpose(a,t,r,c);

printf("original matrix is \n");

display(a,r,c);

printf("transpose matrix is \n");

display(t,c,r);

return 0;

}

5. Write a program to print Fibonacci series.

#include<stdio.h>

int main()

{

int n,i,f=1,s=1,t;

printf("enter nos of terms\n");

scanf("%d",&n);

printf("first %d terms of fibo series are\n",n);

if(n==1)

printf("%d\n",f);

else if(n>=2)

{

printf("%d\t%d\t",f,s);

for(i=1;i<=n-2;i++)

{

t=f+s;

printf("%d\t",t);

f=s;

s=t;

}

printf("\n");

}

else

printf("invalid no of terms\n");

return 0;

}

6. Write a C program to perform multiplication of two matrices.

#include<stdio.h>

void read(int a[10][10], int r, int c)

{

int i,j;

for(i=0;i<r;i++)

 for (j=0; j<c; j++)

 scanf("%d",&a[i][j]);

}

void display(int a[10][10], int r, int c)

{

int i,j;

for(i=0;i<r;i++)

{

 for (j=0; j<c; j++)

 printf("%d ",a[i][j]);

 printf("\n");

}

}

void multiply(int a[10][10],int b[10][10],int c[10][10],int

 r1,int c1,int r2,int c2)

{

int i,j,k;

for(i=0;i<r1;i++)

 for (j=0;j<c2;j++)

 {

 c[i][j]=0;

 for (k=0;k<c1;k++)

c[i][j]=c[i][j]+a[i][k]\*b[k][j];

}

}

int main()

{

int a[10][10],b[10][10],c[10][10],r1,c1,r2,c2;

printf("Enter order of matrix1\n");

scanf("%d %d",&r1,&c1);

printf("Enter order of matrix2\n");

scanf("%d %d",&r2,&c2);

if(c1==r2)

{

 printf("enter elements in first matrix\n");

 read(a,r1,c1);

 printf("enter elements in second matrix\n");

 read(b,r2,c2);

 multiply(a,b,c,r1,c1,r2,c2);

 printf("elements of first matrix\n");

 display(a,r1,c1);

 printf("elements of second matrix\n");

 display(b,r2,c2);

 printf("elements of resultant matrix\n");

 display(c,r1,c2);

}

else

printf("Multiplication not possible\n");

return 0;

}

7. Write a program to find the power of x raised to n that is: x

n

, using recursive

function.

#include <stdio.h>

int power(int n1, int n2);

int main() {

    int base, a, result;

    printf("Enter base number: ");

    scanf("%d", &base);

    printf("Enter power number(positive integer): ");

    scanf("%d", &a);

    result = power(base, a);

    printf("%d^%d = %d", base, a, result);

    return 0;

}

int power(int base, int a) {

    if (a != 0)

        return (base \* power(base, a - 1));

    else

        return 1;

}

8. Write a program to print the following pattern.

A

B B

C C C

D D D D

#include<stdio.h>

int main()

{

    int i,j,n;

    printf("Enter the no of lines\n");

    scanf("%d",&n);

    for(i=1;i<=n;i++)

    {

        for(j=1;j<=i;j++)

        {

            printf("%c",(char)(i+64));

        }

        printf("\n");

    }

    return 0;

}

9. Write a program to find largest element of an 1D array.

int main() {

  int n;

  double arr[100];

  printf("Enter the number of elements (1 to 100): ");

  scanf("%d", &n);

  for (int i = 0; i < n; ++i) {

    printf("Enter number%d: ", i + 1);

    scanf("%lf", &arr[i]);

  }

  // storing the largest number to arr[0]

  for (int i = 1; i < n; ++i) {

    if (arr[0] < arr[i]) {

      arr[0] = arr[i];

    }

  }

  printf("Largest element = %.2lf", arr[0]);

  return 0;

}

10. Write a Program to calculate and display sum of all the elements of the matrix.

#include<stdio.h>

int main()

{

     int a[10][10],r,c,sum=0,i,j;

     printf("/\*How Many Rows You Want To \nEnter in Matrix\*/\nEnter Limit : ");

     scanf("%d",&r);

     printf("\n/\*How Many Columns You Want To \nEnter in Matrix\*/\nEnter Limit : ");

     scanf("%d",&c);

     printf("\nEnter Elements for Matrix of Size %d\*%d:\n\n",r,c);

     for(i=0;i<r;i++)

          for(j=0;j<c;j++)

          {

               scanf("%d",&a[i][j]);

          }

     printf("\n%d\*%d Matrix : \n\n",r,c);

     for(i=0;i<r;i++)

     {

          for(j=0;j<c;j++)

          {

               printf("%2d ",a[i][j]);

          }

          printf("\n");

     }

     for(i=0;i<r;i++)

          for(j=0;j<c;j++)

               sum=sum+a[i][j];

     printf("\nSum of All Elements in Matrix = %d",sum);

     return 0;

}

11. Define a structure called player with data members as player name, team name,

batting average. Store and display the information of at least 10 players.

12. Write a program to display the following for the user specified number of lines.

\*

\*\*

\*\*\*

\*\*\*\*

\*\*\*\*\*

#include<stdio.h>

int main()

{

    int i,j,n;

    printf("Enter the no of lines\n");

    scanf("%d",&n);

    for(i=1;i<=n;i++)

    {

        for(j=1;j<=i;j++)

        {

            printf("\*");

        }

        printf("\n");

    }

    return 0;

}

13. Write a program in C to find the reverse of a given string without using inbuilt

string function.

14. Write a program to store and display at least 10 records of the name, roll

number and fees of a student using structure.

15. Explain String function for the following operations with example.



a. Copy string from source to destination.

b. Merging of two strings.

16. Write a program to print the following pattern. (Note- Not only 4 lines, it should



print N lines taken from the user.)

A

B B

C C C

D D D D

17. Write a C-program to create array of structures in order to store details of



almost 100 books. The book details are book name, book price, book page

number and book author name.

18. Write a program that will accept two-dimensional square matrix and find the

sum of diagonal elements.

#include<stdio.h>

int main()

{

    int mat[12][12];

    int i,j,row,col,sum=0;

    printf("Enter the number of rows and columns for 1st matrix\n");

    scanf("%d%d",&row,&col);

    printf("Enter the elements of the matrix\n");

    for(i=0;i<row;i++)

    {

        for(j=0;j<col;j++)

        {

            scanf("%d",&mat[i][j]);

        }

    }

    printf("The matrix\n");

    for(i=0;i<row;i++)

    {

        for(j=0;j<col;j++)

        {

            printf("%d\t",mat[i][j]);

        }

        printf("\n");

    }

    //To add diagonal elements

    for(i=0;i<row;i++)

    {

        for(j=0;j<col;j++)

        {

            if(i==j)

            {

                sum=sum+mat[i][j];

            }

        }

    }

    printf("The sum of diagonal elements of a square matrix = %d\n",sum);

    return 0;

}

19. Write a C program to accept 10 integers from the user and arrange them in

ascending order and display them.

#include<stdio.h>

#include<conio.h>

int main()

{

int a[10],i,j,temp;

printf("Enter the 10 Numbers:");

for(i=0;i<10;i++)

{

    printf("Enter a value:");

    scanf("%d",&a[i]);

}

for(i=0;i<9;i++)

{

    for(j=0;j<9;j++)

    {

        if(a[j]>a[j+1])

        {

            temp=a[j];

            a[j]=a[j+1];

            a[j+1]=temp;

        }

}

}

printf("Given numbers in ascending order:");

for(i=0;i<10;i++)

{

    printf("\n%d",a[i]);

}

return 0;

}

20. Write a C program to find GCD of two numbers using recursion

#include<stdio.h>

int GCD(int m,int n)

{

    if(n>m)

    {

        return GCD(n,m);

    }

    else if(n==0)

    {

        return m;

    }

    else

    {

        return GCD(n,m%n);

    }

}

int main()

{

    int a,b,g;

    printf("Enter 2 numbers=");

    scanf("%d%d",&a,&b);

    g=GCD(a,b);

    printf("\nGCD=%d",g);

    return 0;

}