Important Practical Programs for CP

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

structures. Display the mords in ascending order of Price.

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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 fspose 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 fanacci 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 G 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.

#include<stdio.h>

#include<string.h>

struct cricket

{

    char     P\_Name[20];

    char     T\_Name[20];

    float B\_Ave;

};

int main()

{

    struct cricket s[5],t;

    int    i,j,n;

    float    p;

    printf("Enter No. player Player:\n");

    scanf("%d",&n);

    printf("Enter Data Of %d Player\n",n);

    for(i=0;i<n;i++)

    {

        printf("\nEnter Player Name,Team Name And Bating Average For Player %d :- \n",i+1);

        scanf("%s %s %f",s[i].P\_Name,s[i].T\_Name,&p);

        s[i].B\_Ave=p;

    }

    for(i=1;i<=n-1;i++)

    {

        for(j=0;j<=n-i;j++)

        {

            if(strcmp(s[j-1].T\_Name,s[j].T\_Name)>0)

            {

                t=s[j-1];

                s[j-1]=s[j];

                s[j]=t;

            }

        }

    }

    printf("\nAfter Teamwise Sorting...Player List Is");

    for(i=0;i<n;i++)

    {

            printf("\n%-20s %-20s %.2f",s[i].P\_Name,s[i].T\_Name,s[i].B\_Ave);

    }

    return 0;

}

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.

#include<stdio.h>

#include<string.h>

int main()

{

    int i,n;

    char str[20];

    printf("Enter the String to get reversed\n");

    gets(str);

    n=strlen(str);

    printf("\nReversed string is \n");

    for(i=n-1;i>=0;i--)

    {

       printf("%c",str[i]);

    }

    return 0;

}

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

number and fees of a student using structure.

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#include<stdio.h>

struct student

{

    int age,roll\_no,fees;

    char name[25];

}stud[100];

int  main()

{

    int i,n;

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

    scanf("%d",&n);

    printf("enter student info as roll\_no , name , fees\n");

    for(i=0;i<n;i++)

    {

        scanf("%d %s %d %d",&stud[i].roll\_no,stud[i].name,&stud[i].fees);

    }

    printf("\nROLL\_NO\t\tNAME\t\tFEES\n");

    for(i=0;i<n;i++)

    {

        printf("%d\t\t    %s\t\t%d\t\t%d\t\t\n",stud[i].roll\_no,stud[i].name,stud[i].fees);

    }

    return 0;

}

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.

#include<stdio.h>

#include<string.h>

#define SIZE 20

struct bookdetail

{

          char name[20];

          char author[20];

          int pages;

          float price;

};

void output(struct bookdetail v[],int n);

int  main()

{

          struct bookdetail b[SIZE];

          int num,i;

          printf("Enter the Numbers of Books:");

          scanf("%d",&num);

          printf("\n");

          for(i=0;i<num;i++)

          {

                   printf("\t=:Book %d Detail:=\n",i+1);

                   printf("\nEnter the Book Name:\n");

                   scanf("%s",b[i].name);

                   printf("Enter the Author of Book:\n");

                   scanf("%s",b[i].author);

                   printf("Enter the Pages of Book:\n");

                   scanf("%d",&b[i].pages);

                   printf("Enter the Price of Book:\n");

                   scanf("%f",&b[i].price);

          }

          output(b,num);

          return 0;

}

void output(struct bookdetail v[],int n)

{

          int i,t=1;

          for(i=0;i<n;i++,t++)

          {

                    printf("\n");

                   printf("Book No.%d\n",t);

                   printf("\t\tBook %d Name is=%s \n",t,v[i].name);

                   printf("\t\tBook %d Author is=%s \n",t,v[i].author);

                   printf("\t\tBook %d Pages is=%d \n",t,v[i].pages);

                   printf("\t\tBook %d Price is=%f \n",t,v[i].price);

                   printf("\n");

          }

}

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

#includemulti<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;

}