**Doddipatla Venkata Vamsi**

**19B91B0110**

**¼Civil-C Section A3**

**EXERCISE-5**

1. Unique Elements

#include <stdio.h>

#include<conio.h>

void main()

{

int arr1[100], n,ctr=0;

int i, j, k;

clrscr();

printf("\n\nPrint all unique elements of an array:\n");

printf("------------------------------------------\n");

printf("Input the number of elements to be stored in the array: ");

scanf("%d",&n);

printf("Input %d elements in the array :\n",n);

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

{

printf("element - %d : ",i);

scanf("%d",&arr1[i]);

}

printf("\nThe unique elements found in the array are: \n");

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

{

ctr=0;

for(j=0,k=n; j<k+1; j++)

{

/\*Increment the counter when the seaarch value is duplicate.\*/

if (i!=j)

{

if(arr1[i]==arr1[j])

{

ctr++;

}

}

}

if(ctr==0)

{

printf("%d ",arr1[i]);

}

}

getch();

}

Output for this programm:

Print all unique elements of an array:

------------------------------------------

Input the number of elements to be stored in the array: 6

Input 6 elements in the array :

element - 0 : 1

element - 1 : 7

element - 2 : 8

element - 3 : 9

element - 4 : 3

element - 5 : 7

The unique elements found in the array are:

1 8 9 3

1. Odd & Even

#include <stdio.h>

#include<conio.h>

void main()

{

int arr1[10], arr2[10], arr3[10];

int i,j=0,k=0,n;

clrscr();

printf("\n\nSeparate odd and even integers in separate arrays:\n");

printf("------------------------------------------------------\n");

printf("Input the number of elements to be stored in the array :");

scanf("%d",&n);

printf("Input %d elements in the array :\n",n);

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

{

printf("element - %d : ",i);

scanf("%d",&arr1[i]);

}

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

{

if (arr1[i]%2 == 0)

{

arr2[j] = arr1[i];

j++;

}

else

{

arr3[k] = arr1[i];

k++;

}

}

printf("\nThe Even elements are : \n");

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

{

printf("%d ",arr2[i]);

}

printf("\nThe Odd elements are :\n");

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

{

printf("%d ", arr3[i]);

}

printf("\n\n");

getch();

}

Output for this programm:

Separate odd and even integers in separate arrays:

------------------------------------------------------

Input the number of elements to be stored in the array :6

Input 6 elements in the array :

element - 0 : 1

element - 1 : 2

element - 2 : 5

element - 3 : 3

element - 4 : 7

element - 5 : 8

The Even elements are :

2 8

The Odd elements are :

1 5 3 7

3. Sort the Elements

#include <stdio.h>

#include<conio.h>

void main()

{

int arr1[100];

int n, i, j, tmp;

clrscr();

printf("\n\nsort elements of array in ascending order :\n ");

printf("----------------------------------------------\n");

printf("Input the size of array : ");

scanf("%d", &n);

printf("Input %d elements in the array :\n",n);

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

{

printf("element - %d : ",i);

scanf("%d",&arr1[i]);

}

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

{

for(j=i+1; j<n; j++)

{

if(arr1[j] <arr1[i])

{

tmp = arr1[i];

arr1[i] = arr1[j];

arr1[j] = tmp;

}

}

}

printf("\nElements of array in sorted ascending order:\n");

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

{

printf("%d ", arr1[i]);

}

printf("\n\n");

getch();

}

Output for this programm:

sort elements of array in ascending order :

----------------------------------------------

Input the size of array : 5

Input 5 elements in the array :

element - 0 : 4

element - 1 : 1

element - 2 : 3

element - 3 : 8

element - 4 : 2

Elements of array in sorted ascending order:

1 2 3 4 8

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**EXERCISE-6**

1.Matrix Multiplication

#include <stdio.h>

#include<conio.h>

void main()

{

int arr1[50][50],brr1[50][50],crr1[50][50],i,j,k,r1,c1,r2,c2,sum=0;

clrscr();

printf("\n\nMultiplication of two Matrices :\n");

printf("----------------------------------\n");

printf("\nInput the rows and columns of first matrix : ");

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

printf("\nInput the rows and columns of second matrix : ");

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

if(c1!=r2)

{

printf("Mutiplication of Matrix is not possible.");

printf("\nColumn of first matrix and row of second matrix must be same.");

}

else

{

printf("Input elements in the first matrix :\n");

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

{

for(j=0;j<c1;j++)

{

printf("element - [%d],[%d] : ",i,j);

scanf("%d",&arr1[i][j]);

}

}

printf("Input elements in the second matrix :\n");

for(i=0;i<r2;i++)

{

for(j=0;j<c2;j++)

{

printf("element - [%d],[%d] : ",i,j);

scanf("%d",&brr1[i][j]);

}

}

printf("\nThe First matrix is :\n");

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

{

printf("\n");

for(j=0;j<c1;j++)

printf("%d\t",arr1[i][j]);

}

printf("\nThe Second matrix is :\n");

for(i=0;i<r2;i++)

{

printf("\n");

for(j=0;j<c2;j++)

printf("%d\t",brr1[i][j]);

}

//multiplication of matrix

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

for(j=0;j<c2;j++)

crr1[i][j]=0;

for(i=0;i<r1;i++) //row of first matrix

{

for(j=0;j<c2;j++) //column of second matrix

{

sum=0;

for(k=0;k<c1;k++)

sum=sum+arr1[i][k]\*brr1[k][j];

crr1[i][j]=sum;

}

}

printf("\nThe multiplication of two matrices is : \n");

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

{

printf("\n");

for(j=0;j<c2;j++)

{

printf("%d\t",crr1[i][j]);

}

}

}

printf("\n\n");

getch();

}

2.Transpose Matrix

#include <stdio.h>

#include<conio.h>

void main()

{

int arr1[50][50],brr1[50][50],i,j,r,c;

printf("\n\nTranspose of a Matrix :\n");

printf("---------------------------\n");

printf("\nInput the rows and columns of the matrix : ");

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

printf("Input elements in the first matrix :\n");

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

{

for(j=0;j<c;j++)

{

printf("element - [%d],[%d] : ",i,j);

scanf("%d",&arr1[i][j]);

}

}

printf("\nThe matrix is :\n");

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

{

printf("\n");

for(j=0;j<c;j++)

printf("%d\t",arr1[i][j]);

}

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

{

for(j=0;j<c;j++)

{

brr1[j][i]=arr1[i][j];

}

}

printf("\n\nThe transpose of a matrix is : ");

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

{

printf("\n");

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

{

printf("%d\t",brr1[i][j]);

}

}

printf("\n\n");

getch();

}

**Exercise-7**

1. Searching an Element

#include<stdio.h>

#include<conio.h>

int searchElement(int arr2D[4][4], int n, int x)

{

int i,j;

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

{

for(j=0;j<n;j++)

{

if (arr2D[i][j] == x)

{

printf("\nThe element Found at the position in the matrix is: %d, %d", i, j);

return 1;

}

}

}

printf("\nThe given element not found in the 2D array.");

return 0;

}

void main()

{

int arr2D[4][4] = { {15, 23, 31, 39},

{18, 26, 36, 43},

{25, 28, 37, 48},

{30, 34, 39, 50},

};

int i,j,v;

clrscr();

v=30;

//------------- print original array ------------------

printf("The given array in matrix form is : \n");

for(i = 0; i < 4; i++)

{

for (j=0;j<4;j++)

{

printf("%d ", arr2D[i][j]);

}

printf("\n");

}

//------------------------------------------------------

printf("The given value for searching is: %d",v);

searchElement(arr2D, 4, v);

getch();

}

1. String Reverse

#include <stdio.h>

#include <string.h>

#include <stdlib.h>

#include<conio.h>

void main()

{

char str[100]; /\* Declares a string of size 100 \*/

int l,i;

clrscr();

printf("\n\nPrint individual characters of string in reverse order :\n");

printf("------------------------------------------------------\n");

printf("Input the string : ");

fgets(str, sizeof str, stdin);

l=strlen(str);

printf("The characters of the string in reverse are : \n");

for(i=l;i>=0;i--)

{

printf("%c ", str[i]);

}

printf("\n");

getch();

}