**NAME :** **AMISHA BHANDARI**

**SECTION : F(G2)**

**ROLL NO. : 55**

**Q1.Write a user define function in C to print all unique elements in an array.**

#include <stdio.h>

void UniqueElements(int arr[], int size);

int main()

{

int arr[100];

int size,i;

// Input size of array and elements

printf("Enter size of array: ");

scanf("%d", &size);

printf("Enter elements in array: ");

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

{

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

}

// Call the function to print unique elements

UniqueElements(arr, size);

return 0;

}

void UniqueElements(int arr[], int size)

{

int freq[50];

int i, j, count;

// Initialize frequency array

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

{

freq[i] = -1;

}

// Find frequency of each element

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

{

count = 1;

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

{

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

{

count++;

freq[j] = 0;

}

}

if (freq[i] != 0)

{

freq[i] = count;

}

}

// Print unique elements

printf("Unique elements in the array are: ");

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

{

if (freq[i] == 1)

{

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

}

}

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tc.c -o tc

C:\Users\Amisha Bhandari\Desktop\codes>tc.exe

Enter size of array: 6

Enter elements in array: 5 7 8 8 9 7

Unique elements in the array are: 5 9

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**Q2. Write a program in C to separate odd and even integers into separate arrays.**

#include <stdio.h>

int main()

{

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

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

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);

// Input elements for the array

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

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

{

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

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

}

// Separate odd and even integers into separate arrays

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

{

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

{

arr2[j] = arr1[i];

j++;

}

else

{

arr3[k] = arr1[i];

k++;

}

}

// Print the Even elements

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

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

{

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

}

// Print the Odd elements

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

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

{

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

}

printf("\n\n");

return 0;

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tcs2.c -o tcs2

C:\Users\Amisha Bhandari\Desktop\codes>tcs2.exe

Separate odd and even integers in separate arrays:

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

Input the number of elements to be stored in the array: 5

Input 5 elements in the array:

element - 0: 34

element - 1: 76

element - 2: 98

element - 3: 88

element - 4: 67

The Even elements are:

34 76 98 88

The Odd elements are:

67

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**Q3. Write a program in C to find the sum of the lower triangular elements of a matrix.**

#include <stdio.h>

int main()

{

int m, n,i,j, lsum = 0;

printf("Enter the number of rows and columns: ");

scanf("%d %d", &m, &n);

// Declare a 2D array for the matrix

int a[m][n];

printf("\nEnter the elements of the matrix:\n");

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

{

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

{

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

}

}

printf("\nThe elements in the matrix are:\n");

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

{

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

{

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

}

printf("\n");

}

if (m == n)

{

// Calculate the sum of lower triangular elements

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

{

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

{

if (i >= j)

{

lsum += a[i][j];

}

}

}

printf("\nThe sum of the lower triangular matrix is %d\n", lsum);

}

else

{

printf("Not possible to display lower triangular elements sum.\n");

}

return 0;

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tcs3.c -o tcs3

C:\Users\Amisha Bhandari\Desktop\codes>tcs3.exe

Enter the number of rows and columns: 3 3

Enter the elements of the matrix:

4 5 6

7 8 9

1 2 3

The elements in the matrix are:

4 5 6

7 8 9

1 2 3

The sum of the lower triangular matrix is 25

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**Q4. Write a program in C to find the max element of each row of a matrix.**

#include<stdio.h>

int main()

{

int max\_row,a[10][10],i,j,m,n;

printf("Enter number of rows:");

scanf("%d",&m);

printf("Enter number of columns:");

scanf("%d",&n);

printf("Enter the elements:\n");

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

{

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

{

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

}

}

printf("\n");

printf("Row wise maximum elements:\n");

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

{

max\_row=a[0][i];

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

{

if(max\_row<a[i][j])

{

max\_row=a[i][j];

}

}

printf("Row %d=%d\n",i,max\_row);

}

printf("\n");

return 0;

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tcs4.c -o tcs4

C:\Users\Amisha Bhandari\Desktop\codes>tcs4.exe

Enter number of rows:3

Enter number of columns:3

Enter the elements:

1 2 3

4 5 6

7 8 9

Row wise maximum elements:

Row 0=3

Row 1=6

Row 2=9

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**Q5. Write a program in C to split string by space into words.**

#include <stdio.h>

#include <string.h>

int main()

{

char str1[100];

char newString[10][10];

int i, j, ctr;

printf("\n\n Split string by space into words :\n");

printf(" Input a string : ");

fgets(str1, sizeof str1, stdin);

j = 0; // Initialize column index of newString array

ctr = 0; // Initialize word count

for (i = 0; i <= (strlen(str1)); i++)

{

if (str1[i] == ' ' || str1[i] == '\0')

{

newString[ctr][j] = '\0'; // Null-terminate the word

ctr++; // Move to the next word

j = 0; // Reset column index to 0 for the next word

}

else

{

newString[ctr][j] = str1[i]; // Store the character into newString

j++; // Move to the next character within the word

}

}

printf("\n Strings or words after split by space are :\n");

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

{

printf(" %s\n", newString[i]);

}

return 0;

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tcs5.c -o tcs5

C:\Users\Amisha Bhandari\Desktop\codes>tcs5.exe

Split string by space into words :

Input a string : welcome to graphic era deemed to be university

Strings or words after split by space are :

welcome

to

graphic

era

deemed

to

be

university

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**Q6. Write a user define function to find the highest frequency character in a string.**

#include <stdio.h>

#include <string.h>

int main()

{

char str1[100], a[100];

int count[100] = {0}, flag = 0;

int i, j = 0, k = 0, l, max, index;

printf("Enter a string : ");

fgets(str1,100,stdin);

l = strlen(str1);

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

{

if (i == 0)

{

a[j++] = str1[i];

count[j - 1]++;

}

else

{

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

{

if (str1[i] == a[k])

{

count[k]++;

flag = 1;

}

}

if (flag == 0)

{

a[j++] = str1[i];

count[j - 1]++;

}

flag = 0;

}

}

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

{

if ((i == 0) && (a[i] != ' '))

{

max = count[i];

}

if ((max < count[i]) && (a[i] != ' '))

{

max = count[i];

index = i;

}

}

printf("\nMax repeated character in the string = %c ", a[index]);

printf("\nIt occurs %d times", count[index]);

return 0;

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tcs6.c -o tcs6

C:\Users\Amisha Bhandari\Desktop\codes>tcs6.exe

Enter a string : hello world

Max repeated character in the string = l

It occurs 3 times

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**Q7. Write a program to remove characters from a string except alphabets.**

#include <stdio.h>

#include <string.h>

int main()

{

char str[150];

int i, j;

printf("\n\nRemove characters in String Except Alphabets :\n");

printf("Input the string : ");

fgets(str, 150, stdin);

for (i = 0; str[i] != '\0'; ++i)

{

while (!((str[i] >= 'a' && str[i] <= 'z') || (str[i] >= 'A' && str[i] <= 'Z' || str[i] == '\0')))

{

for (j = i; str[j] != '\0'; ++j)

{

str[j] = str[j + 1];

}

str[j] = '\0';

}

}

printf("After removing the Output String : %s\n\n", str);

return 0;

}

**OUTPUT**

C:\Users\Amisha Bhandari\Desktop\codes>gcc tcs7.c -o tcs7

C:\Users\Amisha Bhandari\Desktop\codes>tcs7.exe

Remove characters in String Except Alphabets :

Input the string : amisha\_bhandari@78gmail.com

After removing the Output String : amishabhandarigmailcom