**Que.1 Write a C program to check whether a number is prime or not.**

#include <stdio.h>

int main()

{

int i, num, p = 0;

printf("Enter number: ");

scanf("%d", &num);

for (i = 2; i <= num / 2; i++)

{

if (num % i == 0)

{

p++;

break;

}

}

if (p == 0 && num != 1)

{

printf("%d Prime number", num);

}

else

{

printf("%d not a Prime number", num);

}

return 0;

}

**Que.2 Implement a C program that reads a string from the user and counts the number of vowels and consonants in it.**

#include <stdio.h>

#include <string.h>

#include <stdlib.h>

int main() {

char str[100];

int i, len, vowel=0, cons=0;

printf("\n\nCount total number of vowel or consonant :\n");

printf("Enter the string : ");

scanf("%s",str);

len = strlen(str);

for (i = 0; i < len; i++) {

if (str[i] == 'a' || str[i] == 'e' || str[i] == 'i' || str[i] == 'o' || str[i] == 'u' || str[i] == 'A' || str[i] == 'E' || str[i] == 'I' || str[i] == 'O' || str[i] == 'U') {

vowel++;

}

else if ((str[i] >= 'a' && str[i] <= 'z') || (str[i] >= 'A' && str[i] <= 'Z')) {

cons++;

}

}

printf("\nThe total vowel : %d\n", vowel);

printf("The total consonant: %d\n\n", cons);

return 0;

}

**Que.3 Write a C program to calculate the sum of the digits of an integer number entered by the user.**

#include<stdio.h>

int main()

{

int n,sum=0,m;

printf("Enter a number:");

scanf("%d",&n);

while(n>0)

{

m=n%10;

sum=sum+m;

n=n/10;

}

printf("Sum is=%d",sum);

return 0;

}

**Que.4 Develop a C program that finds the transpose of a given matrix.**

#include <stdio.h>

int main() {

int a[10][10] = { {1, 2, 3}, {4, 5, 6},{7,8,9} };

int transpose[10][10], r=3, c=3;

printf("\nYour matrix: \n");

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

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

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

if (j == c - 1)

printf("\n");

}

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

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

transpose[j][i] = a[i][j];

}

printf("\nTranspose of the matrix:\n");

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

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

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

if (j == r - 1)

printf("\n");

}

return 0;

}

**Que.5** **Write a C program to merge two sorted arrays into a single sorted array.**

// Online C compiler to run C program online

#include <stdio.h>

#define MAX\_SIZE 100

int main()

{

int arr1[MAX\_SIZE], arr2[MAX\_SIZE], merged[MAX\_SIZE \* 2];

int size1, size2, i = 0, j = 0, k = 0;

printf("Enter size of first array: ");

scanf("%d", &size1);

printf("Enter elements of first array:\n");

for (i = 0; i < size1; i++)

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

printf("Enter size of second array: ");

scanf("%d", &size2);

printf("Enter elements of second array:\n");

for (i = 0; i < size2; i++)

scanf("%d", &arr2[i]);

i = 0;

j = 0;

k = 0;

while (i < size1 && j < size2)

{

if (arr1[i] < arr2[j])

merged[k++] = arr1[i++];

else

merged[k++] = arr2[j++];

}

while (i < size1)

merged[k++] = arr1[i++];

while (j < size2)

merged[k++] = arr2[j++];

printf("Merged array:\n");

for (i = 0; i < size1 + size2; i++)

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

printf("\n");

return 0;

}

**Que.6 Create a C program that calculates the sum and average of elements in an array.**

#include<stdio.h>

int main()

{

float sum=0, avg;

int i, n=5;

float a[100]={5,4,3,2,1};

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

{

sum = sum + a[i];

}

avg = sum/n;

printf("Sum is %f\n", sum);

printf("Average is %f", avg);

return 0;

}

**Que.7 Develop a C program that checks whether a given string is a palindrome without using built-in functions.**

#include <stdio.h>

#include <string.h>

int main()

{

char str[10];

int i, len, flag = 0;

printf ("Enter the String\n");

scanf("\n%s",&str);

len = strlen(str);

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

{

// Checking if string is palindrome or not

if (str[i] != str[len - i - 1]) {

flag = 1;

break;

}

}

if (flag)

printf("%s is not palindrome", str);

else

printf("%s is palindrome", str);

return 0;

}

**Que.8 Write a C program to find the second largest element in an array of integers.**

#include <stdio.h>

void main() {

int arr1[50]={2,9,7,6,5};

int n=5, i=0, j = 0, lrg=0, lrg2nd=0;

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

if (lrg < arr1[i]) {

lrg = arr1[i];

j = i;

}

}

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

if (i == j) {

i++;

i--;

} else {

if (lrg2nd < arr1[i]) {

lrg2nd = arr1[i];

}

}

}

printf("The Second largest element in the array is : %d \n\n", lrg2nd);

}

**Que.9 Implement a C program that multiplies two matrices.**

#include <stdio.h>

int main() {

int matrix1[3][4] = {

{1,2,3,0},

{4,5,6,0},

{7,8,9,0}

};

int matrix2[3][4] = {

{11,22,33,0},

{44,55,66,0},

{77,88,99,0}

};

int len\_of\_row = sizeof(matrix1)/sizeof(matrix1[0]);

int len\_of\_col = (sizeof(matrix1[0])/sizeof(matrix1[0][0]));

printf("Matrix-1:\n");

for(int row = 0; row<len\_of\_row; row++){

for(int col = 0; col<len\_of\_col; col++){

printf("%d ", matrix1[row][col]);

}

printf("\n");

}

printf("Matrix-2:\n");

for(int row = 0; row<len\_of\_row; row++){

for(int col = 0; col<len\_of\_col; col++){

printf("%d ", matrix2[row][col]);

}

printf("\n");

}

printf("Matrix-1 + Matrix-2:\n");

for(int row = 0; row<len\_of\_row; row++){

for(int col = 0; col<len\_of\_col; col++){

printf("%d ",matrix1[row][col] \* matrix2[row][col]);

}

printf("\n");

}

return 0;

}

**Que.10 Write a C program to count the frequency of each character in a given string.**

#include <stdio.h>

#include <string.h>

int main()

{

char S[100];

int i = 0;

printf("Enter String\n");

scanf("%s",&S);

int freq[26] = { 0 };

while (S[i] != '\0') {

freq[S[i] - 'a']++;

i++;

}

for (int i = 0; i < 26; i++)

{

if (freq[i] != 0)

{

printf("%c - %d\n", i + 'a', freq[i]);

}

}

}

**Que.11 Create a C program that reads an array of integers from the user and removes duplicate elements from the array.**

#include <stdio.h>

#include <stdlib.h>

int main()

{

int n, count = 0;

printf("Enter number of elements in the array: ");

scanf("%d", &n);

int arr[n], temp[n];

if(n==0)

{

printf("No element inside the array.");

exit(0);

}

printf("Enter elements in the array: ");

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

{

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

}

printf("\nArray Before Removing Duplicates: ");

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

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

// To store unique elements in temp after removing the duplicate elements

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

{

int j;

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

{

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

break;

}

if (j == count)

{

temp[count] = arr[i];

count++;

}

}

printf("\nArray After Removing Duplicates: ");

for (int i = 0; i < count; i++)

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

return 0;

}

**Que.12 Write a C program to find the factorial of a number using both iterative and recursive**

**approaches.**

#include <stdio.h>

int factorialUsingRecursion(int n)

{

if (n == 0)

return 1;

return n \* factorialUsingRecursion(n - 1);

}

int factorialUsingIteration(int n)

{

int res = 1, i;

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

res \*= i;

return res;

}

int main()

{

int num;

printf("Enter the Factorial Number\n") ;

scanf("%d=", &num);

printf("Factorial of %d using Recursion is: %d\n", num,

factorialUsingRecursion(num));

printf("Factorial of %d using Iteration is: %d", num,

factorialUsingIteration(num));

return 0;

}

**Que.13 Create a C program that implements a basic calculator using functions for addition,**

**subtraction, multiplication, and division.**

#include <stdio.h>

int main() {

int num1,num2,op,total;

printf("Enter the first operand\n");

scanf("%d",&num1);

printf("Enter the secon operand\n");

scanf("%d",&num2);

printf("select the operation\nPress 1 => Addition\nPress 2 => Subtraction\nPress 3 => Multiplication\nPress 4 => Division\nPress 5 => Modulo");

scanf("%d",&op);

if(op==1){

total=num1+num2;

printf("Your Answer is = %d", total);

}

if(op==2){

total=num1-num2;

printf("Your Answer is = %d", total);

}

if(op==3){

total=num1\*num2;

printf("Your Answer is = %d", total);

}

if(op==4){

total=num1/num2;

printf("Your Answer is = %d", total);

}

if(op==5){

total=num1%num2;

printf("Your Answer is = %d", total);

}

return 0;

}

**Que.14 Write a C program to reverse the words in a given sentence without using any library**

**functions.**

#include <stdio.h>

#include <conio.h>

#include <string.h>

void main(){

char string[20],temp;

int i,length;

printf("Enter String : ");

scanf("%s",string);

length=strlen(string)-1;

for(i=0;i<strlen(string)/2;i++){

temp=string[i];

string[i]=string[length];

string[length--]=temp;

}

printf(" Reverse string :%s",string);

getch();

}

**Que.15 Create a C program that finds the largest and smallest elements in a matrix.**

#include <stdio.h>

int main() {

int arr[] = {10, 5, 8, 20, 3, 15};

int n = sizeof(arr) / sizeof(arr[0]);

int smallest = arr[0];

int largest = arr[0];

for (int i = 1; i < n; i++) {

if (arr[i] < smallest) {

smallest = arr[i];

}

if (arr[i] > largest) {

largest = arr[i];

}

}

printf("Smallest number: %d\n", smallest);

printf("Largest number: %d\n", largest);

return 0;

}

**Que.16 Write a C program to convert a given string to lowercase without using built-in functions.**

#include <stdio.h>

void lower\_case(char arr[], int len){

for(int pos = 0; pos<len;pos++){

if ((arr[pos] >= 'A') && (arr[pos] <='Z')){

printf("%c", arr[pos] + 32);

continue;

}

printf("%c", arr[pos]);

}

}

int main() {

char name[] = "PyThoN cOde";

int len = sizeof(name)/sizeof(name[0]);

lower\_case(name, len);

return 0;

}

**Que.17 Develop a C program that takes a string as input and removes all white spaces.**

#include <stdio.h>

#include <string.h>

int main()

{

char str[50];

int i, j;

printf("Enter a string: ");

gets(str);

i = 0;

j = 0;

while (str[i] != '\0')

{

if (str[i] != ' ')

{

str[j] = str[i];

j++;

}

i++;

}

str[j] = '\0';

printf("String after removing all the white spaces: %s", str);

return 0;

}

**Que.18 Create a C program that checks if a given year is a leap year.**

#include <stdio.h>

int main() {

int year;

printf("Enter a year: ");

scanf("%d", &year);

if (year % 4 == 0) {

if (year % 100 != 0 || year % 400 == 0) {

printf("%d is a leap year.\n", year);

} else {

printf("%d is not a leap year.\n", year);

}

} else {

printf("%d is not a leap year.\n", year);

}

return 0;

}

**Que.19 Write a C program to find the length of a string without using any built-in functions.**

#include <stdio.h>

int main()

{

char str[100];

int i,len=0;

printf("Enter a string: \n");

scanf("%s",str);

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

{

len++;

}

printf("\nLength of input string: %d",len);

return 0;

}

**Que.20 Implement a C program that converts temperature from Celsius to Fahrenheit using the**

**formula F = (C × 9/5) + 32.**

#include <stdio.h>

int main()

{

float celsius, fahrenheit;

printf("Enter temperature in Celsius: ");

scanf("%f", &celsius);

fahrenheit = (celsius \* 9 / 5) + 32;

printf("Temperature in Fahrenheit: %.2f\n", fahrenheit);

return 0;

}