**Assignment-20 Solution Name: Om Pant**

1. Write a function to swap values of two in variables of calling function.

Ans-

// 1. Write a function to swap values of two in variables of calling function.

#include<stdio.h>

void swap(int \*p, int \*q){

    int temp;

    temp = \*p;

    \*p = \*q;

    \*q = temp;

}

int main(){

    int x,y;

    printf("Enter the value of x and y\n");

    scanf("%d%d",&x,&y);

    printf("Before Swapping : X = %d Y = %d\n",x,y);

    swap(&x,&y);

    printf("After  Swapping : X = %d Y = %d\n",x,y);

    return 0;

}

1. Write a function to swap strings of two char arrays of calling functions.

Ans-

//  2. Write a function to swap strings of two char arrays of calling functions.

#include<stdio.h>

#include<string.h>

void swapString(char \*a, char \*b){

    char temp[20];

    strcpy(temp,a);

    strcpy(a,b);

    strcpy(b,temp);

}

int main(){

    char str1[20],str2[20];

    char \*p = str1;

    char \*q = str2;

    printf("Enter First String\n");

    fgets(str1,20,stdin);

    str1[strlen(str1) -1] = '\0';

    printf("Enter Second String\n");

    fgets(str2,20,stdin);

    str2[strlen(str2) -1] = '\0';

    printf("Before Swap: String-1: %s\tString-2: %s\n",str1,str2);

    swapString(p,q);

    printf("After  Swap: String-1: %s\tString-2: %s\n",str1,str2);

    return 0;

}

1. Write a function to sort an array of int type values. [ void sort(int \*ptr,int size); ]

Ans-

// 3. Write a function to sort an array of int type values. [ void sort(int \*ptr,int size); ]

#include<stdio.h>

void sort(int \*ptr ,int size){

    int i,j,temp;

    for(i =0;i<size;i++){

        for(j=i;j<size;j++){

            if(ptr[i] > ptr[j]){

                temp = ptr[i];

                ptr[i] = ptr[j];

                ptr[j] = temp;

            }

        }

    }

}

int main(){

    int arr[10] = {50,12,41,89,65,23,41,78,20,37};

    sort(arr, 10);

    printf("Sorted Array\n");

    for(int i=0;i<10;i++){

        printf("%d ",arr[i]);

    }

    return 0;

}

1. Write a program in C to demonstrate how to handle the pointers in the program.

Ans-

// 4. Write a program in C to demonstrate how to handle the pointers in the program.

//we can understand the use of pointers using the folllowing swapping program

#include<stdio.h>

void swap(int \*p, int \*q){

    int temp;

    temp = \*p;

    \*p = \*q;

    \*q = temp;

}

int main(){

    int x,y;

    printf("Enter the value of x and y\n");

    scanf("%d%d",&x,&y);

    printf("Before Swapping : X = %d Y = %d\n",x,y);

    swap(&x,&y);

    printf("After  Swapping : X = %d Y = %d\n",x,y);

    return 0;

}

1. Write a program to find the maximum number between two numbers using a pointer

Ans-

// 5. Write a program to find the maximum number between two numbers using a pointer

#include<stdio.h>

int findMax(int \*n1, int \*n2){

    if( \*n1 > \*n2){

        return \*n1;

    }

    else{

        return \*n2;

    }

}

int main(){

    int num1,num2,max;

    printf("Enter two numbers\n");

    scanf("%d%d",&num1,&num2);

    max = findMax(&num1,&num2);

    printf("Maximum: %d\n",max);

    return 0;

}

1. Write a program to calculate the length of the string using a pointer

Ans-

// 6. Write a program to calculate the length of the string using a pointer

#include<stdio.h>

#include<string.h>

int stringLength(char \*str){

    int length=0;

    while( \*str != '\0'){

        length++;

        str++;

    }

    return length;

}

int main(){

    char string[50];

    int length;

    printf("Enter a string\n");

    fgets(string,50,stdin);

    string[strlen(string)-1] = '\0';

    length = stringLength(string);

    printf("String Length: %d\n",length);

    return 0;

}

1. Write a program to count the number of vowels and consonants in a string using a pointer.

Ans-

// 7. Write a program to count the number of vowels and consonants in a string using a pointer.

#include<stdio.h>

#include<string.h>

void vowCon(char \*string, int \*vowel, int \*con){

    int i;

    for(i=0; \*(string+i) != '\0';i++){

        if( \*(string+i) == 'a' || \*(string+i) == 'A'){

            (\*vowel)++;

        }

        else if( \*(string+i) == 'e' || \*(string+i) == 'E'){

            (\*vowel)++;

        }

        else if( \*(string+i) == 'i' || \*(string+i) == 'I'){

            (\*vowel)++;

        }

        else if( \*(string+i) == 'o' || \*(string+i) == 'O'){

            (\*vowel)++;

        }

        else if( \*(string+i) == 'u' || \*(string+i) == 'U'){

            (\*vowel)++;

        }

        else if( \*(string+i) >=65 && \*(string+i) <=90  || \*(string+i) >=97 && \*(string+i) <=122  ){

            (\*con)++;

        }

    }

}

int main(){

    char string[50];

    int vowel=0,consonent=0;

    printf("Enter a string\n");

    fgets(string,50,stdin);

    string[strlen(string)-1] = '\0';

    //function to count the no.of vowel and consonents

    vowCon(string, &vowel, &consonent);

    printf("No.of Vowels %d\nNo.of Consonents %d\n",vowel,consonent);

    return 0;

}

1. Write a program to compute the sum of all elements in an array using pointers.

Ans-

// 8. Write a program to compute the sum of all elements in an array using pointers.

#include<stdio.h>

void sumofArray(int \*array, int size, int \*sum){

    for(int i=0;i<size;i++){

        \*sum = \*sum + \*(array+i);

    }

}

int main(){

    int size,sum=0;

    printf("Enter length of array\n");

    scanf("%d",&size);

    int array[size];

    printf("Enter array elements\n");

    for(int c=0;c<size;c++){

        scanf("%d",&array[c]);

    }

   sumofArray(array,size,&sum);

   printf("Sum of Elements: %d\n",sum);

   return 0;

}

1. Write a program to print the elements of an array in reverse order.

Ans-

// 9. Write a program to print the elements of an array in reverse order.

#include<stdio.h>

void printReverse(int \*array, int size){

    printf("Array in reverse order\n");

    for(int i=size-1; i>=0;i--){

        printf("%d ",\*(array+i));

    }

}

int main(){

    int size;

    printf("Enter length of array\n");

    scanf("%d",&size);

    int array[size];

    printf("Enter array elements\n");

    for(int c=0;c<size;c++){

        scanf("%d",&array[c]);

    }

    printReverse(array,size);

   return 0;

}

1. Write a program to print a string in reverse using a pointer

Ans-

// 10. Write a program to print a string in reverse using a pointer\0

#include<stdio.h>

#include<string.h>

void reverseString(char \*string){

    printf("Reverse of String:\n");

    int i = strlen(string) -1;

    for(i;i>=0;i--){

        printf("%c",\*(string+i));

    }

}

int main(){

    char string[50];

    printf("Enter a string\n");

    fgets(string,50,stdin);

    string[strlen(string) -1] = '\0';

    reverseString(string);

    return 0;

}