**Assignment - 20 A Job Ready Bootcamp in C++, DSA and IOT MySirG**

**Pointers**

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

#include<stdio.h>

void swap(int\*,int\*);

int main()

{

int a=5,b=6;

swap(&a,&b);

printf("%d %d\n",a,b);

return 0;

}

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

{

int temp=0;

temp=\*p;

\*p=\*q;

\*q=temp;

}

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

// 3:27:37 Lec No – 24 (using pointer to array)..void(char\*\*,char\*\*)

//Assuming string size should be same

#include<stdio.h>

void swap(char\*,char\*);

int main()

{

char a[10]="Gurudev",b[10]="Singla";

swap(a,b);

printf("a : %s\nb : %s\n",a,b);

return 0;

}

void swap(char \*p,char \*q)

{

char temp;

for(int i=0;p[i]!=0||q[i]!=0;i++)

{

temp=p[i];

p[i]=q[i];

q[i]=temp;

}

}

OR

#include<stdio.h>

#include<conio.h>

#include<string.h>

void swap(char\*\*,char\*\*);

int main()

{

char a[10],b[10],\*p,\*q;

printf("Enter string a : ");

fgets(a,10,stdin);

a[strlen(a)-1]=0;

printf("Enter string b : ");

fgets(b,10,stdin);

b[strlen(b)-1]=0;

p=a;

q=b;

swap(&p,&q);

printf("After swapping a and b : %s and %s",p,q);

getch();

return 0;

}

void swap(char\*\* x,char\*\* y)

{

char\* temp;

temp=\*x;

\*x=\*y;

\*y=temp;

}

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

#include<stdio.h>

void sort(int\*,int);

int main()

{

int a[5]={8,7,8,2,3};

sort(a,5);

for(int i=0;i<5;i++)

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

return 0;

}

void sort(int \*p,int size)

{

int i,j,temp\_ind,temp;

for(i=0;i<size-1;i++)

{

temp\_ind=i;

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

{

if(p[j]<p[temp\_ind])

temp\_ind=j;

}

if(temp\_ind!=i)

{

temp = p[i];

p[i] = p[temp\_ind];

p[temp\_ind] = temp;

}

}

}

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

Sol – 4.

#include<stdio.h>

#include<conio.h>

int main()

{

int x=10,\*p,\*\*q,\*\*\*r;

p=&x;

q=&p;

r=&q;

printf("%d %d %d %d\n",x,\*p,\*\*q,\*\*\*r);

printf("%d %d %d %d\n",&x,p,\*q,\*\*r);

printf("%d %d %d\n",&p,q,\*r);

printf("%d %d\n",&q,r);

printf("%d \n",&r);

getch();

return 0;

}

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

#include<stdio.h>

int\* max(int\*,int\*);

int main()

{

int a=7,b=5;

printf("Max : %d",\*max(&a,&b));

return 0;

}

int\* max(int \*p,int\* q)

{

return \*p>\*q?p:q;

}

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

#include<stdio.h>

int length(char\*);

int main()

{

char str[50]="My name is Gurudev";

printf("Length of String : %d",length(str));

return 0;

}

int length(char \*p)

{

int i=0;

for(;p[i];i++);

return i;

}

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

//Integer array Passed in function must be of size 2 intialized with zeros,

//where index 0 denotes num\_of\_vowel and 1 denotes num\_of\_cons

#include<stdio.h>

void num\_vowels\_consonants(char\*,int\*);

int main()

{

char str[50]="My name is Gurudev";

int size[2]={0,0};

num\_vowels\_consonants(str,size);

printf("Vowels : %d\n",size[0]);

printf("Consonants : %d\n",size[1]);

return 0;

}

void num\_vowels\_consonants(char \*p,int \*a)

{

char consonants[43]="bcdfghjklmnpqrstvwxyzBCDFGHJKLMNPQRSTVWXYZ",vowels[11]="aeiouAEIOU";

int i=0,j;

for(;p[i];i++)

{

for(j=0;consonants[j]||vowels[j];j++)

{

if(p[i]==consonants[j])

{

a[1]++;

break;

}

else if(p[i]==vowels[j])

{

a[0]++;

break;

}

}

}

}

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

#include<stdio.h>

int sum(int\*,int);

int main()

{

int a[50]={1,2,3,4,5,6,7,8,9,10};

printf("Sum : %d",sum(a,50));

return 0;

}

int sum(int \*p,int size)

{

int sum=0,i=0;

for(;i<size;i++)

{

sum+=i[p];

}

return sum;

}

OR

#include<stdio.h>

#include<conio.h>

int main()

{

int i,sum=0,n;

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

scanf("%d",&n);

int a[n],\*p;

p=a;

printf("Enter %d elements\n",n);

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

{

scanf("%d",(p+i));

sum=sum+\*(p+i);

}

printf("Sum of elements : %d",sum);

getch();

return 0;

}

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

//Intialzed array size must be same as passing array size

//else it will print 0's

#include<stdio.h>

void reverse(int\*,int);

int main()

{

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

printf("Reverse : ");

reverse(a,10);

return 0;

}

void reverse(int \*p,int size)

{

for(int i=size-1;i>=0;i--)

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

printf("\n");

}

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

//Intialzed array size must be same as passing array size

//else it will print 0's

#include<stdio.h>

void reverse(char\*,int);

int length(char\*);

int main()

{

char str[100]="The moment where you think of loosing you start loosing";

int size=length(str);

printf("Reverse : ");

reverse(str,size);

return 0;

}

void reverse(char \*p,int size)

{

for(int i=size-1;i>=0;i--)

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

printf("\n");

}

int length(char \*p)

{

int i=0;

for(;p[i];i++);

return i;

}