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, b;

printf("Enter two number: ");

scanf("%d%d", &a, &b);

swap(&a, &b);

printf("After Swapping, a = %d, b = %d", a, b);

return 0;

}

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

{

int t = \*x;

\*x = \*y;

\*y = t;

}

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

#include <stdio.h>

#include <string.h>

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

int main()

{

char \*ptr = "Hello";

char \*str = "Welcome";

swapString(ptr, str);

printf("\nAfter Swapping, a = %sb = %s", ptr, str);

return 0;

}

void swapString(char \*ptr, char \*str)

{

char \*temp = ptr;

ptr = str;

str = temp;

}

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

#include <stdio.h>

void sortArray(int \*ptr, int size)

{

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

{

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

{

if (\*(ptr + i) > \*(ptr + j))

{

int temp = \*(ptr + i);

\*(ptr + i) = \*(ptr + j);

\*(ptr + j) = temp;

}

}

}

}

int main()

{

int size;

printf("Enter the array size: ");

scanf("%d", &size);

int arr[size];

printf("Enter %d Element in array\n", size);

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

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

sortArray(arr, size);

printf("\nAfter Sorting: ");

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

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

return 0;

}

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

#include <stdio.h>

int main()

{

int var;

int \*ptr;

printf("\nWithout Assignemnt values of ptr");

printf("\nAddress of ptr - %d", &ptr); // address of ptr

// printf("\nContent of ptr - %d", \*ptr); // program terminate because ptr not contain any variable address

ptr = &var;

printf("\n Assign variable in ptr pointer, variable contain garbage value");

printf("\nAddress of ptr - %d", &ptr); //address of ptr

printf("\nContent of ptr - %d", \*ptr); // randome value

var = 10;

printf("\n Assignet variable in ptr pointer, variable contain 10 value");

printf("\nAddress of ptr - %d", &ptr); // address of ptr

printf("\nContent of ptr - %d", \*ptr); // randome value

\*ptr = 20;

printf("\n Assignet 20 in ptr pointer");

printf("\nAddress of ptr - %d", &ptr); // address of ptr

printf("\nContent of ptr - %d", \*ptr); // 20

return 0;

}

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

#include <stdio.h>

int main()

{

int x, y;

printf("Enter two number: ");

scanf("%d%d", &x, &y);

int \*p = &x, \*q = &y;

if (\*p > \*q)

printf("Max Num is: %d", \*p);

else

printf("Max Num is: %d", \*q);

return 0;

}

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

#include <stdio.h>

int length(char \*ptr)

{

int i;

for (i = 0; \*(ptr + i); i++)

;

return i-1; // becuase fgets function contain \n extra

}

int main()

{

char str[20];

printf("Enter string: ");

fgets(str, 20, stdin);

int l = length(str);

printf("length of string: %d", l);

return 0;

}

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

pointer.

#include <stdio.h>

int main()

{

int vowel = 0, consonent = 0;

char str[20];

printf("Enter string: ");

fgets(str, 20, stdin);

char \*ptr = str;

for (int i = 0; \*(ptr + i); i++)

{

if (\*(ptr + i) == 'a' || \*(ptr + i) == 'e' || \*(ptr + i) == 'i' || \*(ptr + i) == 'o' || \*(ptr + i) == 'u' || \*(ptr + i) == 'A' || \*(ptr + i) == 'E' || \*(ptr + i) == 'I' || \*(ptr + i) == 'O' || \*(ptr + i) == 'U')

vowel += 1;

else

consonent += 1;

}

printf("\nGiven string, total vowel - %d, total consonent - %d", vowel, consonent - 2); // becuase space and \n neglegct

return 0;

}

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

#include <stdio.h>

int sumOfArray(int \*ptr, int n)

{

int sum = 0;

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

sum += \*(ptr + i);

return sum;

}

int main()

{

int n;

printf("\nhow many number u want to enter : ");

scanf("%d", &n);

int arr[n];

printf("Enter %d element: \n", n);

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

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

int sum = sumOfArray(arr, n);

printf("\nSum of Array is: %d", sum);

return 0;

}

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

#include <stdio.h>

void reverseArrayPrint(int \*ptr, int n)

{

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

printf("%d ",\*(ptr+i));

}

int main()

{

int n;

printf("\nhow many number u want to enter : ");

scanf("%d", &n);

int arr[n];

printf("Enter %d element: \n", n);

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

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

reverseArrayPrint(arr, n);

return 0;

}

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

#include <stdio.h>

#include <string.h>

void reverseStringPrint(char \*ptr)

{

int length = strlen(ptr)-1;

for(int i = length; i>=0; i--)

printf("%c", \*(ptr+i));

}

int main()

{

char arr[20];

printf("Enter string: ");

fgets(arr, 20, stdin);

reverseStringPrint(arr);

return 0;

}