# Arrays and Pointers Assignment

**Mandatory**

1. What does the code below refer to? Extend the code and demonstrate the use of ptr to access the contents of a 2D array.

int (\*ptr)[4];

[Refer the sample code in “array\_ptr\_simple.c”]

int \*ptr = arr[1];

printf("\n 2: %d %d %d", \*(ptr+0), \*(ptr+1), \*(ptr+2));

Ans: the pointer got the base address of 2nd row in the given array. When done with pointer arithmetic you get output as 4 5 6

ptr2[0] = &arr[0][0];

ptr2[1] = &arr[0][1];

ptr2[2] = &arr[0][2];

printf("\n 3: %d %d %d", \*ptr2[0], \*ptr2[1], \*ptr2[2]);

Ans: here pointers are pointed to the array elements respectively and the dereferenced output is established

ptr3 = arr[0];// first row

printf("\n 4: %d %d %d", (\*ptr3)[0], (\*ptr3)[1], (\*ptr3)[2]);

ptr3++;

printf("\n 4: %d %d %d", (\*ptr3)[0], (\*ptr3)[1], (\*ptr3)[2]);

Ans: first pointer incrementation represents the first row and prints those values. While the second pointer represents second row and prints the elements in that row .

A black screen with white text

Description automatically generated

1. Refer the code in “array\_ptr\_simple\_char.c”. Implement the missing functionality in the code marked with TBD1, TBD2…..

Ans:

1. Refer the code snippet below. Implement the function search\_insert() as mentioned in the code.

#define MAX 80

//search for the given char and if found, then create space for 1 character and insert ‘\_’ after the searched character. Let the remaining characters in the input be placed after ‘\_’.

int search\_insert(char name[], char search\_char);

int main()

{

char name[MAX]=”ABC”;

char \*ptr = name;

int ret = search\_insert(name, search\_char);

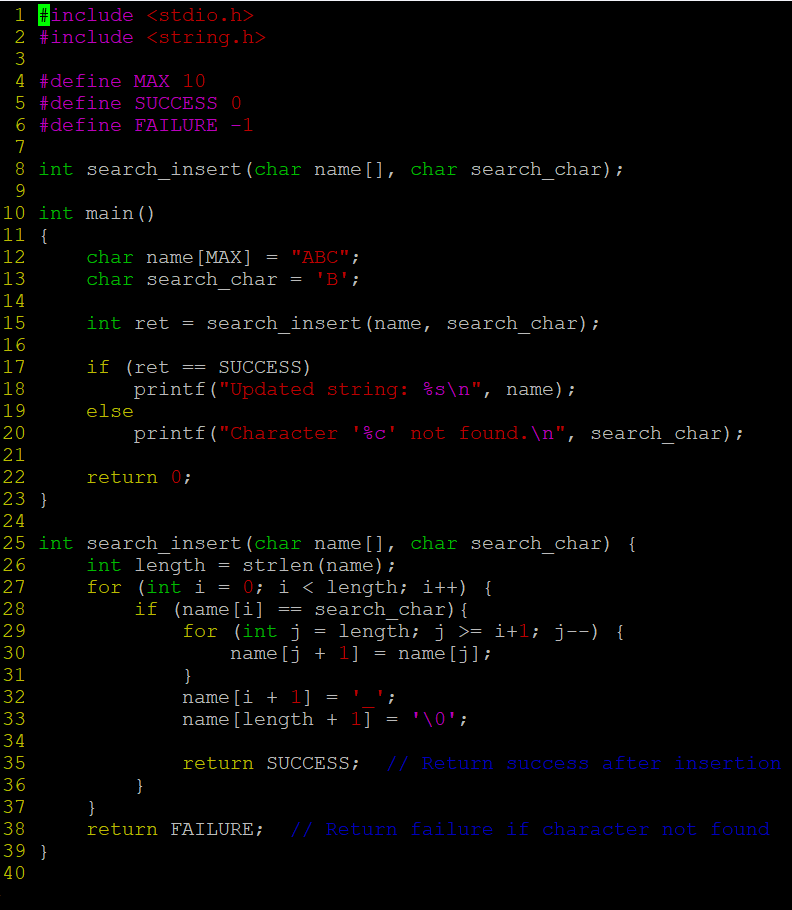
if (ret == SUCCESS)

{

//display updated string

}

}



A black background with white text

Description automatically generated

1. Refer the program “array\_ptr\_repr\_partial.c”. Implement the functions below which are yet to be implemented in code.

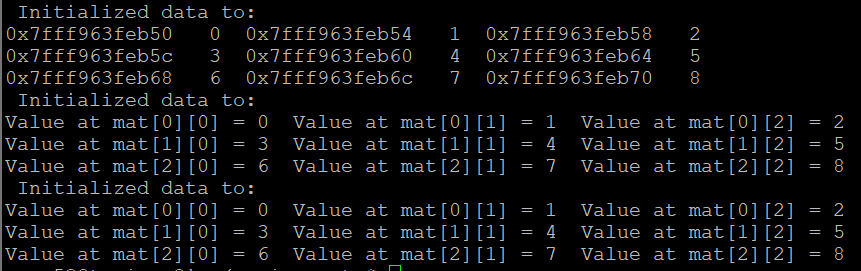
int func1(int (\*ptr)[3]); // pointer to array, second dimension is explicitly specified

int func2(int \*\*ptr); // double pointer, using an auxiliary array of pointers

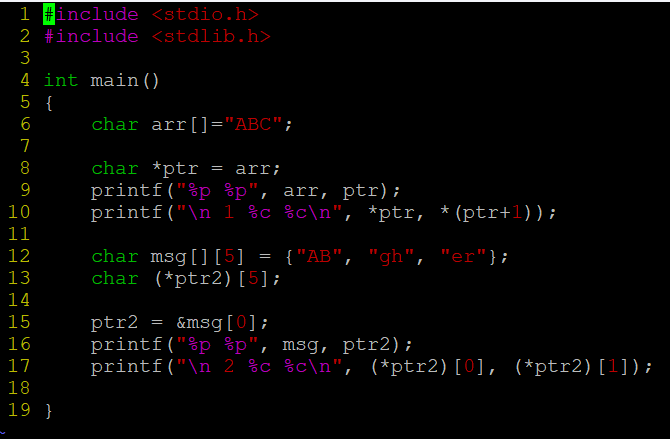


A screen shot of a computer program

Description automatically generated



1. Refer the program “array\_dbl\_pointers\_function\_partial.c”. Implement the missing functionality in the code marked with TBD1, TBD2…..
2. Refer the program "pointer\_example.c". Fix the warning issue.



A screen shot of a computer code

Description automatically generated

1. Consider an array of strings as below.

char arr[][10]={"Word", "Excel", "PowerPoint", "Pdf", "Paint"};

* 1. Implement a function read\_displaystring() to read a row index from the user, access the string, store in a char \* variable and using this, traverse every alternate character in the string and display in console.

void read\_displaystring(char \*arr[][10], int row);

* 1. Reverse the string read at the index in a) using a function of prototype as below. Caller to read the returned string and display the reversed string. [Ensure that the input source array is not corrupted and remaining elements are intact]

char \*reverse(char \*arr[][10], int row);

A screen shot of a computer program

Description automatically generated

A screen shot of a computer code

Description automatically generated