COL100

Lab 12 (Pointers)

Q1. Write a program which performs the following tasks:

a) initialize an integer array of 10 elements in main( )
b) pass the entire array to a function modify( )
c) in modify( ) multiply each element of array by 5 then return the control to main( ) and print the new array elements in main( ).

Q2. Write a single C function to swap three elements in cyclic order using call by reference. Test the function in your main function of the program. The main function should input the three elements a, b and c respectively and then call the function to swap the values:

Example input:

```
1
2
3
```

Value before swapping:

```
a = 1
b = 2
c = 3
```

Value after swapping:

```
a = 3
b = 1
c = 2
```

Q3. Write an iterative function to reverse a string passed to it. You are not allowed to use any string library function. Test your function in the main function of your program.

```
void reverseString(char *s) {

        /* Reverses the string pointed by s. For example if s initially points

           to “it is hard to reverse” then the string must become “esrever ot drah si ti”.  */

}
```

Q4. Write a recursive function to reverse a string passed to it. Test your function in the main function of your program. Following is the prototype of the function:

```
void reverseString(char *start, int len) {
        /* Reverses the characters stored from start[0] to start[len-1]  */
}
```

Q5. Write an iterative function to count and return (using parameters passed by reference) the number of vowels and consonants in the given input string. Test your function in the main function of your program.

Q6. Write a recursive function to count and return (using parameters passed by reference) the number of vowels and consonants in the given input string. Test your function in the main function of your program.

Q7. Write a program to read a list of 10 names (strings) of students and their heights in centimetres (integers) on standard input. The program should sort the students in increasing order of their heights and then print their names and heights. Assume that names are less than 32 characters each. The heights should be stored in a 1 dimensional integer array. You should use two dimensional array of char for storing the names and an array of char pointers to maintain the corresponding names while you sort them in ascending order of their heights.

Example Input:	Output:
Rohan 150	Raithnam 140
Shyam 180	Rohan 150
Rahul 178	Vandana 155
Aditya 159	Aditya 159
Babu 191	Vikas 171
Vandana 155	Rahul 178
Raithnam 140	Shyam 180
Saurabh 185	Saurabh 185
Vikas 171	Babu 191
Mohit 195	Mohit 195