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/*
Lab1
Programmer: Chau Nguyen
tug37553@temple.edu
Write a program to accept a string from the keyboard,
reverse the string, capitalize all alphabet chars in
the string, print each char on its own line, print the
number of alphabet chars capitalized and print the length
f the string.
*/
//Impliment the library
#include <stdio.h>
//prototype
int getInputLength (char input[]);
void getInput(char * input);
int isLowerCase(char input);
char convertToUpperCase(char lowerCaseInput);
int capitallizeAndCount(char* input);
char * reverseString(char *string, int stringLength);
void printOutput(int stringLength, int numberOfLowerCase, char *string);

//5. Function to get string from the keyboard
void getInput(char * input){
gets(input); //get input
}
//2. Function to get the length of a string
int getInputLength (char input[]){
char i;
//for loop: increasement i until input string hit the ends
for(i = 0; input[i] != '\0'; ++i);
//return number of increasment
return i;
}
//3. check whether a char is lowercase
int isLowerCase(char input){
//return 1 if lowercase else 0
  if (input >='a' && input <= 'z')
    return 1;
  else return 0;
}
//4. convert lower case character to upper case
char convertToUpperCase(char lowerCaseInput){
  //take lowerCase Input and shift down 32 in ASCII Table
    return lowerCaseInput-32;
}
//7. Capitalize all the alpha characters a lower
//case char to uppercase  and count number capitallized
int capitallizeAndCount(char* input){
            int i =0;
  int counter=0;
            while (input[i] != '\0'){
                        if ( isLowerCase(input[i]) == 1) {
      //convert to Upper Case if input is lower Case
                                    input[i]=convertToUpperCase(input[i]);
      //count number of lower Case was capitallized
      counter++;
    }
                        i++;
            }
  return counter;
}



//6.Function to reverse string.
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char * reverseString(char *string, int stringLength){
   int i;
   char *begin, *end, temp;
   //set both begin and end with the string
   begin  = string;
   end    = string;
   for (i = 0; i < stringLength - 1; i++)
      end++;

   for (i = 0; i < stringLength/2; i++)
   {
    //swap the location of end and begin
      temp   = *end;
      *end   = *begin;
      *begin = temp;
      begin++;
      end--;
   }
   return string;

}
//8.Function to print output.
void printOutput(int stringLength, int numberOfLowerCase, char *string){
printf("\nThe output should be: \n");
int i;
//for loop to print each char on its own line
for(i=0; string[i]!='\0'; ++i)
   {
    printf("%c",string[i]);
    printf("\n");
   }
//displace number of char and number of char was capitalized
printf("\nThe string is %d chars and %d chars was capitalized.\n\n", stringLength, numberOfLowerCase);

}


//1.Main function
int main() {
// Declare variables
char input[1000];//ask about the length
int inputLength;
int numberOfLowerCase;

//Print Welcome message
printf("Welcome to lab 2\n");
printf("Enter character: ");
//Call 5.Function to get string from a keyboard
getInput(input);
//call 2.Function to get the length of a string
inputLength = getInputLength(input);
//Call 7.Capitalize all the alpha characters a lower
//case char to uppercase  and count number capitallized
numberOfLowerCase = capitallizeAndCount(input);
//Call 6.Function to reverse string.
char * reverseInput =reverseString(input, inputLength);
//Call 8.Function to print output.
printOutput(inputLength, numberOfLowerCase, reverseInput);
return 0;
}
```