Presidency University, Bengaluru
2nd Semester 2018-19
Computer Programming
Lab Sheet 8

Objectives

- Strings / Character Array
- Reading and Displaying strings
- Applications of Strings
- In built functions to perform string operations.

Problem 1: Program to demonstrate Declare, Read and Display the string.

```
#include<stdio.h>
void main()
{
char cpstudent[100];
printf("Read the name of cp student \n");
scanf("%s",cpstudent);
printf("%s",cpstudent);
}
```

Give Input as: *Atal Bihari Vajpayee*

OutPut:_____

Problem 2: Program to demonstrate Declare, Read and Display the string.

```
#include<stdio.h>
void main()
{
char cpstudent[100];
printf("Read cp student gets\n");
gets(cpstudent);
printf("Displaying cp student name\n");
puts(cpstudent);
}
```

Give Input as: *Atal Bihari Vajpayee*

OutPut:_____

Problem 3: Program to find the length of the string.

```
#include<stdio.h>
void main()
{
char cpstudent[100];
int index, count;
count=0;
printf("Enter the CP student\n");
gets(cpstudent);

 for(index=0;cpstudent[index]!='\0';index++)
 count++;
printf("The length of the string is %d\n",count);
}
```

Problem 4: Program to Display the sub string.

```
#include<stdio.h>
void main()
{
char cpstudent[100];
int start,index,end;

 printf("Enter the name of cp student\n");
 gets(cpstudent);

 printf(" Enter the start location\n");
 scanf("%d",&start);

 printf("Enter the End Location\n");
 scanf("%d",&end);

 for(index=start;index<=end;index++)
  printf("%c",cpstudent[index]);
 printf("\n");
}
```

Problem 5: Program to concatenate two strings

```
#include<stdio.h>
void main()
{
char firstname[100],lastname[100],fullname[200];
int index,index2;

printf("Enter the  First Name \n");
gets(firstname);
printf("Enter the last name \n");
gets(lastname);

 index2=0;
 for(index=0;firstname[index]!='\0';index++)
{
  fullname[index2]=firstname[index];
 index2++;
}

 for(index=0;lastname[index]!='\0';index++)
 {
  fullname[index2]=lastname[index];
 index2++;
}
puts(firstname);
printf("\n");
puts(lastname);
printf("\n");
puts(fullname);
printf("\n");
}
```

C Library Functions Under Different Header File

C Header Files	
<assert.h>	Program assertion functions
<ctype.h>	Character type functions
<locale.h>	Localization functions
<math.h>	Mathematics functions
<setjmp.h>	Jump functions
<signal.h>	Signal handling functions
<stdarg.h>	Variable arguments handling functions
<stdio.h>	Standard Input/Output functions
<stdlib.h>	Standard Utility functions
<string.h>	String handling functions
<time.h>	Date time functions

Inbuilt functions to Manipulate strings in C Programming Language

Defined under: **string.h**

Function	Work of Function
strlen(string)	Calculates the length of string
strcpy(string1,string2)	Copies a string to another string
strcat(string1,string2)	Concatenates(joins) two strings
strncat(string1,string2,n)	First n characters of string 2 is concatenated with string 1
strcmp(string1,string2)	Returns 0 if str1 is same as str2. Returns <0 if strl < str2. Returns >0 if str1 > str2
strrev(string)	Reverse the string (It's a nonstandard function, may not be available in all the versions of C compilers)
strlwr(string)	Converts string to lowercase
strupr(string)	Converts string to uppercase

- Write individual program to use these functions
- **Use the following template to write your program**
- This is an example to reverse the string

```
#include<string.h>
#include<stdio.h>
void main()
{
 char string[100];
 gets(string);
 strrev(string);
 puts(string);
}
```

- **Complete the program to concatenate two string**

```
#include<string.h>
#include<stdio.h>
void main()
{
 char string1[100],string2[100];
 printf("Enter String 1\n");
 gets(string1);
 printf("Enter String 2\n");
 gets(string2);
 strcat(string1,string2);
 puts(string1);
 strncat(string1,string2,10);
 puts(string1);
}
```

- **Write a program to compare two string**
- **Write a program to extract substrings given below from the string**

```
#include<string.h>
#include<stdio.h>
void main()
{
 char string1[100],string2[100];
 printf("Enter String 1\n");
 gets(string1);
 strncpy(string2,string1,5);
 puts(string2);
 strncpy(string2,string1+5,5);
 puts(string2);
 strncpy(string2,&string1[4],5);
 puts(string2);
 }
```

If string is PRESIDENCYUNIVERSITY

Substring should be:

PRESI

DENCY

IDENC

Mathematical Functions

Under: math.h

Function	Description
floor ( )	This function returns the nearest integer which is less than or equal to the argument passed to this function.
round ( )	This function returns the nearest integer value of the float/double/long double argument passed to this function. If decimal value is from ".1 to .5", it returns integer value less than the argument. If decimal value is from ".6 to .9", it returns the integer value greater than the argument.
ceil ( )	This function returns nearest integer value which is greater than or equal to the argument passed to this function.
sin ( )	This function is used to calculate sine value.
cos ( )	This function is used to calculate cosine.
cosh ( )	This function is used to calculate hyperbolic cosine.
exp ( )	This function is used to calculate the exponential "e" to the x^{th} power.
tan ( )	This function is used to calculate tangent.
tanh ( )	This function is used to calculate hyperbolic tangent.
sinh ( )	This function is used to calculate hyperbolic sine.
log ( )	This function is used to calculates natural logarithm.
log10 ( )	This function is used to calculates base 10 logarithm.
sqrt ( )	This function is used to find square root of the argument passed to this function.
pow ( )	This is used to find the power of the given number.
trunc.(.)	This function truncates the decimal value from floating point value and returns integer value.

Example 1:

```
#include<math.h>
void main()
{
   int i=-10, e=2, d=10;
   float rad=1.43;
   double d1=3.0, d2=4.0;
   printf("%d\n", abs(i));
   printf("%f\n", sin(rad));
   printf("%f\n", cos(rad));
   printf("%f\n", exp(e));
   printf("%d\n", log(d));
   printf("%f\n", pow(d1,d2));
}
```

Self study Component

Reference:

https://www.tutorialspoint.com/c_standard_library/c_standard_library_tutorial.pdf