STRING

Q. Write a program to display character from A to Z using loops.

Ans:

```
#include <stdio.h>
int main()
{
   char c;
   for(c='A'; c<='Z'; ++c)
      printf("%c ",c);
   return 0;
}
```

Output

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
```

Q.Write a program find vowel or consonant?

Ans:

```
#include <stdio.h>
int main(){
  char c;
  printf("Enter an alphabet: ");
  scanf("%c",&c);
  if(c=='a'||c=='A'||c=='e'||c=='E'||c=='i'||c=='I'||c=='o'||c=='O'||c=='u'||c=='U')
     printf("%c is a vowel.",c);
  else
     printf("%c is a consonant.",c);
  return 0;
}
```

Output 1

```
Enter an alphabet: i
i is a vowel.
```

Output 2

```
Enter an alphabet: G
G is a consonant.
```

Q. Write a program to display character from A to Z using loops either in uppercase or lowercase depending upon the data from user ?

Ans:

```
#include <stdio.h>
int main()
{
   char c;
   printf("Enter u to display characters in uppercase and l to display in
lowercase: ");
   scanf("%c",&c);
   if(c=='U' || c=='u')
   {
     for(c='A'; c<='Z'; ++c)
       printf("%c ",c);
   }
   if (c=='L' || c=='l')
   {
      for(c='a'; c<='z'; ++c)
       printf("%c ",c);
   }
   if (c!='U' || c!='L' || c=='u' || c=='l')
```

```
        printf("Error !!!");
    return 0;
}
```

Output

```
Enter U to display characters in Uppercase and L to display in lowercase: L
a b c d e f g h i j k l m n o p q r s t u v w x y z
```

Q. What is string? CSE,ICE,APPE

Ans :

A string is a sequence of characters that is treated as single data item. Any group of characters defined between double quotation marks is a string constant.

If we want to read complete sentence. or string is a set of character.

Example;

"c is programming language"

Q how you declare and initialize a string variable?

Ans:

Delclaration of Sring:

Since **string** is an array, the declaration of a string is the same as declaring a char array.

Or

String is nothing but an array of characters.

char string name [size];

The size determines the numbers of characters in the string name.

Strings are declared in C in similar manner as arrays. Only difference is that, strings are of char type.

char s[5];

s[0]	s[1]	s[2]	s[3]	s[4]

Strings can also be declared using pointer.

char *p

Initialization string:

String can be initialized in different number of ways .

```
char c[]="abcd";
   OR,
char c[]={'a','b','c','d','\0'};
   OR;
char c[5]={'a','b','c','d','\0'};
   OR,
char c[5]="abcd";   //Here declaration NULL character (\0) will automatically be inserted at the end of the string.
```

c[0]	c[1]	c[2]	c[3]	c[4]
a	b	c	d	\0

char students[6] = "Hello"

H	e	l	l	o	'\0'

When the compiler assigns a characters string to a character array, it automatically supplies a null character ('/0') at the end of the string.

String can also be initialized using pointers
char *c="abcd";

Q.How Reading string from user?
Ans:

Reading a words from user:

```
char c[20];
scanf("%s",c);
```

String variable *c* can only take a word. It is because when white space is encountered, the scanf() function terminates.

Write a C program to illustrate how to read string from terminal?

```
#include <stdio.h>
int main(){
  char name[20];
  printf("Enter name: ");
  scanf("%s",name);
  printf("Your name is %s.",name);
  return 0;
}
```

Output

```
Enter name: Dennis Ritchie
Your name is Dennis.
```

ere, program will ignore Ritchie because, scanf() function takes only string before the white space.

Reading a line of text:

C program to read line of text manually.

```
#include <stdio.h>
int main(){
  char name[30],ch;
  int i=0;
  printf("Enter name: ");
  while(ch!='\n')   // terminates if user hit enter
  {
    ch=getchar();
    name[i]=ch;
    i++;
  }
  name[i]='\0';      // inserting null character at end
  printf("Name: %s",name);
  return 0;
}
```

This process to take string is tedious. There are predefined functions gets() and puts in C language to read and display string respectively.

```
 int main(){
 char name[30];
 printf("Enter name: ");
 gets(name);    //Function to read string from user.
 printf("Name: ");
 puts(name);   //Function to display string.
 return 0;
}
Or
  int main(){
  char name[30];
  printf("Enter name: ");
 scanf("%[^/n]",name);//Function to read string from user.
  printf("Name: ");
  puts(name);   //Function to display string.
  return 0;
}
```

Both, the above program has same output below:

Output

```
Enter name: Tom Hanks
Name: Tom Hanks
```

Q. what is the difference between 'A' and "A"? Exam:ACCE-2012,CSE,MSE

Ans:

here 'A' is a charater type data and "A" is a string . in program

Char ch='A'--------------→1 byte

Char ch[]="A"-------→2 byte;

Q. List four string related standard library function with their prototype?

Ans:

Include <string.h> as a header file. The following functions are available for use.

- •Concatenate two strings: strcat(s1, s2)
- •Compare two strings : strcmp(s1, s2)
- •Length of string : strlen(s)
- •Copy one string over other: strcpy(s1, s2)
  –Here contents of s2 are copied to s1
- •Locating substring: strstr(s1,s2)
  –Gives the position of s1 in s2

Q. How do you use pointer in string? ICE-2013

Ans:

c supports an alternative method to crate strings using pointer variables of type char.

Example:

Char * str="good"

This creates a string for the literal and stores its address in the pointer variable str.

We can also use the runtime assignment for giving values to a string pointer. Example

```
Char * string 1;
String 1="good";
```

Let a example to explain it

```
Int main()
{ char * st;
Printf("Enter your text:");
Scanf("%s",st);
 Printf("%s",st);
Return 0;
}
```

Q. what the difference between array and string?
Ans:
following are the differences:

Array	string
Where as an array can hold any data type.	String can hold only char data
- An array size can not be changed	.. Where as a string size can be changed if it is a char pointer
The last element of an array is an element of the specific type	The last character of a string is a null – '\0' character
The length of an array is to specified in [] at the time of declaration (except char[]).	The length of the string is the number of characters + one (null character
Example : char str[100];	Example: *str[10]

To explain pointer as example:

```
int main(){
 char *str[5];
 Int I;
printf("Enter your text");
For(i=0;i<5;i++)
 { scanf("%s",str[i]);
for(i=0;i<n;i++)
{ printf("%s",str[i]);
}
return 0;}}..
```

Q. How can you use string variable to the function parameter?

Ans: Since the strings are treated as character arrays in c. the rules for passing strings to functions are very6 similar to those for passing array to function.

basic rules are

1.The string to be passed must be declared as a formal argument of the when it is defined as

```
Void display(char item_name[])
 {
 }
```

2.The function prototype must show that the argument is a string . for the above function Definition, the prototype can be written as

```
 Void display (char str[]);
```

3.A call th the function must have a string name without subscripts.As its actual arguments As,

```
 Display(names);
```

Where names is a properly declared string array in the calling function. Let an example to explain it .

```
Int display(char str[]);
        int main()
           {
         Char str[100];
```

```
                    printf("Enter your text :");
                    gets(str);
                    display(str);
                    return 0;
                     }
               int display(str[])
                       {
                        printf("display your text:");
                        printf("%s",str);
                        }
```

Q. What is input function of a string? Exam:ACCE-2011,ICE-2015,APPE

Ans:

There are different types of input function oin string. Such as

(a) scanf
(b) getchar
(c) gets

(a) scanf:

the familiar input function scanf can be used with %s format specification to read in a strin g of characters. Unlike preyious sccanf calls, in the case of character arrays. Ampersand (&) is not required before the variable name.

If we want to input a single word:

```
Char address[10]
Scanf("%s",address);
```

If we want to input a multiple word until \n found:

```
scanf(" %[^\n]s",name);
```

\n just sets the delimiter for the scanned string

(b) getchar:

The char getchar function reads the next available character from the screen and returns it as an integer. This function reads only single character at a time. You can use this method in the loop in case you want to read more than one character from the screen.

```
Char ch;
Ch =getchar();
```

The getchar function has no parameter.

(c) gets:

The **char gets()** function reads a line from stdin into the buffer pointed to by s until either a terminating newline or EOF (End of File).

Example:

```
char str[100];
printf( "Enter a value :");
gets( str )
```

Q What is the output function of string? Exam:ICE-2015,ACCE-2013

Ans:

C supports different types of output function such as

(a) printf
(b) Putchar
(c) puts

(a)printf:

We have used extensively the printf function with %s format to print strings to output screen. Th format %s can be used to display an array of characters that is terminated by the null character. For exampl the statement.

```
Printf("%s",st);
```

We can also specify the precision with which the array is displayed. For instance the specification

```
rintf("%10.4s",st);
```

This prints the first d acahracters of the string in the field width of w.

```
Char st[]="ICE"
Printf("%d.*s",d.st);
```

(b)putchar:

The **putchar** function puts the passed character on the screen and returns the same character. This function puts only single character at a time. You can use this method in the loop in case you want to display more than one character on the screen. Check the following example

```
printf( "\nYou entered: ");
 putchar( c );
```

(c)puts:

The puts function writes the string 's' and 'a' trailing newline to stdout. prints the string pointed to by str to the screen

```
printf( "\nYou entered: ");
 puts( str );
```

Q. What do you mean by two dimensional string?

Ans:

We often use lists of character strings. Alist of name can be treated as table of string and a two dimentional character array can be used to strore the entire list.

For example a character array.

Strudent[30][5];

- char names[People][Length];
- char month[5][10] = {"January", "February", "March", "April", "May"};

It may be used to strore a list of 30 names eache of length not more than 15 characters.

Q. write a program that accepts a string from the user and calculates its length without using any string related library functions.

Ans:

```
 #include<stdio.h>
  int main()
      {int l;
char st[100];
printf("Enter any string:");
 scanf("%s",st);
for(l=0;st[l];l++);
printf("Length %d",l);
return 0;      }
```

Q. describe the functions of strcmp() and strcpy()

Ans:

Strcmp():

Description

The C library function int strcmp(const char *str1, const char *str2) compares the string pointed to, by str1 to the string pointed to by str2.

Declaration

Following is the declaration for strcmp() function.

int strcmp(char*str1,char*str2)

Parameters

- str1 -- This is the first string to be compared.

- str2 -- This is the second string to be compared.

Return Value

This function return values that are as follows:

- if Return value < 0 then it indicates str1 is less than str2.
- if Return value > 0 then it indicates str2 is less than str1.
- if Return value = 0 then it indicates str1 is equal to str2.

Example

Q. Write a program that read two string and compare them and print largest of them?

The following example shows the usage of strncmp() function.

```
#include <stdio.h>
#include <string.h>
int main ()
{  char str1[15];
   char str2[15];
   int ret;
   strcpy(str1, "abcdef");
   strcpy(str2, "ABCDEF");
   ret = strcmp(str1, str2);
   if(ret < 0)  {
     printf("str1 is less than str2");
   }
   else if(ret > 0)
   {
     printf("str2 is less than str1");
   }
   else
   {
     printf("str1 is equal to str2");
   }
   return(0);
}
```

Let us compile and run the above program that will produce the following result:

```
str2 is less than str1
```

strcpy():

Description

The C library function **char *strcpy(char *dest, const char *src)** copies the string pointed to, by src to dest.

Declaration

Following is the declaration for strcpy() function.

char *strcpy(char *dest, const char *src)

Parameters

- **dest** -- This is the pointer to the destination array where the content is to be copied.
- **src** -- This is the string to be copied.

Return Value

This returns a pointer to the destination string dest.

Example

The following example shows the usage of strcpy() function.

Q.Write a program that read a string and copy this string into another variable?

Ans;

```
#include <stdio.h>
#include <string.h>
int main()
```

```
{
 char src[40];
 char dest[100];
 memset(dest, '\0', sizeof(dest));
 strcpy(src, "This is tutorialspoint.com");
 strcpy(dest, src);
 printf("Final copied string : %s\n", dest);

 return(0);
}
```

Let us compile and run the above program that will produce the following result:

```
Final copied string : This is tutorialspoint.com
```

Q.Write a program in c that will read 20 string from keyboard. Store them in a array and print them in ascending order. **Marks:3.50 Exam-ACCE-2014**

Ans:

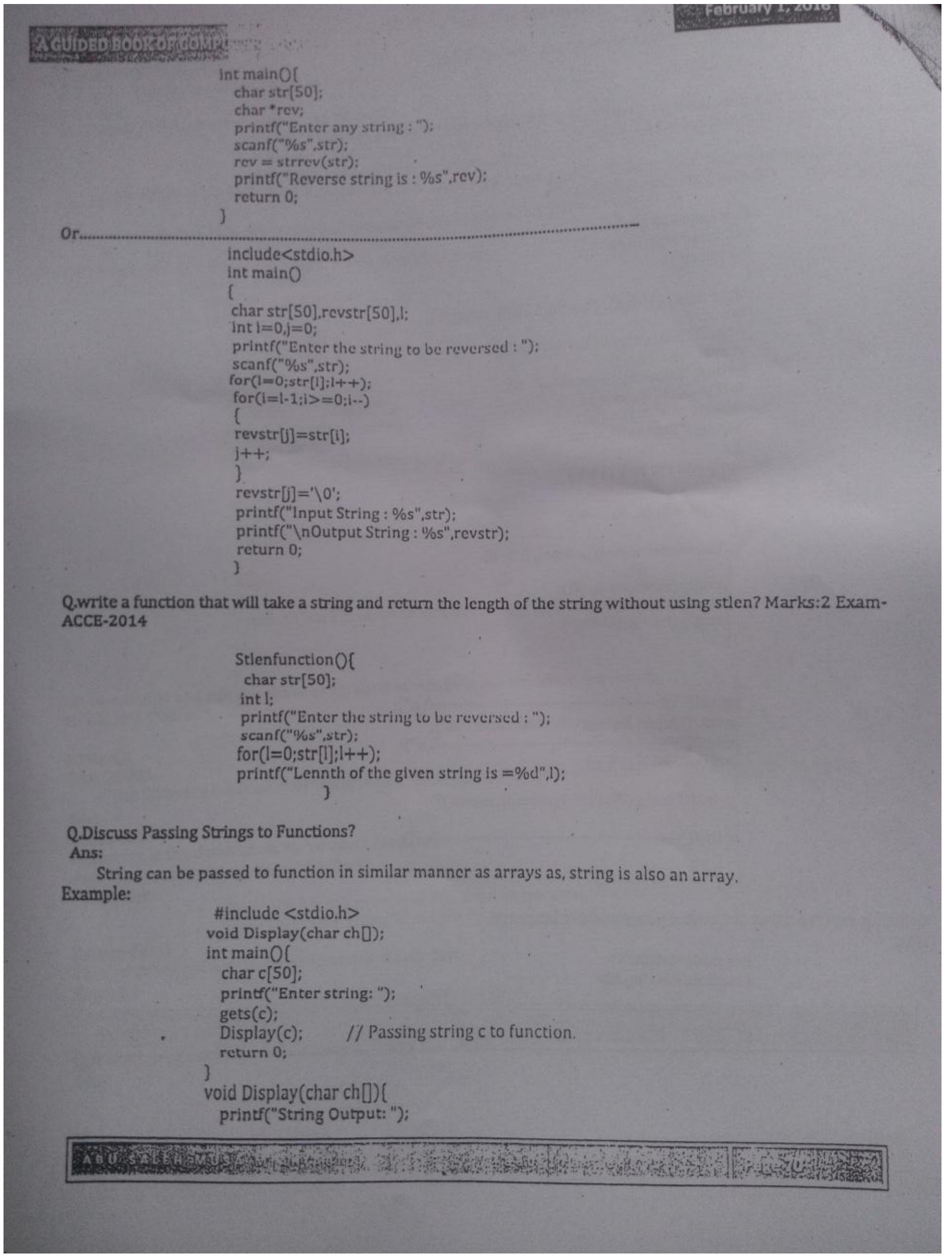
```
#include <stdio.h>
#include <string.h>
int main()
{
 char name[10][8], Tname[10][8], temp[8];
 int i, j, N;
 printf("Enter the value of N\n");
 scanf("%d", &N);
 printf("Enter %d names\n", N);
 for(i=0; i< N ; i++) {
  scanf("%s",name[i]);
  strcpy (Tname[i], name[i]);
  }
  for(i=0; i < N-1 ; i++)
  {
   for(j=i+1; j< N; j++)
   {
    if(strcmpi(name[i],name[j]) > 0)
    {
     strcpy(temp,name[i]);
     strcpy(name[i],name[j]);
     strcpy(name[j],temp);
    }
   }
  }
  printf("\n----------------------------------------\n");
  printf("Input Names\tSorted names\n");
  printf("----------------------------------------\n");
  for(i=0; i< N ; i++)
  {
   printf("%s\t\t%s\n",Tname[i], name[i]);
  }
  printf("----------------------------------------\n");

 }  /* End of main() */
```

Q. String reverse using strrev in c programming language.

Ans:

```
#include<stdio.h>
#include<string.h>
```



```
int main(){
  char str[50];
  char *rev;
  printf("Enter any string : ");
  scanf("%s",str);
  rev = strrev(str);
  printf("Reverse string is : %s",rev);
  return 0;
}
```

Or..

```
include<stdio.h>
int main()
{
 char str[50],revstr[50],l;
 int l=0,j=0;
 printf("Enter the string to be reversed : ");
 scanf("%s",str);
for(l=0;str[l];l++);
 for(i=l-1;i>=0;i--)
 {
 revstr[j]=str[i];
 j++;
 }
 revstr[j]='\0';
 printf("Input String : %s",str);
 printf("\nOutput String : %s",revstr);
 return 0;
 }
```

Q.write a function that will take a string and return the length of the string without using stlen? Marks:2 Exam-ACCE-2014

```
Stlenfunction(){
  char str[50];
 int l;
 printf("Enter the string to be reversed : ");
 scanf("%s",str);
for(l=0;str[l];l++);
printf("Lennth of the given string is =%d",l);
            }
```

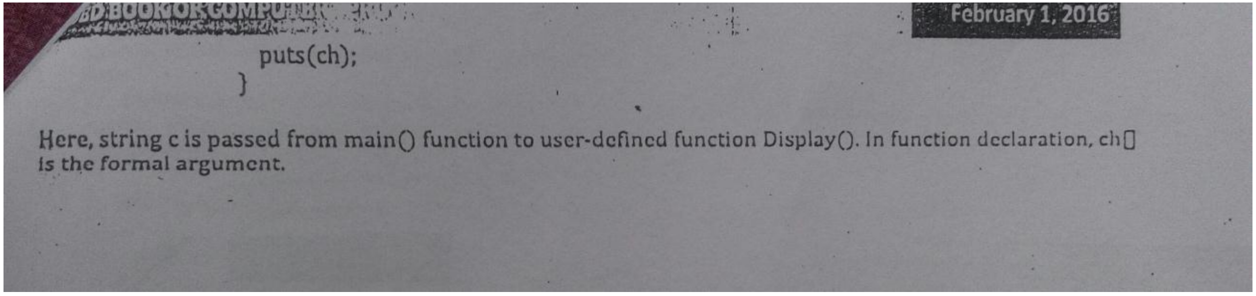
Q.Discuss Passing Strings to Functions?

Ans:

String can be passed to function in similar manner as arrays as, string is also an array.

Example:

```
 #include <stdio.h>
void Display(char ch[]);
int main(){
  char c[50];
  printf("Enter string: ");
  gets(c);
  Display(c);       // Passing string c to function.
  return 0;
}
void Display(char ch[]){
  printf("String Output: ");
```



```
  puts(ch);
}
```

Here, string c is passed from main() function to user-defined function Display(). In function declaration, ch[] is the formal argument.