String

It is an array of type char. ***(Collection of alpha ,Numeric & Special Characters values)***

Syntax for declaration: char <array/string name> [max. number of characters to be stored +1];

The number of elements that can be stored in a string is always n-1, if the size of the array specified is n. This is because 1 byte is reserved for the NULL character '\0' i.e. backslash zero. A string is always terminated with the NULL character.

Example:

char str[80]; //Single String **0 to 79** characters

char names[10][20];//**10 Names with 20** characters

Character (Array):

char N[5]={'N','I','T','I','N'}; //loop for input and output

stdio.h (Input and Output Functions)

Input :

1. gets(String Variable);//Input Function

char S[20]; gets(S);

String (Array):

char N[5]= "NITIN";//string gets and puts

Output :

2. puts(String Variable); // Output Function

char S[20]; gets(S); puts(S);

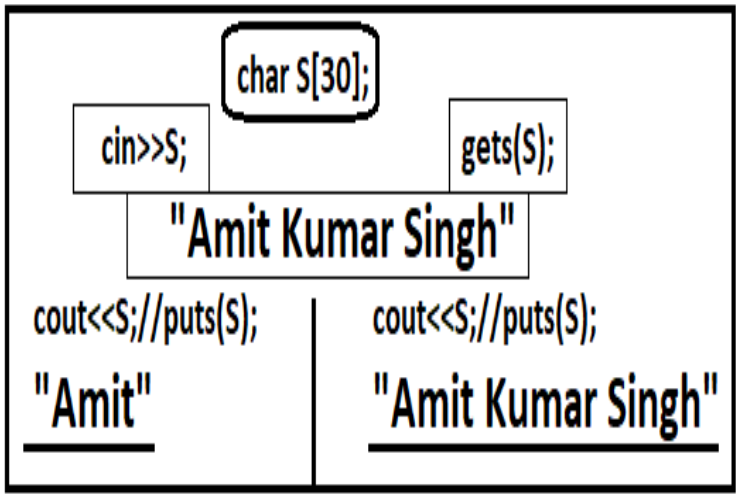
Character /ASCII Value ***'A' to 'Z' : 65 to 90, 'a' to 'z' : 97 to 122, '0' to '9' :47 to 57***

A string can be initialized to a constant value when it is declared.

char str[ ] = "Good"; Orchar str[]={'G','o','o','d','\0'};

Here. 'G' will be stored in str[0], 'o' in str[1] and so on.

Note: When the value is assigned to the complete string at once, the computer automatically inserts the NULL character at the end of the string. But, if it is done character by character, then we have to insert it at the end of the string.



Reading strings with/without embedded blanks

To read a string without blanks cin can be used

cin>>str;

To read a string with blanks cin.getline() or gets() can be used.

cin.getline(str,80); -Or-gets(str);

Printing stringscout and puts() can be used to print a string. ***cout<<str: Orputs(str);***

Note: For gets( ) and puts(), the header file stdio.h has to be included. puts() can be used to display only strings. It takes a line feed after printing the string.

String.h(String Function /Operations)

1. **strcpy :**Copy one string into another string :

Example:

char s1[20]= "Amit",s2[20]= "Kumar";
strcpy(s1,s2);
cout<<s1;

Output is Kumar

2. **strcat :**(Concatination) Append one string to another

Example:

char s1[20]= "Amit",s2[20]= "Kumar";
strcat(s1,s2);
cout<<s1;

Output is AmitKumar

3. **strcmp** :compare two string with case sensitivity **(T/F)**

Example:

char s1[20]= "Amit",s2[20]= "amit";
if(strcmp(s1,s2))
orcout<<strcmp(s1,s2);

Output is False

4. **strcmpi** :compare two string without case sensitivity

Example:

char s1[20]= "Amit",s2[20]= "amit";
if(strcmpi(s1,s2))
orcout<<strcmpi(s1,s2);

Output is True

5. **strlen** : characters present in string

Example:

char s1[120]= "Amit Kumar";
int l=strlen(s1);
cout<<l;

Output is 10

6. **strlwr** : convert string into lower case

Example:

char s1[120]= "Amit Kumar";
cout<<strlwr(s1)

Output is: amit kumar

7. **strupr:** convert string into upper case

Example:

char s1[120]= "Amit Kumar";
cout<<strupr(s1)

Output is: AMIT KUMAR

8. **strrev**:convert string into reverse order

Example:

char s1[120]= "Amit Kumar";
cout<<strrev(s1)

Output is: ramuK timA

ctype.h(Compare Characters)

1. **isalnum(ch); check given character is 'a' to 'z' of 'A' to 'Z' and '0' to '9':**
   Example: *if(isalnum(*ch*)) :=> if((ch>= 'a'&&ch<= 'z') || (ch>= 'A'&&ch<= 'Z') ||(ch>= '0'&&ch<= '9'))*
2. **islower(ch); check given character is 'a' to 'z'-:** ***Example :***if(islower(ch)) : =>*if(ch>= 'a'&&ch<= 'z')*
3. **isupper(ch);check given character is 'A' to 'Z'-:** ***Example :*** if(isupper(ch)) : =>*if (ch>= 'A'&&ch<= 'Z')*
4. **isalpha(ch); check given character is 'a' to 'z' of 'A' to ' Z'*Example :*** if(isalpha(ch)=>*if((ch>='a'&&ch<='z')||(ch>='A'&&ch<= 'Z'))*
5. **isspace(ch); check given character is ' _' white space ->*Example :***if(isspace(ch)) : =>*if(ch== ' ')*
6. **isdigit(ch); check given character is *'0' to '9' Example :***if(isdigit(ch)) :=> if(ch>=47&&ch<=57) , if*(ch>= '0'&&ch<= '9')*
7. **toupper(ch/str); convert character into upper case *Example :***toupper(ch/str):=> strupe(ch/str) :=> Is equal to ch=ch-32
8. **tolower(ch/str); convert character into upper case *Example :*** tolower(ch/str) :=> strlwr(ch/str) :=> Is equal to ch=ch+32

Programs

1. **WAP to convert String in upper case or lower case.**
2. **WAP to count in given message.**
   a. Upper Case. | c. Words, | e. Digits
   b. Lower Case | d. Space | f. Special Characters
3. **WAP to count words start with**
   a. Capital letters | c. Digits
   b. Small letters | d. Special character in given message.
4. **WAP to count words end with**
   a. Capital letters | c. Digits
   b. Small letters | d. Special character in given message.
5. **WAP to replace every space with a hyphen(#) in string .**
6. **WAP to remove all space present in in string .**
7. **WAP that check the character present in a string or not.**
8. **WAP that count the character in a string.**
9. WAP to delete the all consonants from given string.
10. WAP to delete the all vowels from given string.
11. WAP to print the string from given character.
12. WAP String concatenation without using strcat
13. WAP How to compare two strings without using strcmp
14. WAP String copy without using strcp
15. WAP to check a string whether a string is Palindrome or not.
16. WAP to sort the characters of a string.
17. WAP that check a character in a string at on specified position.
18. WAP that display the string from a specified position to a specified position .
19. **WAP which accepts a strings and print it in the following format according to user's choice :**
    1.Sentence case | 2.Title Case | 3.UPPER CASE | 4.lower case | 5.tOGGLE cASE
20. WAP the print the string one character at a line .
21. WAP to count vowel and consonants in msg.
22. WAP to count no of words start with vowel and end with consonants in msg.
23. WAP the display reverse a msg .
24. **WAP to check given string is palindrome or not.**
25. **WAP the display each word of a msg in new line.**
26. WAP the display each word with frequency of vowels in a message.
27. WAP the display each word with no of characters present in a message in new line.
28. WAP the display word which have maximum no of characters in a message. .
29. WAP the display each word with frequency of vowels and consonant present in the message.
30. WAP to input a string and count the frequency of a particular word occurs in it. Display the frequency of the searched word. **For example: if the string is : The monkey is sitting on the tree. In addition, the monkey was very naughty. And the word to be searched is : the , then the output will be : 3 times.**
31. WAP to display each word of the string in reverse order.
    For example: If Input string = "I love my India" Output should be :- "I evol ym aidnI"
32. WAP in to input a string and print out the text with the uppercase and lowercase letters reversed, but all other characters should remain the same as before.
    For Example: INPUT: WelComE TO School OUTPUT: wELcOMe to sCHOOL

cin	gets()
1. It can be used to take input of a value of any data type. 2. It takes the white space i.e. a blank, a tab, or a new line character as a string terminator. 3. It requires header file iostream.h Example:char S[80];cout<<"Enter a string:";cin>>S;	It can be used to take input of a string. It does not take the white space i.e. a blank, a tab, or a new line character, as a string terminator. It requires the header file stdio.h Example:char S[80];cout<<"Enter a string:";gets(S);
cout	**puts()**
It can be used to display the value of any data type. It does not take a line feed after displaying the string. It requires the header file iostream.h Example:char S[80]="Computers"; cout<<S<<S; Output:ComputersComputers	It can be used to display the value of a string. It takes a line feed after displaying the string. It requires the header file stdio.h Example:char S[80]="Computers"; puts(S);puts(S); Output:ComputersComputers

ctype.h

Function	Mining
isalpha(c)	it returns True if C is an uppercase letter and False if c is lowercase.
isdigit(c)	It returns True if c is a digit (0 through 9) otherwise False.
isalnum(c)	it returns True if c is a digit from 0 through 9 or an alphabetic character (either uppercase or lowercase) otherwise False.
islower(c)	it returns True if C is a lowercase letter otherwise False.
isupper(c)	it returns True if C is an uppercase letter otherwise False.
toupper(c)	it converts c to uppercase letter.
tolower(c)	it converts c to lowercase letter.

string.h

strlen(S)	it gives the no. of characters including spaces present in a string S.
strcat(S1, S2)	It concatenates the string S2 onto the end of the string S1. The string S1 must have enough locations to hold S2.
strcpy(S1, S2)	It copies character string S2 to string S1. The S1 must have enough Storage locations to hold S2.
strcmp((S1, S2)==0) **strcmp((S1, S2)>0)** **strcmp((S1, S2) <0)**	**It compares S1 and S2 and finds out whether S1 equal to S2, S1 greater than S2 or S1 less than S2.**
strrev(s)	It converts a string s into its reverse
strupr(s)	It converts a string s into upper case
strlwr(s)	It converts a string s into lower case

Set1

Find Output after executing the codes (String):

```
Q1. char string[]="vR2GooD";
    for(int i=0;string[i]!='\0';i+=2)    cout<<string[i];
Q2. char string[]="vR2GooD";
    for(int i=0;string[i]!='\0';i+=3)    cout<<string[i];
Q3. char string[]="vR2GooD";
  for(int i=2;string[i]!='\0';i+=2)    cout<<string[i];
Q4. char string[]="vR2GooD@";
   int l=strlen(string);
   for(int i=0;i<l;i++)cout<<string[4]<<endl;
Q5. char string[]="vR2GooD DooG2Rv";
   int l=strlen(string);
    for(int i=0;i<l/2;i++)cout<<string[l/2-i]<<endl;
Q6. char string[]="vR2GooD DooG2Rv";
    int l=strlen(string);
     for(int i=0;i<l/2;i++)cout<<string[l/2+i]<<endl;
Q7. char string[]="vR2GooD,DooG2Rv*";
    int l=strlen(string);
     for(int i=0;i<l;i++)
{if(isupper(string[i]))cout<<tolower(string[i]);
 else if(islower(string[i]))cout<<toupper(string[i]);
 else cout<<string[i];    }
```

String Outputs Set 1

Text[15]="PROGRAMMING";	
if value of i =3	Text[i] >G
Text[i+1] >R	Text[i]-1 >F
Text[i]+1 >H	Text[i-1] >O

```
#include<iostream.h>
void repch(char s[])
{for (int i=0;s[i]!='\0';i++)
{if(((i%2)!=0) &&(s[i]!=s[i+1]))
{s[i]='@';}
else if (s[i]==s[i+1])
{s[i+1]='!';
i++;}}}
void main()
{ char str[]="SUCCESS";
cout<<"Original String"<<str
repch(str);
cout<<"Changed String"<<str;}
```

e. Find the output of the following : 3

```
#include<iostream.h>
void switchover(int A[ ],int N, int
split)
{
for(int K = 0; K<N; K++)
if(K<split)A[K] += K;
else A[K]*= K;}
```

Ans:

Original String SUCCESS
Changed String S@C!ES!

Q 1.
```
#include<iostream.h>
#include<ctype.h>
void main( )
{
char Text[ ] = "Mind@work!";
for(int I=0; Text[I]!='\0';I++)
{
 if(!isalpha(Text[I]))
Text[I]='*';
else if(isupper(Text[I]))
Text[I]=Text[I]+1;
else
Text[I] = Text[I+1];}
cout<<"\n Final : "<<Text; }
```

Q 2.
```
#include<iostream.h>
#include<ctype.h>
void main( )
{
char Mystring[ ] = "what@OUTPUT!";
for(int I=0; Mystring[I]!='\0';I++)
{
 if(!isalpha(Mystring[I]))
Mystring[I]='*';
else if(isupper(Mystring[I]))
Mystring[I]=Mystring[I]+1;
else
Mystring[I] =Mystring[I+1];
}
cout<<"\n   Final :"<<Mystring; }
```

Q 3.
```
#include<iostream.h>
#include<ctype.h>
#include<conio.h>
void Secret(char Msg[],int N);
void main( )
{
 char SMS[30 ]="rEPorTmE";
Secret(SMS,2);
cout<<" \nFinal : "<<SMS<<endl;
}
void Secret(char Msg[],int N)
{
for(int c=0;Msg[c]!='\0';c++)
{
if(c%2==0)
Msg[c]= Msg[c]+N;
else if (isupper(Msg[c]))
Msg[c]=tolower(Msg[c]);
else
Msg[c]= Msg[c]-N;}}
```

Q 4.
```
#include<iostream.h>
#include<ctype.h>
void Mycode(char Msg[],char ch)
{ for(int cnt=0;Msg[cnt]!='\0';cnt++)
{ if(Msg[cnt]>='B'&& Msg[cnt]<='G')
Msg[cnt]=tolower(Msg[cnt]);
else
if(Msg[cnt]=='A'||Msg[cnt]=='a')
Msg[cnt]=ch;
else
if(cnt%2==0)
Msg[cnt]=toupper(Msg[cnt]);
else
Msg[cnt]=Msg[cnt-1];}}
void main()
{
 char MyText[]="ApEACeDriVE";
Mycode(MyText,'@');
cout<<"NEW TEXT: "<<MyText<<" "<<endl; }
```

Q 5.
```
#include<iostream.h>
#include<ctype.h>
void Secret(char Str[ ])
{
for (int L=0;Str[L]!='\0';L++);
{
for (int C=0;C<L/2;C++)
{if (Str[C]=='A' || Str[C]=='E')
Str[C]='#';
else
```

```
char Temp=Str[C];
Str[C]=Str[L-C-1];
Str[L-C-1]=Temp;
}}}}
void main()
{
char Message[ ]="ArabSagar";
Secret(Message);
cout<<"\n Final : "<<Message<<endl;}
```

Q 6.

```
#include<iostream.h>
#include<ctype.h>
#include<string.h>
void main()
{
char *Name= "a ProFile";
for(int x =0; x<strlen(Name); x++)
{
if(islower(Name[x]) )
Name[x]=toupper(Name[x] );
else
if(isupper(Name[x]) )
if (x%2!=0)
Name[x]=tolower(Name[x-1]);
else
Name[x]--;}
cout<<"\n Final :"<<Name<<endl;}
```

Q 7.

```
#include<iostream.h>
#include<ctype.h>
#include<string.h>
void main( )
{
char * NAME = "admiNStrAtiOn";
for( int x=0;x<strlen(NAME);x++)
{
if(islower(NAME[x]))
NAME[x] = toupper(NAME[x]);
else
if(isupper (NAME[x]))
if(x%2==0)
NAME[x] = NAME[x -1];
else
NAME[x]--;
cout<<NAME <<endl;}}
```

Q 8.

```
#include<iostream.h>
#include<ctype.h>
#include<string.h>
void main( )
{
char *poet= "SakESpHerE" ;
for (int i=0;i<strlen(poet);i++)
{
if(islower(poet[i]))
poet[i]=poet[i-1];
else if( isupper(poet[i]))
if(poet[i]=='S')
poet[i]='X';
else if(poet[i]=='E')
poet[i]=toupper(poet[i-1]);
else
poet[i]--;}
cout<<"\n Final : "<<poet; }
```

Q 9.

```
#include <iostream.h>
#include <ctype.h>
void Encrypt(char T[])
{
for (int i=0;T[i]!='\0';i+=2)
{
if (T[i]=='A' || T[i]=='E') T[i]='#';
else if (islower(T[i])) T[i]=toupper(T[i]);
else T[i]='@';}}
void main()
{
char Text[]="SaVE EArtH";
cout<<"\n Final : "<<Text<<endl;
Encrypt(Text);
cout<<"\n Final : "<<Text<<endl;}
```

Q 10.

```
#include <iostream.h>
#include <ctype.h>
void ReCode ( char Text[ ], int Num );
void main ( )
{
char Note [30] = "Butterfly";
ReCode (Note, 2);
cout << "\n Final : "<<Note <<endl;}
void ReCode (char Text [ ], int Num)
{
for ( int  K = 0 ; Text [K] !='\0' ; K++)
{
if ( K % 2 == 0)
Text [K] = Text [K] + Num;
else if ( islower (Text[K] ))
Text [K] = toupper ( Text [K] );
else
Text[K] = Text[K] + Num;
cout<<"\n "<<Text;}}
```

Q 11.

```
#include <iostream.h>
#include <ctype.h>
void main()
{
int a[5] ={0, 3, 4, 2, 1};
int b[5]= {0};
for ( int i=0; i<5;++i)
```

```
b[a[i]]=a[i];
cout<< b[0]<<b[1]<<b[2]<<b[3]<<b[4];}
```

Q 12.
```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
void main()
{char NAME[]="ComPUteR";
for(int x=0;x<strlen(NAME);x++)
{if(islower(NAME[x]))
NAME[x]=toupper(NAME[x]);
else
if(isupper(NAME[x]))
if(x%2==0)
NAME[x]=tolower(NAME[x]);
else
NAME[x]=NAME[x-1];
cout<<"\n"<<NAME;}
cout<<"\n Final :"<<NAME;}
```

Q 13.
```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
void main()
{
char  name[]= "teAmIndia";
for ( int i = 0; name[i]!= '\0' ; i += 2)
{
if ( islower( name[i]) )
name[i] = toupper(name[i]) ;
else
name[i] = tolower(name[i]);
cout<<"\n"<<name;}
cout<<"\n Final :"<<name;}
```

Q 14.
```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
void main( )
{
char  name[]= "ThE bESt mAN wINs";
for ( int i = 0; name[i] != '\0' ; i += 1)
{
if ( islower( name[i]) )
  name[i] = toupper(name[i]) ;
else
 if( isupper(name[i]) )
   if ( i % 2 == 0)
      name[i] -- ;
else
name[i] = tolower(name[i - 1]);
cout<<"\n "<<name;
}
cout<<"\n Final : "<<name;}
```

Q 15.
```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
void main( )
{
char  str[] = "TEACHER";
for ( int i = strlen(str)  ; i >= 0 ; i --)
{
 for ( int x = 0 ; x <= i ; x ++)
   cout<<str[x] ;
    cout<<"\n";}}
```

Q 16.
```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
#include<conio.h>
main( )
{
int number[10],a,b,c,d;
clrscr();
for(int i=0;i<10;i++)
{
number[i]=i+i;}
clrscr( );
for(int j=0;j<9;j++){
for(int k=j+1;k<10;k++){
if (number[j]>number[k])
{a=number[j];
number[j]=number[k];
number[k]=a;}}}
cout<<endl;
for(i=0;i<10;i++)
cout<<number[i]<<"\t";i++;
getch( );
return 0;}
```

Q 17.
```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
#include<conio.h>
main( )
{
int a=0;
clrscr( );
char name[]= “Internet Browsing”;
for(a=0;a<=8;a++)
cout<<name[a+1];
cout<<endl;
cout<<name[a];
cout<<endl<<(int)name[a]-1;
getch( );
return 0;}
```

Q 18.
```
#include <iostream.h>
```

```
#include <ctype.h>
#include<string.h>
#include<conio.h>
main( )
{clrscr( );
char name[]= “dheeraj@lw1.vsnl.net.in”;
int len=0;
len = strlen(name);
len = len-1;
cout<<endl;
for(int i=len;i>=0;i=i-2)
{ cout<<name[i];}
cout<<endl;
cout<<i;
cout<<endl;
cout<<name[i+4];
cout<<endl;
getch( );
return 0;}
```

Q 19.

```
#include <iostream.h>
#include <ctype.h>
#include<string.h>
#include<conio.h>
main( )
{
clrscr( );
char name[]=“SHANA”;
int l;
l=strlen(name);
cout<<l<<endl<<(int) name[l-2];
cout<<endl;
cout<<name[l-3];
getch( );}
```

Q 20.

```
#include <iostream.h>
#include <ctype.h>
void main ( )
{char T[ ]="SaVE EArtH";
for (int i=0;T[i]!='\0';i+=2)
{
if (T[i]=='A' || T[i]=='E')
T[i]='#';
else if (islower(T[i]))
T[i]=toupper(T[i]);
else
T[i]='@';
cout<<T<<endl;}
cout<<"\n Final :"<<T;}
```