Section 4A (Strings)

Programming Applications - CC213

Strings

char x[] = “Hello”;

ASCII

Code	Char	Code	Char	Code	Char	Code	Char	Code	Char	Code	Char
32	[space]	48	0	64	@	80	P	96	`	112	p
33	!	49	1	65	A	81	Q	97	a	113	q
34	"	50	2	66	B	82	R	98	b	114	r
35	#	51	3	67	C	83	S	99	c	115	s
36	$	52	4	68	D	84	T	100	d	116	t
37	%	53	5	69	E	85	U	101	e	117	u
38	&	54	6	70	F	86	V	102	f	118	v
39	'	55	7	71	G	87	W	103	g	119	w
40	(	56	8	72	H	88	X	104	h	120	x
41	)	57	9	73	I	89	Y	105	i	121	y
42	*	58	:	74	J	90	Z	106	j	122	z
43	+	59	;	75	K	91	[	107	k	123	{
44	,	60	<	76	L	92	\	108	l	124	|
45	-	61	=	77	M	93	]	109	m	125	}
46	.	62	>	78	N	94	^	110	n	126	~
47	/	63	?	79	O	95	_	111	o	127	[backspace]

Count the spaces in a string

char x[] = “I am Sam”;

‘I’	‘ ‘	‘a’	‘m’	‘ ‘	‘S’	‘a’	‘m’	\0

You can initialize strings in a number of ways.

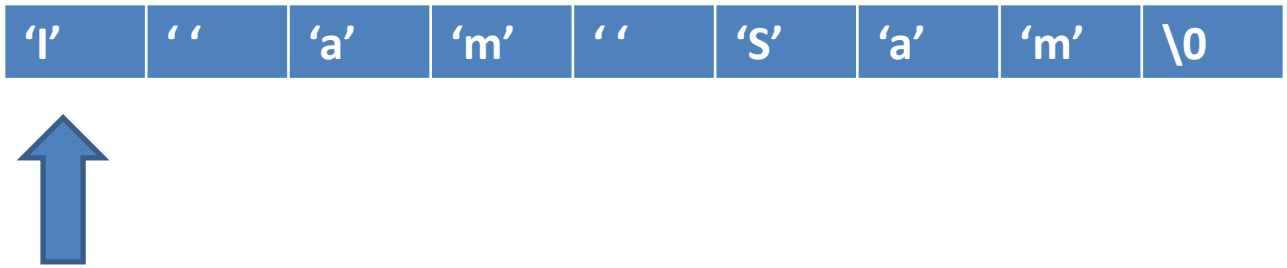
```
char c[] = "abcd";

char c[50] = "abcd";

char c[] = {'a', 'b', 'c', 'd', '\0'};

char c[5] = {'a', 'b', 'c', 'd', '\0'};
```

Count the spaces in a string

counter=0

Count the spaces in a string

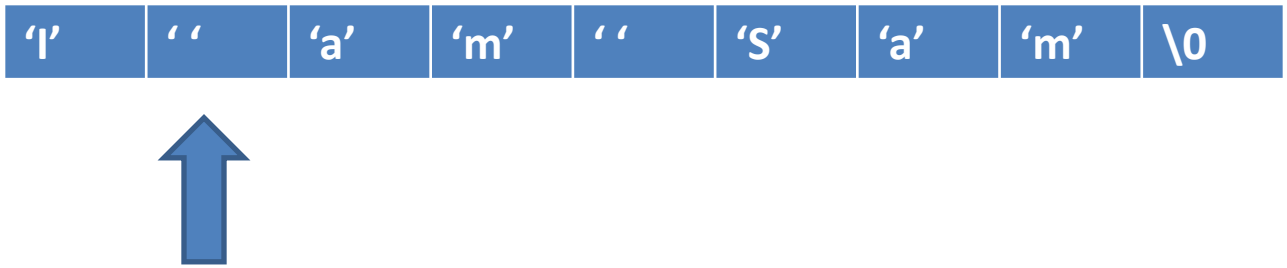
counter=0




```
if(x[i]==‘ ‘){
    counter++
}
```

Count the spaces in a string

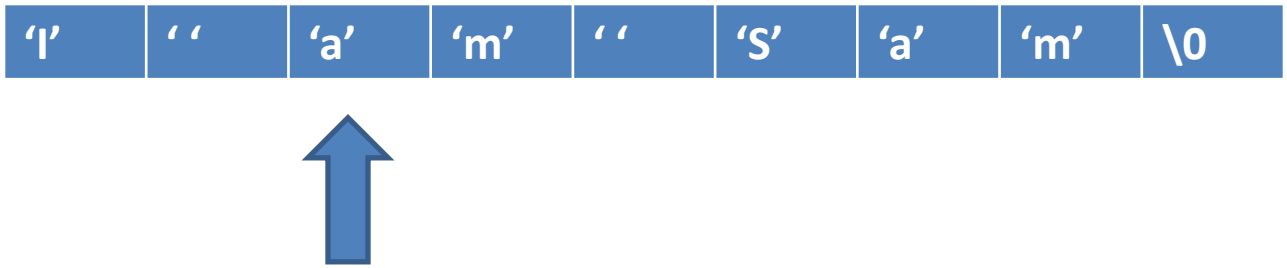
counter=1




```
if(x[i]==‘ ‘){
    counter++
}
```

Count the spaces in a string

counter=1




```
if(x[i]==' '){
    counter++
}
```

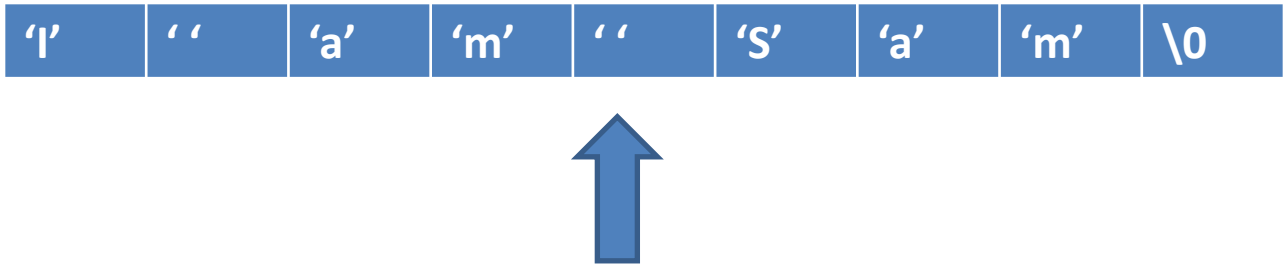
Count the spaces in a string

counter=1


```
if(x[i]==' '){
    counter++
}
```

Count the spaces in a string

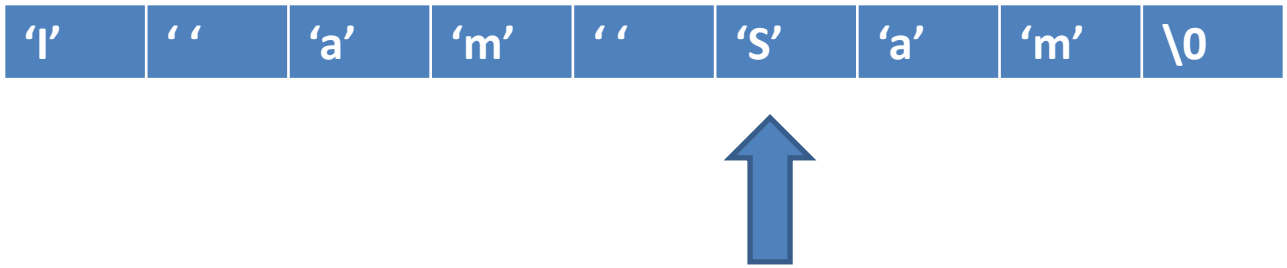
counter=2




```
if(x[i]==' '){
    counter++
}
```

Count the spaces in a string

counter=2




```
if(x[i]==' '){
    counter++
}
```

Count the spaces in a string

counter=2


```
if(x[i]==' '){
    counter++
}
```

Count the spaces in a string

counter=2


```
if(x[i]==' '){
    counter++
}
```

Important String Functions

#include <string.h>

Function	Description	Example
strlen	Return the length of a string	int n= strlen(x)
strcat	Concatenate 2 strings	strcat(x,y)
strcpy	Copy one string to the other	strcopy(x,y)
strcmp	Compares 2 strings alphabetically	strcmp(x,y)

Strcmp(First,Second)

Return Value	Remarks
0	if both strings are identical (equal)
negative	if the ASCII value of the first unmatched character is less than the second.
positive integer	if the ASCII value of the first unmatched character is greater than the second.

Scan a string

```
char x[100];
scanf(“%s”,x); //Scan ONE word
```

Scan a string

```
char x[100];
gets(x)//Scan ONE line
```

Print a String

```
char c[]="Hello World";
printf("%s",c);          OR          puts(c);
```

ASCII

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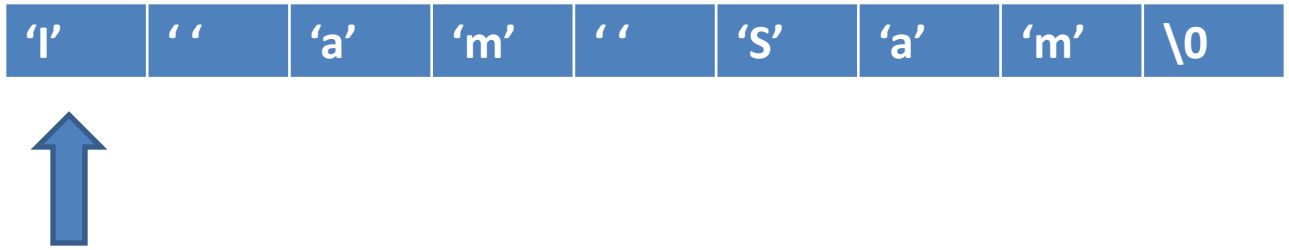
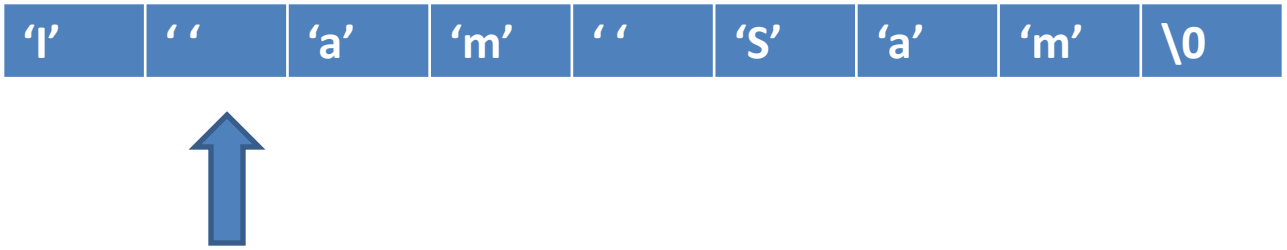
32	[space]	48	0	64	@	80	P	96	`	112	p
33	!	49	1	65	A	81	Q	97	a	113	q
34	"	50	2	66	B	82	R	98	b	114	r
35	#	51	3	67	C	83	S	99	c	115	s
36	$	52	4	68	D	84	T	100	d	116	t
37	%	53	5	69	E	85	U	101	e	117	u
38	&	54	6	70	F	86	V	102	f	118	v
39	'	55	7	71	G	87	W	103	g	119	w
40	(	56	8	72	H	88	X	104	h	120	x
41	)	57	9	73	I	89	Y	105	i	121	y
42	*	58	:	74	J	90	Z	106	j	122	z
43	+	59	;	75	K	91	[	107	k	123	{
44	,	60	<	76	L	92	\	108	l	124	|
45	-	61	=	77	M	93	]	109	m	125	}
46	.	62	>	78	N	94	^	110	n	126	~
47	/	63	?	79	O	95	_	111	o	127	[backspace]

Lower to Upper



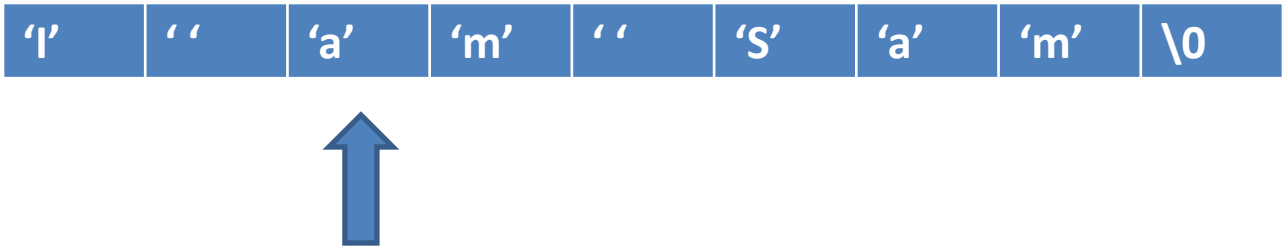
if lower case
Convert to upper

Lower to Upper



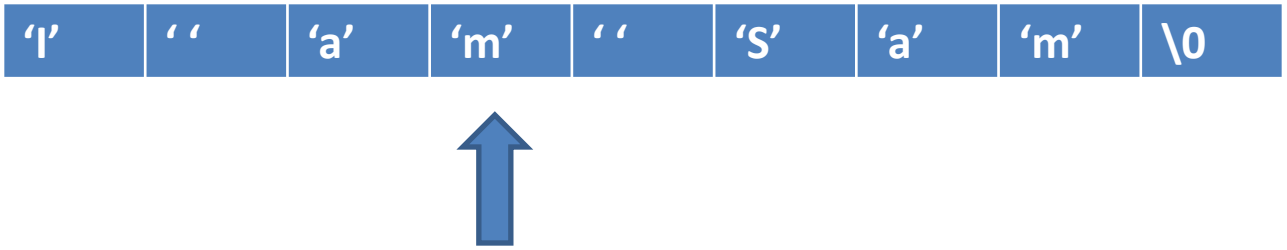
if lower case
Convert to upper

Lower to Upper



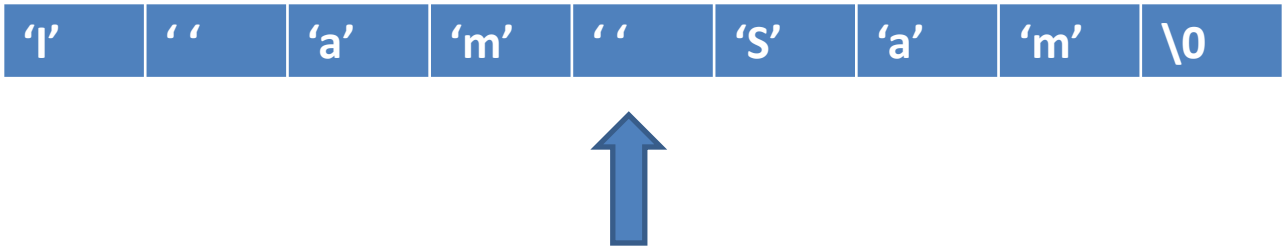
if lower case
Convert to upper

Lower to Upper

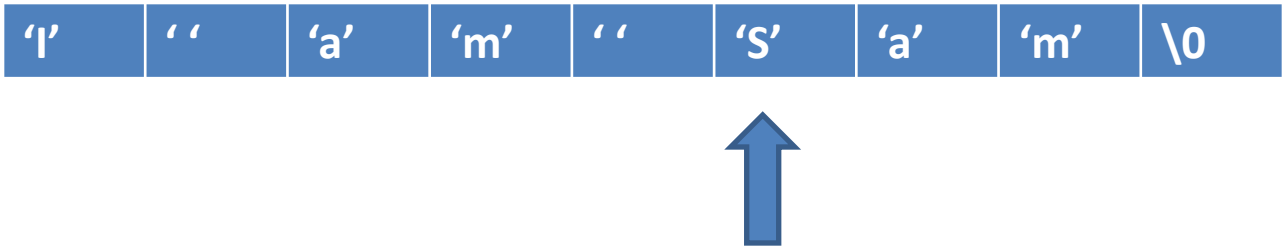


if lower case
Convert to upper

Lower to Upper

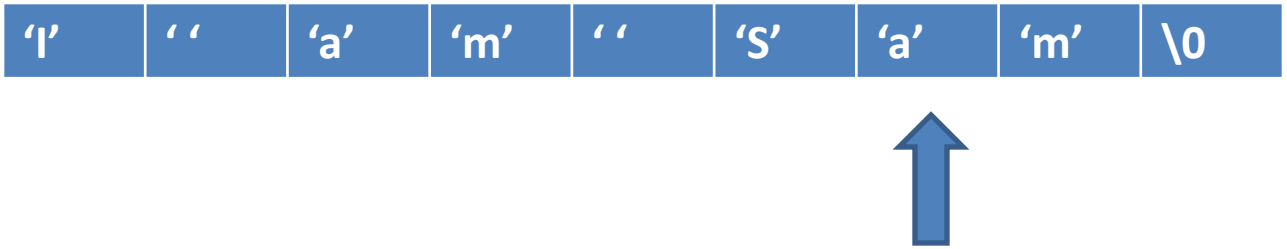


Lower to Upper

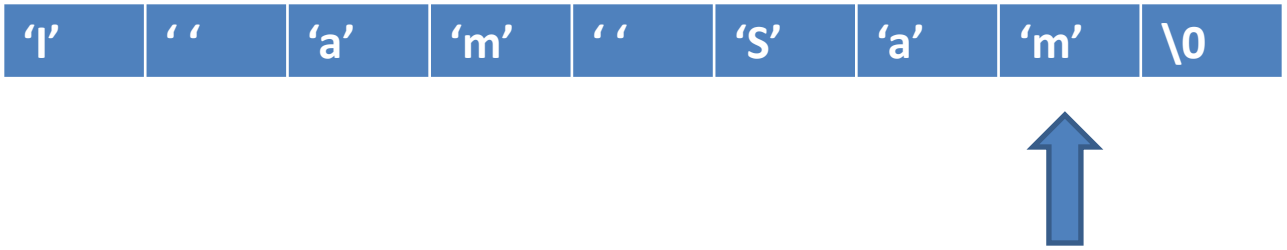


if lower case
Convert to upper

Lower to Upper



Lower to Upper



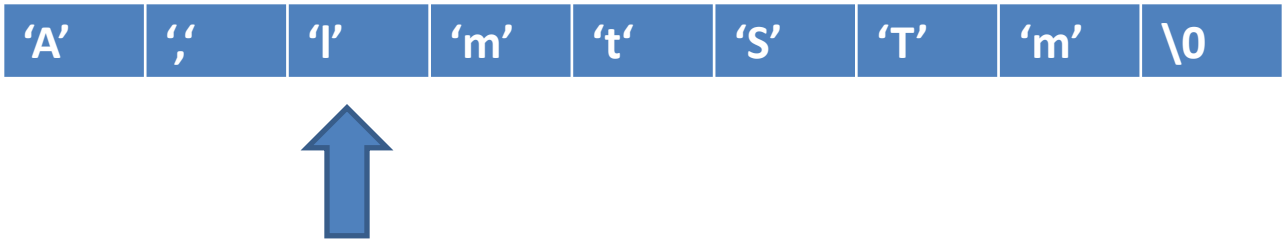
Lower to upper case: -32 // -(‘a’-’A’)

Upper to lower case: +32// +(‘a’-’A’)

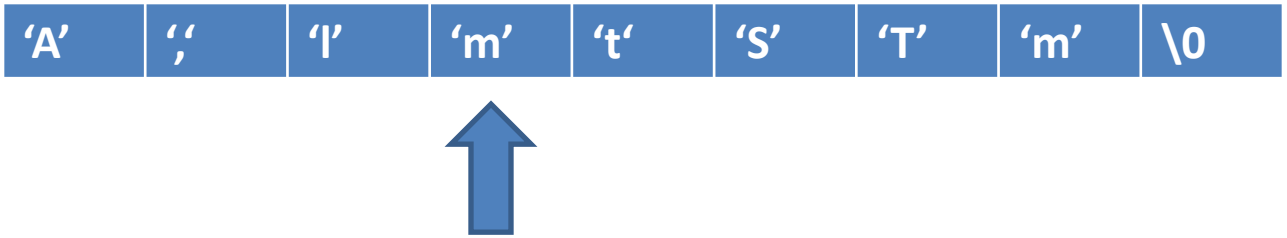
Traverse the string

Traverse the string

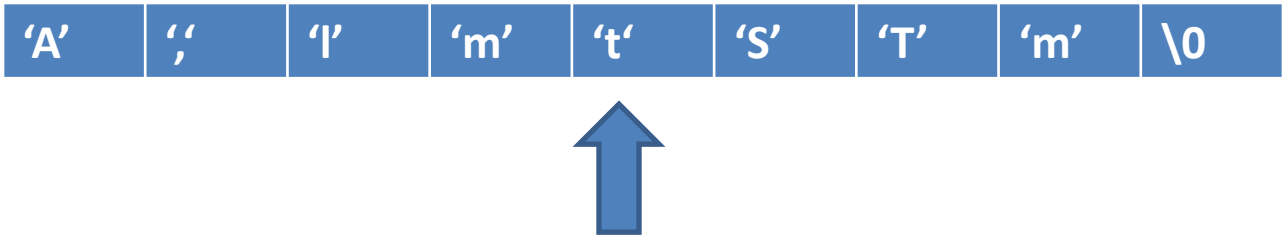
Traverse the string



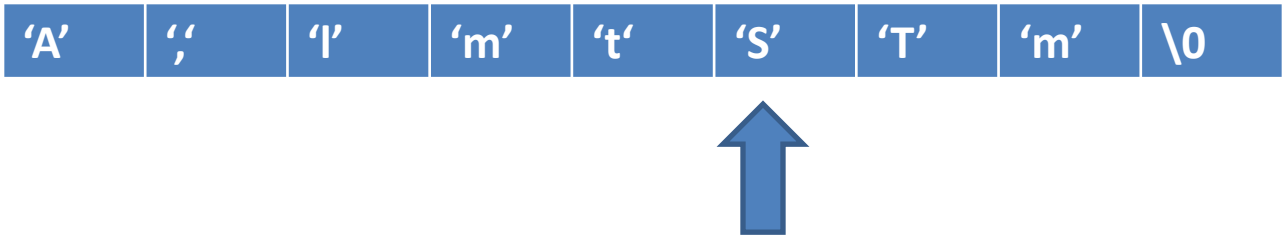
Traverse the string



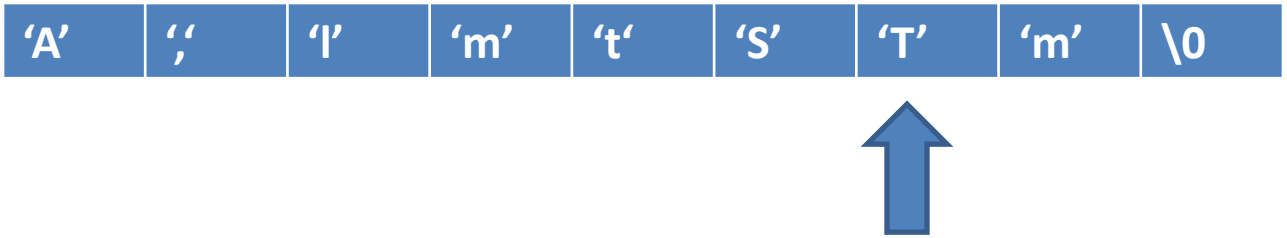
Traverse the string



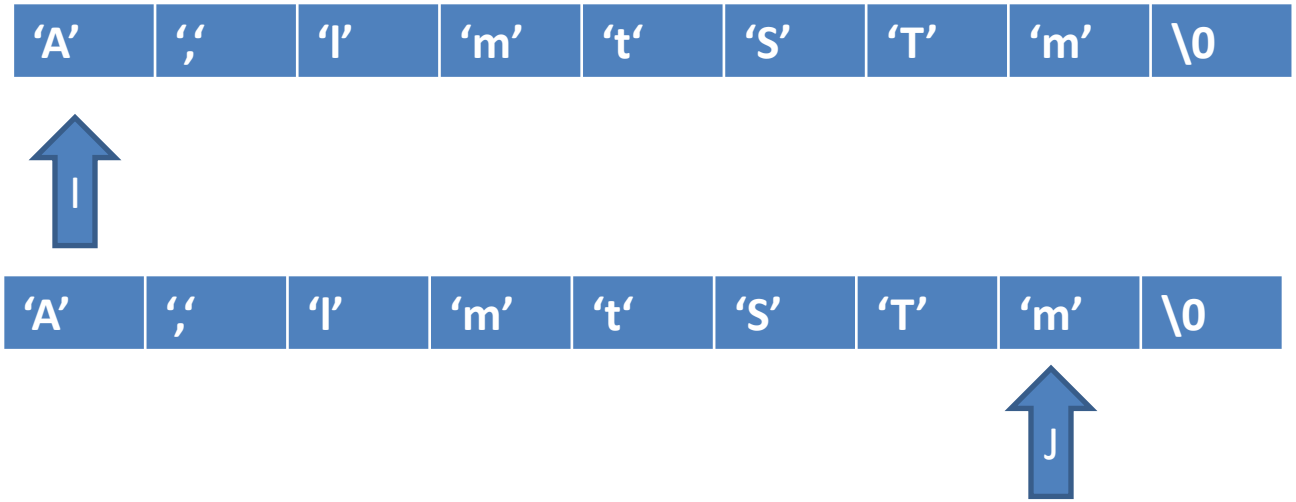
Traverse the string



Traverse the string



Traverse the string



Array of Strings

char x[5][30]

Index of String	String
x[0]	“Mohamed”
x[1]	“Ahmed”
x[2]	“Yara”
x[3]	“Ibrahim”
x[4]	“Soha”

Search for a Name

Index of String	String
x[0]	“Mohamed”
x[1]	“Ahmed”
x[2]	“Yara”
x[3]	“Ibrahim”
x[4]	“Soha”

strcmp

Search for a Name

Index of String	String
x[0]	“Mohamed”
x[1]	“Ahmed”
x[2]	“Yara”
x[3]	“Ibrahim”
x[4]	“Soha”

strcmp

Search for a Name

Index of String	String
x[0]	“Mohamed”
x[1]	“Ahmed”
x[2]	“Yara”
x[3]	“Ibrahim”
x[4]	“Soha”

strcmp

Search for a Name

Index of String	String
x[0]	“Mohamed”
x[1]	“Ahmed”
x[2]	“Yara”
x[3]	“Ibrahim”
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strcmp

Search for a Name

Index of String	String
x[0]	“Mohamed”
x[1]	“Ahmed”
x[2]	“Yara”
x[3]	“Ibrahim”
x[4]	“Soha”

strcmp

Sort Strings

Bubble Sort

```
for (int pass = 1; pass < 5; pass++) {
  for (int j = 0; j < 5 - pass; j++) {
    /* bubble the larger number to the right */
    if (A[j] > A[j+1]) {
      int temp = A[j];
      A[j] = A[j+1];
      A[j+1] = temp;
    } /* end if */
  } /* end for */
} /* end for */
```

```
for (int pass = 1; pass < 5; pass++) {
  for (int j = 0; j < 5 - pass; j++) {
    /* bubble the larger number to the right */
    if (strcmp(A[j],A[j+1]) > 0 ) {
      char temp[30];
      strcpy(temp,A[j]);
      strcpy(A[j],A[j+1]);
      strcpy(A[j+1],temp);
    } /* end if */
  } /* end for */
} /* end for */
```