Strings 字串

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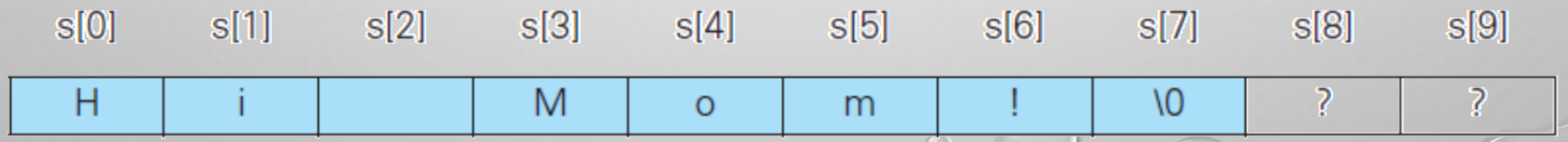
string / ‘char’acter

- One way to represent a string is as an **array** with base type **char**.
- “Hello” => “Hello\0”
- char h[6] = “Hello”;

string / 'char'acter

- One way to represent a string is as an **array** with base type **char**.
- "Hello" => "Hello\0"
- char h[6] = "Hello";
- char s[10];



string / ‘char’acter

- char shortString[] = “abc”;
- char shortString[4] = “abc”;
- char shortString[] = {“a”, “b” ,“c”};

string / 'char'acter

- char shortString[] = "abc";
- char shortString[4] = "abc";
- char shortString[] = {"a", "b" ,"c"};

same

not the same

using = / ==

```
char aString[10];
aString = "Hello";
```

using = / ==

```
char aString[10];
aString = "Hello";
```

illegal !!

using = / ==

```
char aString[10];
aString = "Hello";
```

illegal !!

```
#include <cstring>
...
char aString[10];
strcpy(aString, "Hello");
```

legal

using = / ==

```
if(cString1 == cString2)

...
```

illegal !!

using = / ==

```
if(cString1 == cString2)

...
```

illegal !!

```
#include <cstring>

...

if(strcmp(cString1, cString2))

     cout << "The strings are NOT the same.";

else

     cout << "The strings are the same.";
```

legal

using = / ==

```
cString = cString + "haha";
```

illegal !!

using = / ==

```
cString = cString + "haha";
```

illegal !!

```
#include <cstring>

...

strcat(cString, "haha");
```

legal

cin / cout

```
char School[10]= "TNGS";
cout << School << endl;
```

cin / cout

```
char School[10]= "TNGS";
cout << School << endl;
```

```
char FirstName[10], LastName[10];
cin >> FirstName >> LastName;
cout << FirstName << ' ' << LastName << endl;
```

cin / cout

```
char School[10]= "TNGS";
cout << School << endl;
```

```
char FirstName[10], LastName[10];
cin >> FirstName >> LastName;
cout << FirstName << ' ' << LastName << endl;
```

the length

```
#include <cstring>

...

char cString[80] = "Hello";

int Len = strlen(cString);

cout << Len << endl;
```

a single char

```
#include <cstdio>

...

char a;

a = getchar();

putchar(a);
```

all line

```
#include <cstdio>

...

char sentence[80];

fgets( sentence, 80, stdin );

puts( sentence );
```

reverse

```cpp
/* Using gets and putchar */
#include <iostream>
#include <cstdio>
#include <cstring>
using namespace std;

int main(){
    char sentence[ 80 ]; /* create char array */
    cout << "Enter a line of text:\n";
    /* use fgets to read line of text */
    fgets( sentence, 80, stdin );
    cout << "\nThe line printed backward is:";
    int Len = strlen(sentence);
    for(int i=Len-1; i>=0; --i)
        putchar(sentence[i]);   // cout << sentence[i];
    cout << endl;
    return 0; /* indicates successful termination */
} /* end main */
```

```cpp
/* Using gets and putchar */
#include <iostream>
#include <cstdio>
#include <cstring>
using namespace

int main(){
    char sentenc
    cout << "Ent
    /* use fgets
    fgets( sente
    cout << "\nT
    int Len = strlen(sentence);
    for(int i=Len-1; i>=0; --i)
        putchar(sentence[i]);   // cout << sentence[i];
    cout << endl;
    return 0; /* indicates successful termination */
} /* end main */
```

reverse

```
Enter a line of text:
Characters and Strings

The line printed backward is:
sgnirtS dna sretcarahC
```

```cpp
/* Using gets and putchar */
#include <iostream>
#include <cstdio>
using namespace std;

int main(){
    char c; /* variable to hold character input by user*/
    char sentence[ 80 ]; /* create char array */
   int i = 0; /* initialize counter i */

    /* prompt user to enter line of text */
    puts( "Enter a line of text:" );

    /* use getchar to read each character */
    while ( ( c = getchar() ) != '\n')
        sentence[ i++ ] = c;

    sentence[ i ] = '\0'; /* terminate string */
    /* use puts to display sentence */
    puts( "\nThe line entered was:" );
    puts( sentence );
    return 0; /* indicates successful termination */
} /* end main */
```

same text

```
1  /* Using gets and putchar */
2  #include <iostream>
3  #include <cstdio>
4  using namespace std;
5
6  int main(){
7      char c; /* varia
8      char sentence[ 8
9     int i = 0; /* ini
10
11     /* prompt user t
12     puts( "Enter a l
13
14     /* use getchar t
15     while ( ( c = ge
16         sentence[ i+
17
18     sentence[ i ] = '\0'; /* terminate string */
19     /* use puts to display sentence */
20     puts( "\nThe line entered was:" );
21     puts( sentence );
22     return 0; /* indicates successful termination */
23 } /* end main */
```

same text

```
Enter a line of text:
This is a test.

The line entered was:
This is a test.
```

#include <cctype>

- toupper
- tolower
- isupper
- islower
- isalpha
- isdigit
- isalnum

```
char c = toupper('a');
cout << c;
```
Outputs: A

```
if (isupper(c))
    cout << "Is uppercase.";
else
    cout << "Is not uppercase.";
```

```
char c = '$';
if (isalpha(c))
    cout << "Is a letter.";
else
    cout << "Is not a letter.";
```
Outputs: Is not a letter.

```
if (isalnum('3') && isalnum('a'))
    cout << "Both alphanumeric.";
else
    cout << "One or more are not.";
```
Outputs: Both alphanumeric.

#include <cctype>

- toupper
- tolower
- isupper
- islower
- isalpha
- isdigit
- isalnum

```
char c = tolower ('A');
cout << c;
```
Outputs: a

```
char c = 'a';
if (islower(c))
    cout << c << " is lowercase.";
```
Outputs: a is lowercase.

```
if (isdigit('3'))
    cout << "It's a digit.";
else
    cout << "It's not a digit.";
```
Outputs: It's a digit.


Take a
BREAK

String!!!

using = / ==

```
string aString;
aString = "Hello";
```

illegal !!

using = / ==

```
if(cString1 == cString2)

...
```

illegal !!

using = / ==

```
cString = cString + "haha";
```

illegal !!

or

```
cString += "haha";
```

cin / cout

```
string School= "TNGS";
cout << School << endl;
```

```
string FirstName, LastName;
cin >> FirstName >> LastName;
cout << FirstName << ' ' << LastName << endl;
```

the length

```
char cString = "Hello";
int Len = cString.length();
cout << Len << endl;
```

all line

```
string sentence;
getline(cin, sentence);
cout << sentence << endl;
```