

C STRINGS

Problem Solving with Computers-I

C++

```
#include <iostream>
using namespace std;

int main(){
    cout<<"Hola Facebook\n";
    return 0;
}
```

const

- `const double pi = 3.141592654;`
- `int maxWithPointers1(int *x, int *y);`
- `int maxWithPointers2(const int *x, const int *y);`

What are C Strings?

- They have the type `char *`
- Almost like an array of characters, with one key difference
- Shorthand:
 - Instead of writing `char *s = {'H', 'e', 'l', 'l', 'o', '\0'};`
 - You can write `char *s = "Hello";` just like for C++ strings

Which of the following is not a C string?

A. `char mystr[5] = "John";`

B. `char mystr[] = "Mary";`

C. `const char *mystr = "Jill";`

D. `char mystr[4] = {'J', 'i', 'l', 'l'};`

C String Standard Functions #include <cstring>

- `int strlen(char *string);`
 - Returns the length not counting of `string` the null terminator
- `int strcmp(char *str1, char *str2);`
 - return 0 if `str1` and `str2` are identical (how is this different from `str1 == str2`?)
- `char* strcpy(char *dst, char *src);`
 - copy the contents of string `src` to the memory at `dst`. The caller must ensure that `dst` has enough memory to hold the data to be copied.
- `char* strcat(char *s1, char *s2);`
 - concatenate the contents of string `s2` onto the end of `s1` and returns pointer to resulting string (therefore it returns `s1`)
 - `s1` better have had enough space

Which of the following statements about the given code is FALSE?

```
char s1[5] = "Mark", s2[5] = "Jill";  
for (int i = 0; i <= 5; i++)  
    s1[i] = s2[i];  
if (s1 != s2) s1 = "Art";
```

- A. There is an out of bounds access in the for loop
- B. The entire for loop can be replaced by `s1 = s2;`
- C. In the if statement, the logic for comparing two strings is incorrect.
- D. The body of the if statement is incorrect: cannot change the base address of an array

Q3: What is the output of the following code?

```
char s1[4] = "abc", s2[4] = "EFG";
```

```
if (strcmp(s1, s2)) cout << "Hi!";
```

```
else cout << "Hey!";
```

- A. Hi!
- B. Hey!
- C. Compiler error
- D. Runtime error

C strings vs. String class: What is the output of the code?

```
string s1 = "Mark";  
string s2 = "Jill";  
for (int i = 0; i <= s1.length(); i++)  
    s2[i] = s1[i];  
if (s1 == s2) s1 = "Art";  
cout << s1 << " " << s2 << endl;
```

- A. Mark Jill
- B. Mark Mark
- C. Art Mark
- D. Compiler error
- E. Run-time error

The C++ string class methods

```
string fruit = "Apple";  
int len = fruit.length();  
int pos= fruit.find('l');  
string part= fruit.substr(1,3);  
fruit.erase(2,3);  
fruit.insert(2,"ricot");  
fruit.replace(2,5,"ple");
```

Check out ctype for checks and conversions on characters

```
fruit[0]= tolower(fruit[0]);  
isalpha(fruit[0])
```