Students:
Section 3.15 is a part of 2 assignments: CSC108 CH03.11-3.20 C3B

This assignment's due date has passed. Activity will still be recorded, but will not count towards this assignment (unless the due date is changed). See this article for more info.

Includes: CA
Due: 02/25/2025, 11:59 PM EST

3.15 Character operations

Including the ***cctype library*** via `#include <cctype>` provides access to several functions for working with characters. ctype stands for character type. The first c indicates the library is originally from the C language.

Table 3.15.1: Character functions return values.

isalpha(c)	true if alphabetic: a-z or A-Z	`isalpha('x') // true`
		`isalpha('6') // false`
		`isalpha('!') // false`
			toupper(c)	Uppercase version	`letter = toupper('a') // A`
					`letter = toupper('A') // A`
					`letter = toupper('3') // 3`

isdigit(c)	true if digit: 0-9.	`isdigit('x') // false`
		`isdigit('6') // true`
			tolower(c)	Lowercase version	`letter = tolower('A') // a`
					`letter = tolower('a') // a`
					`letter = tolower('3') // 3`

isspace(c)	true if whitespace.	`isspace(' ') // true`
		`isspace('\n') // true`
		`isspace('x') // false`			

Note: Above, false is zero, and true is non-zero.

See http://www.cplusplus.com/reference/cctype/ for a more complete list (applies to both C and C++).

Feedback?

Figure 3.15.1: State abbreviation capitalization.

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

int main() {
   char let0;
   char let1;

   cout << "Enter a two-letter state abbreviation: ";
   cin >> let0;
   cin >> let1;

   if ( ! (isalpha(let0) && isalpha(let1)) ) {
      cout << "Error: Both are not letters." << endl;
   }
   else {
      let0 = toupper(let0);
      let1 = toupper(let1);
      cout << "Capitalized: " << let0 << let1 << endl;
   }

   return 0;
}
```

```
Enter a two-letter state abbreviation: az
Capitalized: AZ
...
Enter a two-letter state abbreviation: AZ
Capitalized: AZ
...
Enter a two-letter state abbreviation: Mn
Capitalized: MN
...
Enter a two-letter state abbreviation: 5x
Error: Both are not letters.
...
Enter a two-letter state abbreviation: A8
Error: Both are not letters.
```

Feedback?

PARTICIPATION ACTIVITY | 3.15.1: Character functions.

To what value does each evaluate? userStr is "Hey #1?".

1) isalpha('7')
   - True
   - False

2) isalpha(userStr.at(0))
   - True
   - False

3) isspace(userStr.at(3))
   - True
   - False

4) isdigit(userStr.at(6))
   - True
   - False

5) toupper(userStr.at(1)) returns 'E'.
   - True
   - False

6) tolower(userStr.at(2)) yields an error because 'y' is already lower case.
   - True
   - False

7) tolower(userStr.at(6)) yields an error because '?' is not alphabetic.
   - True
   - False

8) After tolower(userStr.at(0)), userStr becomes "hey #1?"
   - True
   - False

Feedback?

CHALLENGE ACTIVITY | 3.15.1: Character operations.

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Start

Variable userString is assigned with a 3-character string read from input. If userString's second character is whitespace, output "The second character is whitespace." Otherwise, output "The second character is not whitespace." End each output with a newline.

Ex: If the input is `r -`, then the output is:

```
The second character is whitespace.
```

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

int main() {
   string userString;

   getline(cin, userString);

   /* Your code goes here */

   return 0;
}
```

1 2 3

Check Next level

Feedback?

How was this section? Provide section feedback

Activity summary for assignment: CSC108 CH03.11-3.20 C3B

24 / 24 points

Due: 02/25/2025, 11:59 PM EST

24 / 24 points submitted to BlackboardLearn

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Completion details