Activity No. 4.4	
Characters and Strings	
Course Code: CPE 007	**Program:** Computer Engineering
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Section: CPE11S1	**Date Submitted: 09/25/2025**
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6. Output	

1. Try to create a program that outputs the following?

According to islower:

p is a lowercase letter

P is not a lowercase letter

5 is not a lowercase letter

! is not a lowercase letter

Code :

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

int main() {
    char ch;

    ch = 'p';
    if (islower(ch))
        cout << ch << " is a lowercase letter" << endl;
    else
        cout << ch << " is not a lowercase letter" << endl;

    ch = 'P';
    if (islower(ch))
        cout << ch << " is a lowercase letter" << endl;
    else
        cout << ch << " is not a lowercase letter" << endl;

    ch = '5';
    if (islower(ch))
        cout << ch << " is a lowercase letter" << endl;
    else
        cout << ch << " is not a lowercase letter" << endl;

    ch = '!';
    if (islower(ch))
        cout << ch << " is a lowercase letter" << endl;
    else
        cout << ch << " is not a lowercase letter" << endl;

    return 0;
}
```

Output :

```
p is a lowercase letter
P is not a lowercase letter
5 is not a lowercase letter
! is not a lowercase letter

--------------------------------
Process exited after 1.03 seconds with return value 0
Press any key to continue . . .
```

Explanation :

- **#include <cctype>** to include islower, basically **ch = 'p'; if (islower(ch))** checks if the variable is a lowercase or not then **cout << ch << " is a lowercase letter" << endl;** will tell or print the text as a label to a lowercase in the output. then **else cout << ch << " is not a lowercase letter" << endl;** to print the text as a label to the variable that isn't lowercase then repea.

According to isupper:

D is an uppercase letter

d is not an uppercase letter

8 is not an uppercase letter

& is not an uppercase letter

Code :

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

int main() {
    char ch;

    ch = 'D';
    if (isupper(ch))
        cout << ch << " is a uppercase letter" << endl;
    else
        cout << ch << " is not a uppercase letter" << endl;

    ch = 'd';
    if (isupper(ch))
        cout << ch << " is a uppercase letter" << endl;
    else
        cout << ch << " is not a uppercase letter" << endl;

    ch = '8';
    if (isupper(ch))
        cout << ch << " is a uppercase letter" << endl;
    else
        cout << ch << " is not a uppercase letter" << endl;

    ch = '&';
    if (isupper(ch))
        cout << ch << " is a uppercase letter" << endl;
    else
        cout << ch << " is not a uppercase letter" << endl;

    return 0;
}
```

Output :

```
D is a uppercase letter
d is not a uppercase letter
8 is not a uppercase letter
& is not a uppercase letter

--------------------------------
Process exited after 1.027 seconds with return value 0
Press any key to continue . . .
```

Explanation :

basically the same as earlier **#include <cctype>** to include isupper, but this time **ch = 'D'; if (isupper(ch))** checks if the variable is an uppercase or not then **cout << ch << " is a upper letter" << endl;** will tell or print the text as a label to a uppercase in the output. then **else cout << ch << " is not an uppercase letter" << endl;** to print the text as a label to the variable that isn't lowercase then repeat.

u converted to uppercase is U

7 converted to uppercase is 7

$ converted to uppercase is $

L converted to lowercase is l

Code :

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

int main() {
    char ch;

    ch = 'u';
    cout << ch << " converted to uppercase is " << char(toupper(ch)) << endl;

    ch = '7';
    cout << ch << " converted to uppercase is " << char(toupper(ch)) << endl;

    ch = '$';
    cout << ch << " converted to uppercase is " << char(toupper(ch)) << endl;

    ch = 'L';
    cout << ch << " converted to lowercase is " << char(tolower(ch)) << endl;

    return 0;
}
```

Output :

```
u converted to uppercase is U
7 converted to uppercase is 7
$ converted to uppercase is $
L converted to lowercase is l

--------------------------------
Process exited after 1.031 seconds with return value 0
Press any key to continue . . .
```

Explanation :

- **#include <cctype>** again to include toupper then **ch = ‘’;** to assign what is being converted then **cout << ch << " converted to uppercase is "** to print it to the output then **char(toupper(ch)) << endl;** to convert the variable into uppercase then repeat, change the **char(toupper(ch))** to **char(tolower (ch))** to convert it to lower instead of uppercase.

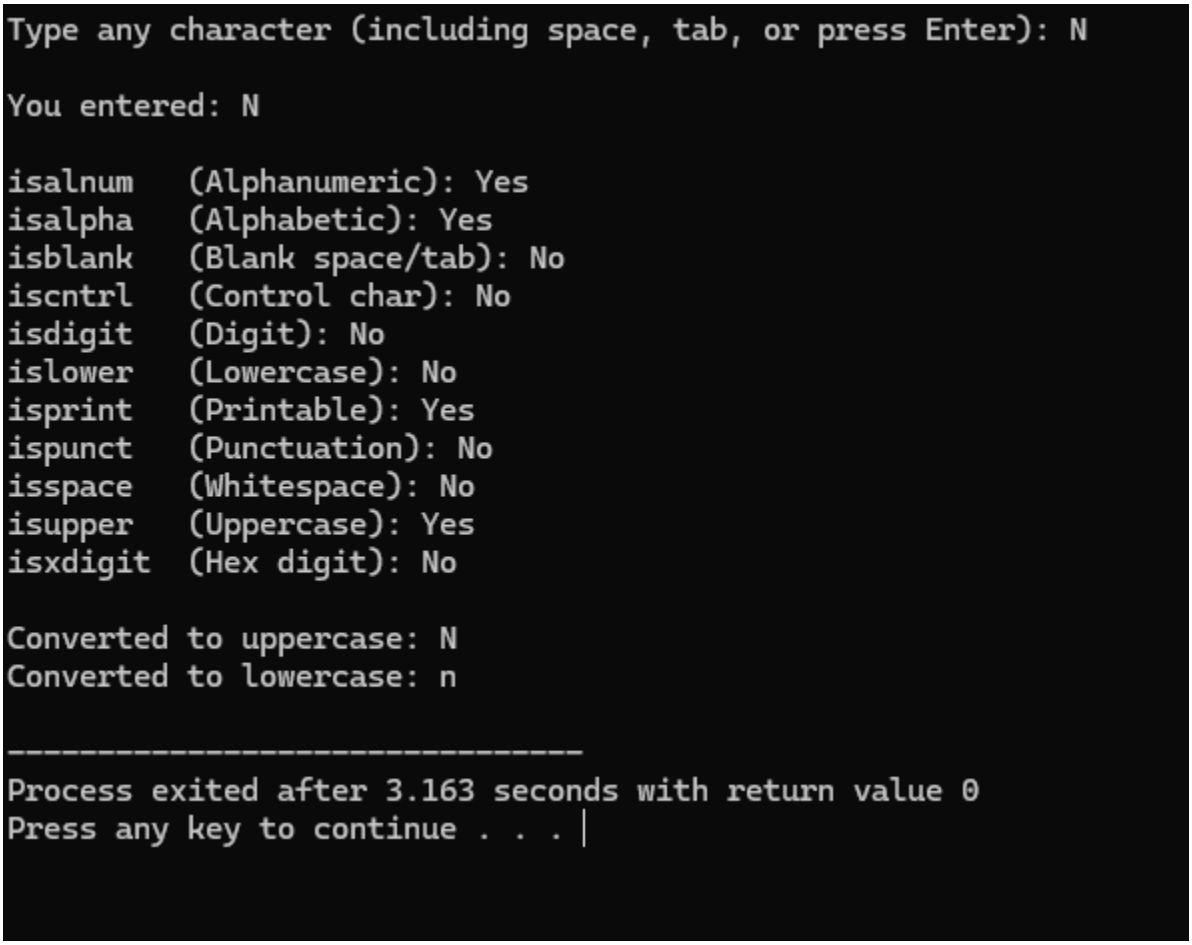
7. Supplementary Activity

2. Write a program that inputs a character from the keyboard and tests the character with each of the functions in the character handling library. (Refer to the first Table above)

Code :

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

void print_test(const char* func_name, bool result) {
    cout << func_name << ": " << (result ? "Yes" : "No") << endl;
}

int main() {
    char ch;
    cout << "Type any character (including space, tab, or press Enter): ";
    ch = cin.get();

    cout << "\nYou entered: ";
    if (ch == ' ')
        cout << "[space]";
    else if (ch == '\n')
        cout << "[newline]";
    else if (ch == '\t')
        cout << "[tab]";
    else
        cout << ch;
    cout << "\n\n";

    print_test("isalnum   (Alphanumeric)", isalnum(ch));
    print_test("isalpha   (Alphabetic)", isalpha(ch));
    print_test("isblank   (Blank space/tab)", isblank(ch));
    print_test("iscntrl   (Control char)", iscntrl(ch));
    print_test("isdigit   (Digit)", isdigit(ch));
    print_test("islower   (Lowercase)", islower(ch));
    print_test("isprint   (Printable)", isprint(ch));
    print_test("ispunct   (Punctuation)", ispunct(ch));
    print_test("isspace   (Whitespace)", isspace(ch));
    print_test("isupper   (Uppercase)", isupper(ch));
    print_test("isxdigit  (Hex digit)", isxdigit(ch));

    cout << "\nConverted to uppercase: " << (char)toupper(ch) << endl;
    cout << "Converted to lowercase: " << (char)tolower(ch) << endl;

    return 0;
}
```

Output :



Explanation :

- **void print_test(const char* func_name, bool result) {cout << func_name << ": " << (result ? "Yes" : "No") << endl;** this is used to print the result, showing if the variable entered is true or false. **cout << "Type any character (including space, tab, or press Enter): ";** to print its text.and **ch = cin.get();** to read variables. **cout << "\nYou entered: ";**

  if (ch == ' ') cout << "[space]"; else if (ch == '\n') cout << "[newline]"; else if (ch == '\t') cout << "[tab]"; else cout << ch; cout << "\n\n"; to add spaces newline and tab.

  print_test("isalnum (Alphanumeric)", isalnum(ch)); print_test("isalpha (Alphabetic)", isalpha(ch)); print_test("isblank (Blank space/tab)", isblank(ch)); print_test("iscntrl (Control char)", iscntrl(ch)); print_test("isdigit (Digit)", isdigit(ch)); print_test("islower (Lowercase)", islower(ch)); print_test("isprint (Printable)", isprint(ch)); print_test("ispunct (Punctuation)", ispunct(ch)); print_test("isspace (Whitespace)", isspace(ch)); print_test("isupper (Uppercase)", isupper(ch)); print_test("isxdigit (Hex digit)", isxdigit(ch)); to check if the variable entered is alphanumeric, alphabetic letter, blank cpace or tab, control character, a number, a lowercase letter, printable variable, a punctuation, a whitespace and an uppercase letter. then **cout << "\nConverted to uppercase: " << (char)toupper(ch) << endl;** to convert the entered variable into an upper case. **cout << "Converted to lowercase: " << (char)tolower(ch) << endl;** to convert the entered variable to lowercase.

3. Write a program that inputs 4 strings that represent integers, converts the strings to integers, sums the values and prints the total of the 4 values.

Code :

```cpp
#include <iostream>
#include <string>
#include <sstream>
using namespace std;

int main() {
    string s1, s2, s3, s4;
    cout << "Enter 4 numbers : ";
    cin >> s1 >> s2 >> s3 >> s4;

    int n1, n2, n3, n4;

    stringstream(s1) >> n1;
    stringstream(s2) >> n2;
    stringstream(s3) >> n3;
    stringstream(s4) >> n4;

    int total = n1 + n2 + n3 + n4;

    cout << "The total of the 4 values is: " << total << endl;

    return 0;
}
```

Output :

```
Enter 4 numbers : 3762, 893, 109, 383
The total of the 4 values is: 5147

--------------------------------
Process exited after 14.48 seconds with return value 0
Press any key to continue . . .
```

Explanation :

- so basically we use **#include <iostream>, #include <string> #include <sstream>, using namespace std;**, as a header to include function, string, for summarizing std::cout, and to include stringstream. For the body of this program we will need to use **string s1, s2, s3, s4; cout << "Enter 4 numbers : "; cin >> s1 >> s2 >> s3 >> s4;** is for storage, to hold the values, to print the text in the output and to assign its variable. using **int n1, n2, n3, n4;** this will store the converted value later. **stringstream(s1) >> n1; stringstream(s2) >> n2; stringstream(s3) >> n3; stringstream(s4) >> n4;** to convert the values in s1, s2, s3, s4 to , **n1, n2, n3, n4. int total = n1 + n2 + n3 + n4;** to sum or add everything up **cout << "The total of the 4 values is: " << total << endl;** to print the text and sum.

8. Conclusion

- By doing this activity it really made me feel insecure the way I thought I knew coding only that much, it surprised me how much I still need to learn. This activity for me is really hard especially with the 13 functions. This activity helped me understand Characters and string, the process of checking if it's an alphabet, a number or letter, how to properly use toupper and tolower. For me turning a variable to upper and lower is easy but doing the 13 functions of checking, not doing it is very hard for me. If I didn't have this much time I would probably be unable to do it. I think I did well on everything except number two, both number one and number 3 only took me 1 day to do but number 3 took me a while.This activity really challenged and helped me improve my critical thinking and coding skills.