Hands-on Activity 4.4	
Characters and Strings	
Course Code: CPE007	**Program:** Computer Engineering
Course Title: Programming Logic and Design	**Date Performed:9/23/25**
Section:CPE11S1	**Date Submitted:9/23/25**
Name(s): Niel Vincent B. Condino	**Instructor: Engr. Jimlord M. Quejado**

6. Output

A.

Code:

```
#include <iostream>
#include <string>
#include <cctype>

int main(){
    char ch[5] = "pP5!";

    for (int i = 0; i < 4; i++){
        if (islower(ch[i])){
            std::cout << ch[i] << " is a lowercase letter\n";
        }
        else{
            std::cout << ch[i] << " is not a lowercase letter\n";
        }
    }

    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 0.3765 seconds with return value 0
Press any key to continue . . .
```

Analysis:

First inside the function, a character array named ch that has a size of 5 that has a string value “pP5!”. Next the for loop cycles 4 times.Inside this loop, it checks for each of the values of the array ch if the character is lowercase. If it is true then it prints “(character) is a lower case letter” else it will print “(character) is not a lowercase letter”. Lastly it returns 0.

B.
Code:

```cpp
#include <iostream>
#include <string>
#include <cctype>

int main(){
    char ch[5] = "Dd8&";

    for (int i = 0; i < 4; i++){
        if (isupper(ch[i])){
            std::cout << ch[i] << " is an uppercase letter\n";
        }
        else{
            std::cout << ch[i] << " is not an uppercase letter\n";
        }
    }
    return 0;
}
```

Output:

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

--------------------------------
Process exited after 0.3877 seconds with return value 0
Press any key to continue . . .
```

Analysis
First inside the function, a character array named ch that has a size of 5 that has the string value “Dd8&”. Next the for loop cycles 4 times.Inside this loop, it checks for each of the values of the array ch if the character is uppercase. If it is true then it prints “(character) is an uppercase letter” else it will print “(character) is not an uppercase letter”. Lastly it returns 0.

C.
Code:

```cpp
#include <iostream>
#include <string>
#include <cctype>

int main(){
    char ch[5] = "u7$L";

    for (int i = 0; i < 4; i++){
        if (isupper(ch[i])){
            char otherch = tolower(ch[i]);
            std::cout << ch[i] << " converted to lowercase is " << otherch << std::endl;
        }
        else{
            char otherch = toupper(ch[i]);
            std::cout << ch[i] << " converted to uppercase is " << otherch << std::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 0.3952 seconds with return value 0
Press any key to continue . . .
```

Analysis:
First inside the function, a character array named ch that has a size of 5 that has the string value “u7$L”. Next the for loop cycles 4 times.Inside this loop, it checks for each of the values of the array ch if the character is uppercase. If it is then it initializes a character named “otherch” that uses the function tolower(t*hevalue*). Then it prints “(value) converted to lowercase is (otherch)“. If it is not uppercase then it initializes a character named “otherch” that uses the function toupper(t*hevalue*). Then it prints “(value) converted to uppercase is (otherch)“.

7. Supplementary Activity

2.

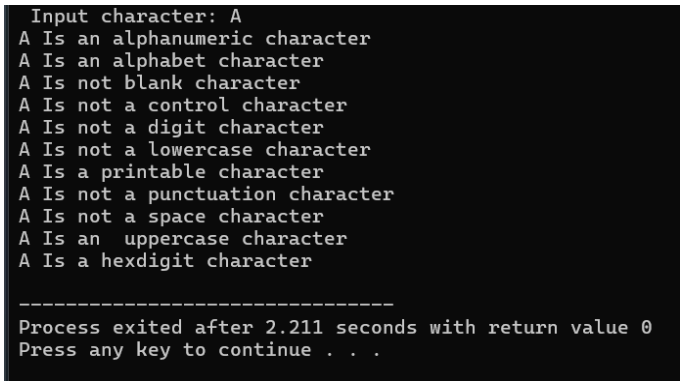
Code:

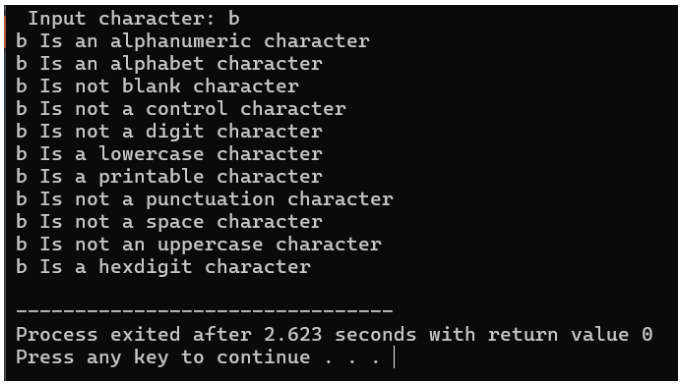
```cpp
#include <iostream>
#include <cstring>
#include <cctype>

using namespace std;
int main(){
    char input;

    cout << " Input character: ";
    input = cin.get();

    if (isalnum(input)){
        cout << input << " Is an alphanumeric character\n";
    }
    else {
        cout << input << " Is not an alphanumeric character\n";
    }

    if (isalpha(input)){
        cout << input << " Is an alphabet character\n";
    }
    else {
        cout << input << " Is not an alphabet character\n";
    }

    if (isblank(input)){
        cout << input << " Is a blank character\n";
    }
    else {
        cout << input << " Is not blank character\n";
    }

    if (iscntrl(input)){
        cout << input << " Is a control character\n";
    }
```

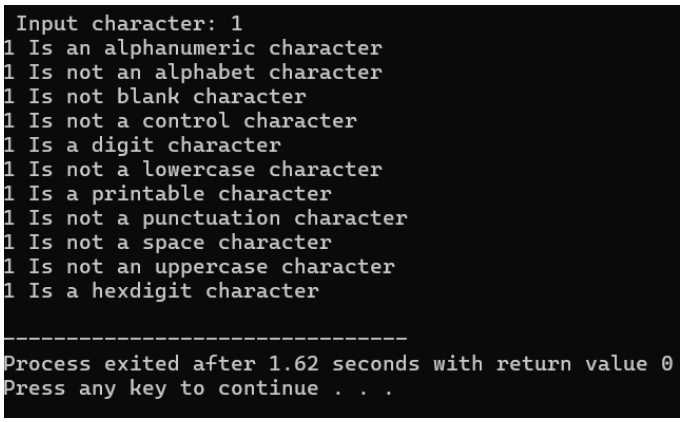
```cpp
    else {
        cout << input << " Is not a control character\n";
    }

    if (isdigit(input)){
        cout << input << " Is a digit character\n";
    }
    else {
        cout << input << " Is not a digit character\n";
    }

    if (islower(input)){
        cout << input << " Is a lowercase character\n";
    }
    else {
        cout << input << " Is not a lowercase character\n";
    }

    if (isprint(input)){
        cout << input << " Is a printable character\n";
    }
    else {
        cout << input << " Is not a printable character\n";
    }

    if (ispunct(input)){
        cout << input << " Is a punctuation character\n";
    }
    else {
        cout << input << " Is not a punctuation character\n";
    }

    if (isspace(input)){
        cout << input << " Is a space character\n";
    }
```

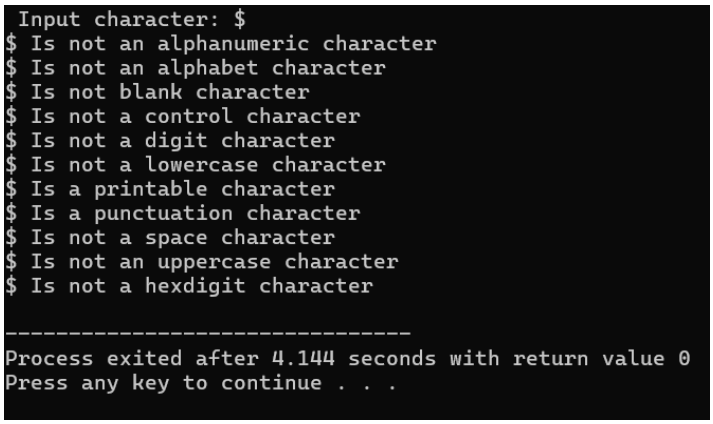
```cpp
    else {
        cout << input << " Is not a space character\n";
    }

    if (isupper(input)){
        cout << input << " Is an  uppercase character\n";
    }
    else {
        cout << input << " Is not an uppercase character\n";
    }

    if (isxdigit(input)){
        cout << input << " Is a hexdigit character\n";
    }
    else {
        cout << input << " Is not a hexdigit character\n";
    }

    return 0;
}
```

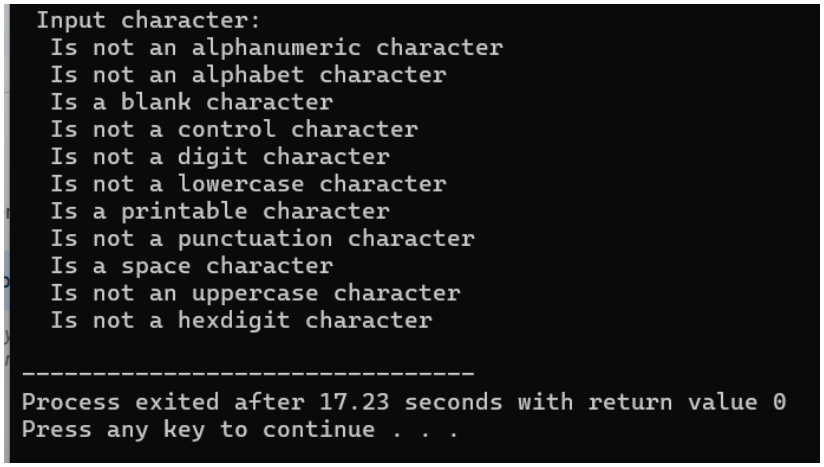
Output:

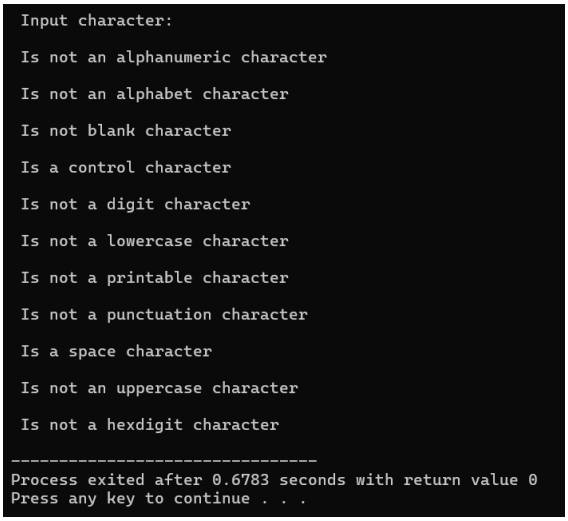












Analysis:

First inside the function, it waits for a character input that will be stored inside the character variable “input” using cin.get() in order to store spaces and control characters. The first if statement checks if the inputted character is an alphanumeric character.The next checks if it is an alphabet character.The next one checks if it is a blank character.The other one checks if it is a control character. After this, the next if statement checks if it is a digit character. The next one checks if it is a lowercase character. The next one checks if it is a printable character. The next one checks if it is a punctuation character. The next one checks if it is a space character. The next if statement checks if it is an uppercase character. The last if statement checks if it is a hex digit character. These “if” statements print out “(*the character*) is a/an (*The characteristic being checked for example ‘alphanumeric character’*)” if the statement is true. If not, they print out “(*the character*) is not a/an (*The characteristic being checked*). Lastly it returns 0.

3.

Code:

```cpp
#include <iostream>
#include <cstring>
#include <cctype>

using namespace std;

int main(){
    const int cycle = 4;
    string num[cycle];
    int sum;

    for (int i = 0; i < cycle; i++){
        cout << "Input number:";
        cin >> num[i];
    }

    for (int i = 0; i < cycle;i++){
        sum += stoi(num[i]);
    }

    cout << "Sum is " << sum;
    return 0;
}
```

```
Input number:7
Input number:5
Input number:12
Input number:3
Sum is 27
--------------------------------
Process exited after 11.99 seconds with return value 0
Press any key to continue . . .
```

Analysis:
First inside the function, it initializes a constant integer named cycle that has a value of 4. Then it initializes a string array named num with a size of the value of the “cycle” variable. Below it, it initializes the integer variable named sum. After that is a for loop that cycles 4 times. Inside the first “for” loop it prints “Input number:” and waits for an inputted number and stores inside the array “num” After this loop is another for loop. What this loop does is that it converts the string into an integer and then adds them to the variable sum. After that it prints” Sum is (sum’s value). Lastly it returns zero.

8. Conclusion

I learned more functions pertaining to characters and strings, like how a string is an array of characters. I also learned of different functions like isalphanum() or isdigit() for detecting if a character is a letter, digit, etc..The output activities are pretty simple since there are already examples above that show how it is done. I just based my code on how the examples did it. All I had to do was to change some of the variables on the first 2. For the last one, it was simply running each element on an if else statement and converting them using the functions taught.The first supplementary is easy to do but pretty long to code. It needs 10 if else statements for checking each criteria. The second activity required me to search on the internet how to make strings into integers. It just needs a function “stoi()” to achieve this effect. From there it is simple to add them up. Overall, I think I did alright at this activity although things like turning string into integers are still very unknown to me. Searching things like that could be my area of improvement.

9. Assessment Rubric