Activity No. 4.2	
Hands-on Activity 4.2: Arrays	
Course Code: CPE007	Program: Computer Engineering
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6. Output	

Example of initializing an array:

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

int main() {
    int n[10];

    // Initialize array elements to 0
    for (int i = 0; i < 10; i++) {
        n[i] = 0;
    }

    cout << "Element    Value" << endl;

    // Print index and value
    for (int i = 0; i < 10; i++) {
        cout << "    " << i << "        " << n[i] << endl;
    }

    return 0;
}
```
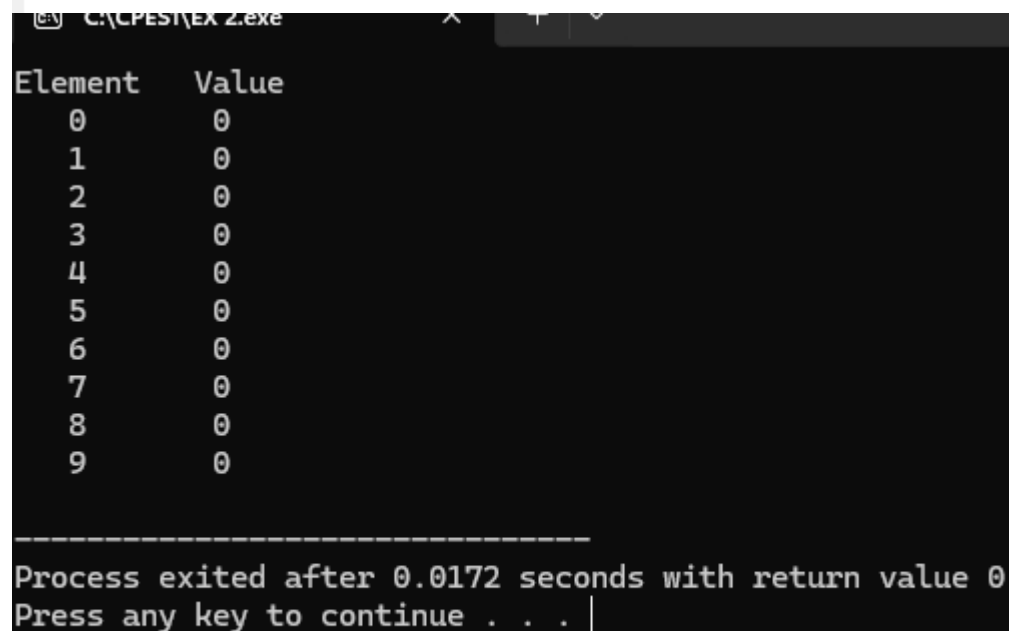
```
C:\CPEST\EX 2.exe                    X

Element    Value
   0         0
   1         0
   2         0
   3         0
   4         0
   5         0
   6         0
   7         0
   8         0
   9         0


----------------------------------
Process exited after 0.0172 seconds with return value 0
Press any key to continue . . . |
```

In this array, for loop is used performed in this coding, it is used to shorten the code with the variable i going to 0-9. It declares an integer array n of size 10. Prints a header of "Element and Value".

Example of initializing an array with a declaration:

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

int main() {
    int n[10] = {32, 27, 64, 18, 95, 14, 90, 70, 60, 37};

    cout << "Element  Value" << endl;

    for (int i = 0; i < 10; i++) {
        cout << "    " << i << "       " << n[i] << endl;
    }

    return 0;
}
```

```
Element  Value
   0       32
   1       27
   2       64
   3       18
   4       95
   5       14
   6       90
   7       70
   8       60
   9       37

--------------------------------
Process exited after 0.01885 seconds with return value 0
Press any key to continue . . . |
```

In this array, compared to the one before its Value has value of numbers, which were declared as 32, 27, 64, 18, 1 95, 14, 90, 70, 60, and 37. Also, like no. 1, Element used 'for loop' for its contents, ranging from 0 -9 and prints the header as Element and Value.

Example of computing sum of elements of the array:

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

#define SIZE 12

int main() {
    int a[SIZE] = {1, 3, 5, 4, 7, 2, 99, 16, 45, 67, 89, 45};
    int total = 0;

    for (int i = 0; i < SIZE; i++) {
        total += a[i];
    }

    cout << "Total of array element values is " << total << endl;
    return 0;
}
```

```
Total of array element values is 383

--------------------------------
Process exited after 0.01302 seconds with return value 0
Press any key to continue . . .
```

In this array, it is used for computing sum of element values. Then again, the code used for loop to shorten the code, using variable of I, it should be less than the given integer and equals to zero, after than use a code to add everything "+=". Lastly, print "Total of array element values is ".

7. Supplementary Activity

1. Given the size of an array which is 10, and the elements such as 19, 3, 15, 7, 11, 9, 13, 5, 17 and 1, create a program that will display the following output:

```
Element   Value   Histogram

   0         19    *******************

   1          3    ***

   2         15    ***************

   3          7    *******

   4         11    ************

   5          9    *********

   6         13    *************

   7          5    *****
```

```
       8                17      *****************

       9                 1      *
0
```

```cpp
#include <iostream>
#include <iomanip>

int main() {
    const int SIZE = 10;
    int arr[SIZE] = {19, 3, 15, 7, 11, 9, 13, 5, 17, 1};

    std::cout << std::setw(8) << "Element" << std::setw(8) << "Value" << "   Histogram" << std::endl;

    for (int i = 0; i < SIZE; ++i) {
        std::cout << std::setw(8) << i << std::setw(8) << arr[i] << "   ";
        for (int j = 0; j < arr[i]; ++j) {
            std::cout << "*";
        }
        std::cout << std::endl;
    }

    return 0;
}
```

```
Element   Value   Histogram
      0      19    *******************
      1       3    ***
      2      15    ***************
      3       7    *******
      4      11    ***********
      5       9    *********
      6      13    *************
      7       5    *****
      8      17    *****************
      9       1    *


---------------------------------
Process exited after 0.3215 seconds with return value 0
Press any key to continue . . . |
```

In this array, there are three columns to perform and match the value to the historgram, to perform that, setw are used.

2. Given the following data, create a program that summarizes the number of each type. Use array responses for the 40 element array of student's responses. Such as

int responses[RESPONSE_SIZE] = { 1, 2, 6, 4, 8, 5, 9, 7, 8, 10, 1, 6, 3, 8, 6, 10, 3, 8, 2, 7, 6, 5, 7, 6, 8, 6, 7, 5, 6, 6, 5, 6, 7, 5, 6, 4, 8, 6, 8, 10

```cpp
#include <iostream>

int main() {

    const int RESPONSE_SIZE = 40;
    int responses[RESPONSE_SIZE] = {1, 2, 6, 4, 8, 5, 9, 7, 8, 10, 1, 6, 3, 8, 6, 10, 3, 8, 2,
    7, 6, 5, 7, 6, 8, 6, 7, 5, 6, 6, 5, 6, 7, 5, 6, 4, 8, 6, 8, 10 };

    int frequency[11] = {0};

    for (int i = 0; i < RESPONSE_SIZE; ++i) {
        int current = responses[i];

        if (current >= 1 && current <= 10) {
            frequency[current]++;
        }
    }

    std::cout << "Response Summary:" << std::endl;

    for (int i = 1; i <= 10; ++i) {

        std::cout << "Response " << i << ": " << frequency[i] << " students" << std::endl;
    }

    return 0;
}
```

```
Response Summary:
Response 1: 2 students
Response 2: 2 students
Response 3: 2 students
Response 4: 2 students
Response 5: 5 students
Response 6: 11 students
Response 7: 5 students
Response 8: 7 students
Response 9: 1 students
Response 10: 3 students


--------------------------------
Process exited after 0.2719 seconds with return value 0
Press any key to continue . . . |
```

In this array, to know know the code will know have to decision wether ifs a match or not, use the for loop and then, bind values using &&.

8. Conclusion
Even if I'm not accustomed to using array, I don't my best with understanding array, it can be just a simple array itself, it can be use to sum elements, it can be used to match one's values and etc. To do this, I must understand the concept and apply them in coding. I must understand for loop, the various prints and also setw.
9. Assessment Rubric