Name: _____ Student ID: _____ Date: _____

Worksheet 10

Array

Objectives

After completing this worksheet, you should be able to

- Declare array of elements
- Understand the usage of 1-dimensional array
- Use the concept of array to solve complicated problem

1. Open a new project, write program 10.1.

```
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[ ])
{
    int  x[5];                    // Declare an array of integer for storing  5 elements of integer values
    int  total;
    printf("Enter Value 1. : "); scanf("%d",&x[0]);          // The usage of each element of array
    printf("Enter Value 2. : "); scanf("%d",&x[1]);
    printf("Enter Value 3. : "); scanf("%d",&x[2]);
    printf("Enter Value 4. : "); scanf("%d",&x[3]);
    printf("Enter Value 5. : "); scanf("%d",&x[4]);
    total  =  x[0] + x[1] + x[2] + x[3] + x[4];
    printf("Total is %d\n",total);

    return  0;
}
```

Program 10.1

2. Run and enter the values shown in Table10.1 to the program. Then record the results in the table.

Table 10.1

Input of the program					output
X[0]	X[1]	X[2]	X[3]	X[4]	
5	3	0	10	1	
25	-10	2	7	4	

3. Open a new project, write program 10.2.

```
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[ ])
{
    int  x[5],  i,  total = 0;
                    // The varaible i is used as an index of the array
    for(i = 0; i <= 4; i++) {
    printf("Enter value %d : " ,i+1);
    scanf("%d",&x[i]);                    // The for statement is used for accessing the array
    total  =  total + x[i];
    }
    printf("Total is %d\n",total);

    return  0;
}
```

Program 10.2

Run the program and enter the values shown in Table 10.1. Observe the results. What does the program do? Are there difference between Program 10.1 and 10.2 _____

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Modify Program 10.2 for accepting 10 floating-point values from the keyboard. Then calculate and display an average value of these 10 values.

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4. Open a new project, write program 10.3.

```
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[ ]) {
    int  x[5]  =  { 11, 22, 33, 44, 55 };    // Initialize the array  x[0] = 11, x[1] = 22, ..., x[4] = 55
    int  i;
    for(i = 0; i <= 4; i++)
    x[i]  =  x[i] * 2;                // Multiply [x] by 2 and store the result in  [x]  -->  [x]  =  [x]  * 2
    for(i = 0; i <= 4; i++)
    printf("x[%d]  =  %d\n", i, x[i]);                // Display the values in array x
    return  0;
}
```

Program 10.3

Run the program and observe the results. Then record the results.

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Suppose that we have 2 arrays of integer and initialize these arrays as shown below. Write a program in C that exchanges the values of these 2 arrays.

```
int  x[5]  =  { 0,  1,  2,  3,  4 };
int  y[5]  =  { 9,  8,  7,  6,  5 };
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5. Open a new project, write program 10.4.

```
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[ ])
{
    int  x[5],  i,  max;
    for(i = 0; i <= 4; i++) {
    printf("Enter value %d : " ,i+1);
    scanf("%d",&x[i]);
    }
    max =  x[0];                          // Set the max variable to the first value of array -> x[0]
    for(i = 1; i <= 4; i++) {
    if (max < x[i])
            max  =  x[i];
    }
    printf("The maximum value in the array is %d\n" ,max);

    return  0;
}
```

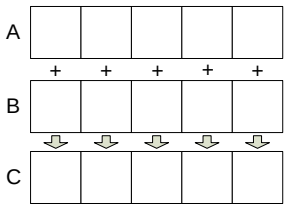
Program 10.4

Run the program and enter the values shown in Table 10.2 to the program. Then observe and record the results in the table.

Input of the program					output
X[0]	X[1]	X[2]	X[3]	X[4]	
5	3	0	10	1	
-25	-10	2	7	4	

Table 10.2

6. Write a program to accept 5 integer values and store in 2 arrays. Then add these 2 arrays together and store the results in the third array.



Name: _____ Student ID: _____ Date: _____

Homework 10

1. Write a program that accepts 10 numbers and find out the maximum, minimum, summation and average of them.

2. Write a program to sort 10 numbers in ascending order. The displayed results will show the values in array both before and after sorting.