3 Exercises

1. Write a program that will display the calculator menu. The program will prompt the user to choose the operation choice(from 1 to 5). Then it asks the user to input two integer values for the calculation. See the sample below.

```
==================================================
                  MENU
==================================================
      1.Add
      2.Subtract
      3.Multiply
      4.Divide
      5.Modulus
Enter your choice(1~5):1
Enter your integer numbers:2 6

Result:8
Press y or Y to continue:y
Enter your choice(1~5):3
Enter your integer numbers:6 9

Result:54
Press y or Y to continue:Y
Enter your choice(1~5):5
Enter your integer numbers:22 3

Result:1
Press y or Y to continue:n

Process finished with exit code 0
```

The program also asks the user to decide whether he/she wants to continue the operation. If he/she inputs ‘y’, the program will prompt the user to choose the operation gain. Otherwise, the program will terminate.

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

void Displaymenu()
{
    // complete code here
}

int Add(int a, int b)
{
  // complete code here
}

int Substract(int a, int b)
{
   // complete code here
}

int Multiply(int a, int b)
{
    // complete code here
}

int Divide(int a, int b)
{
      //complete code here
}

int Modulus(int a, int b)
{
   // complete code here
}
```

```cpp
int main()
{
   //show menu
   Displaymenu();
   int YourChoice;
   int a, b;
   char confirm;
   do
   {
      cout << "Enter your choice(1~5):";
      cin >> YourChoice;
      cout << "Enter your integer numbers:";
      cin >> a >> b;
      cout << "\n";
      switch(YourChoice)
      {
           // complete code here

      }
      cout << "Press y or Y to continue:";
      cin >> confirm;
   }while(confirm == 'y' || confirm == 'Y');

   return 0;
}
```

2. Here is a structure declaration:

```
struct box
{
char maker[40];
float height;
float width;
float length;
float volume;
};
```

(1) Write a function that passes a box structure by value and that display the value of each member.

(2) Write a function that passes the address of a box structure and that sets the volume member to the product of the other three dimensions.

(3) Write a simple program that uses these two function.

A sample run might look like this:

```
Before setting volume:
Maker: Jack Smith
Height: 3.4
Width: 4.5
Length: 5.6
Volume: 0
After setting volume:
Maker: Jack Smith
Height: 3.4
Width: 4.5
Length: 5.6
Volume: 85.68
```

3. Write a program that uses the following functions:

- **int Fill_array(double arr[], int size)** prompts the user to enter double values to be entered in the array. It ceases taking input when the array is full or when the user enters non-numeric input, and it returns the actual number of entries.
- **void Show_array(double *arr, int size)** displays the contents of the array.
- **void Reverse_array(double *arr, int size)** is a recursive function, it reverses the order of the values stored in the array.

The program should use these functions to fill an array, show the array, reverse the array; revers all except the first and last element of the array, and then show the array. A sample run might look like this:

Output:

```
Enter the size of an array:6
Enter value #1: 1
Enter value #2: 2
Enter value #3: 3
Enter value #4: 4
Enter value #5: 5
Enter value #6: 6
1 2 3 4 5 6
6 5 4 3 2 1
6 2 3 4 5 1
```