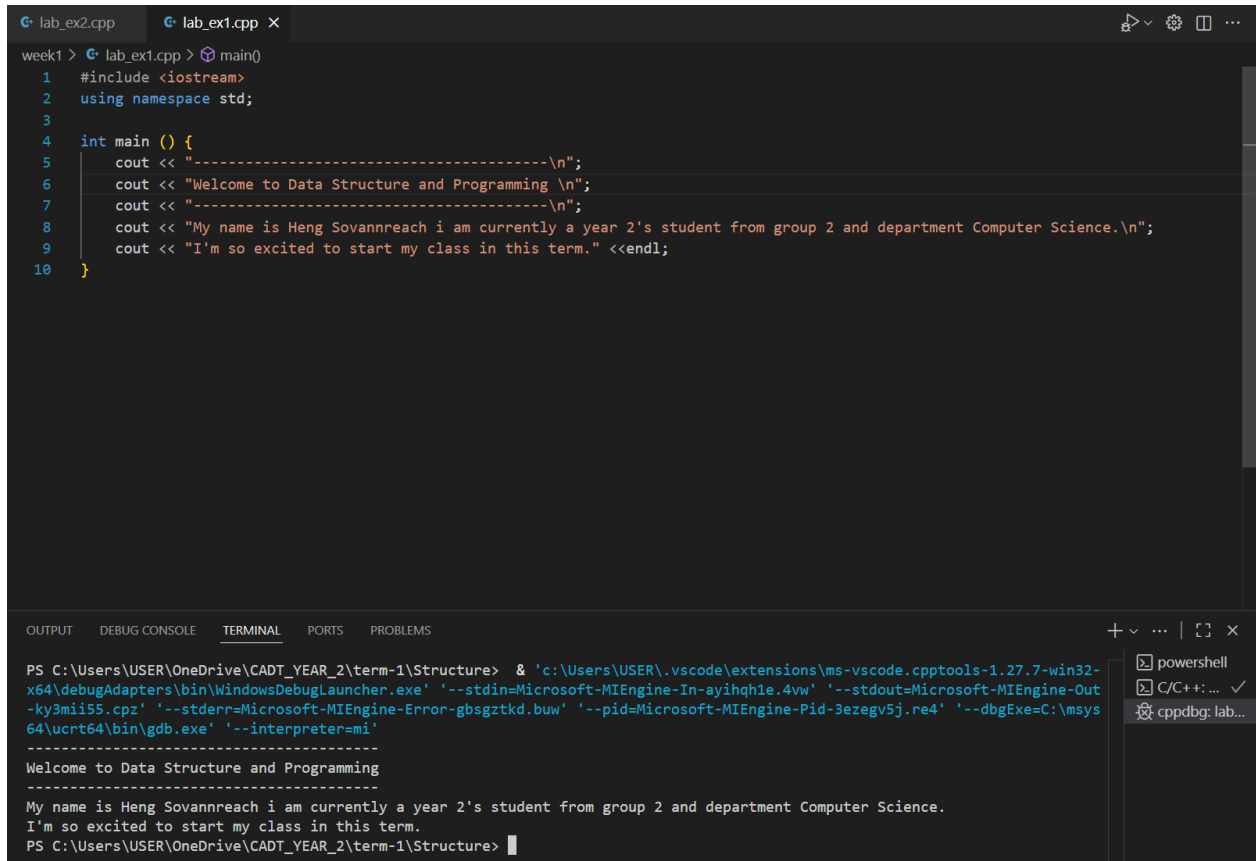


# Lab Practice 1

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## Exercise1



The image shows a Visual Studio Code editor window with two tabs: 'lab\_ex2.cpp' and 'lab\_ex1.cpp'. The 'lab\_ex1.cpp' tab is active, displaying a C++ program. The program includes `<iostream>` and uses the `std` namespace. The `main` function prints a series of messages: a separator line, a welcome message, another separator line, a personal introduction, and a final separator line. Below the code editor, the 'TERMINAL' panel is open, showing the command prompt output. The output matches the program's output, displaying the welcome message, the personal introduction, and the final separator line. The terminal also shows the command used to run the program, which includes the path to the C++ compiler and the program file.

```
week1 > G+ lab_ex1.cpp > main()
1  #include <iostream>
2  using namespace std;
3
4  int main () {
5      cout << "-----\n";
6      cout << "Welcome to Data Structure and Programming \n";
7      cout << "-----\n";
8      cout << "My name is Heng Sovannreach i am currently a year 2's student from group 2 and department Computer Science.\n";
9      cout << "I'm so excited to start my class in this term." <<endl;
10 }
```

OUTPUT DEBUG CONSOLE TERMINAL PORTS PROBLEMS

```
PS C:\Users\USER\OneDrive\CADT_YEAR_2\term-1\Structure> & 'c:\Users\USER\.vscode\extensions\ms-vscode.cpptools-1.27.7-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-ayihq1e.4vw' '--stdout=Microsoft-MIEngine-Out-ky3mii55.cpz' '--stderr=Microsoft-MIEngine-Error-gbsgztkd.buw' '--pid=Microsoft-MIEngine-Pid-3ezegv5j.re4' '--dbgExe=C:\msys64\ucrt64\bin\gdb.exe' '--interpreter=mi'
-----
Welcome to Data Structure and Programming
-----
My name is Heng Sovannreach i am currently a year 2's student from group 2 and department Computer Science.
I'm so excited to start my class in this term.
PS C:\Users\USER\OneDrive\CADT_YEAR_2\term-1\Structure>
```

## Exercise 2

```
lab_ex2.cpp X
week1 > lab_ex2.cpp > main()
1  #include <iostream>
2  using namespace std;
3  int main () {
4      int array[10];
5      int even = 0;
6      int numEven[0];
7      for (int i = 0 ; i<10; i++){
8          cout<<"input number: ";
9          cin>>array[i];
10     }
11     cout <<"Array :";
12     for(int i = 0 ; i<10 ; i++) {
13         cout <<array[i]<<" ";
14     }
15     cout <<"\nReverse Array :";
16     for (int i=9 ; i>=0 ; i--){
17         cout<<array[i]<<" ";
18     }
19     cout<<"\nEven Number :";
20     for ( int i = 0 ; i <10 ; i++){
21         if( array[i] % 2 == 0){
22             even++;
23             numEven[i] = array[i];
24             cout<<numEven[i]<<" ";
25         }
26     }
27 }
```

OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    PROBLEMS

```
input number: 4
input number: 5
input number: 6
input number: 7
input number: 8
input number: 9
input number: 10
Array :1 2 3 4 5 6 7 8 9 10
Reverse Array :10 9 8 7 6 5 4 3 2 1
Even Number :2 4 6 8 10
PS C:\Users\USER\OneDrive\CADT YEAR 2\term-1\Structure>
```

### Exercise 3

```
lab_ex3.cpp X
week1 > lab_ex3.cpp > ...
1  #include <iostream>
2  using namespace std;
3  int main () {
4      int a[] = {10,20,0,-5,9,7};
5      int min = a[0];
6      int max = a[0];
7      int size = sizeof(a) / sizeof(a[0]);
8      cout << "Array : ";
9      for (int i = 0 ; i < size ; i++){
10         cout << " " << a[i];
11         if ( a[i] < min){
12             min = a[i];
13         }
14         if (a[i] > max){
15             max = a[i];
16         }
17     }
18
19     cout << "\nmin is" << min << endl;
20     cout << "max is" << max << endl;
21 }
```

OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    PROBLEMS

Open file in editor (ctrl + click)

```
PS C:\Users\USER\OneDrive\CADT_YEAR_2\term-1\Structure> & 'c:\Users\USER\.vscode\extensions\ms-vscode.cpptools-1.2
x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-0zm43j21.r2n' '--stdout=Microsoft-MI
-ymzbrkfi.efo' '--stderr=Microsoft-MIEngine-Error-tp4oo2l.chq' '--pid=Microsoft-MIEngine-Pid-fdewtjw5.1ds' '--dbg
64\ucrt64\bin\gdb.exe' '--interpreter=mi'
Array : 10 20 0 -5 9 7
min is-5
max is20
PS C:\Users\USER\OneDrive\CADT_YEAR_2\term-1\Structure>
```

#### Exercise 4

```
lab_ex4.cpp X
week1 > lab_ex4.cpp > ...
1  #include<iostream>
2  using namespace std;
3  float sum_of_number(int n){
4      return n*(n+1)/2;
5  }
6  float Sum_of_squares(int n){
7      return n*(n+1)*(2*n+1)/6;
8  }
9  float Harmonic_number(int n){
10     float sum = 0;
11     for (int i = 1 ; i < n ; i++){
12         sum += (float)1/i;
13     }
14     return sum;
15 }
16
17 }
18 int main () {
19     cout<<sum_of_number(10)<<endl;
20     cout<<Sum_of_squares(7)<<endl;
21     cout<<Harmonic_number(3)<<endl;
22 }
23

OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  PROBLEMS

PS C:\Users\USER\OneDrive\CADT_YEAR_2\term-1\Structure> & 'c:\Users\USER\.vscode\extensions\ms-vscode.cpptools-1
x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-g1lag1ki.nsh' '--stdout=Microsoft-I
-11slrkgd.lnm' '--stderr=Microsoft-MIEngine-Error-wavmnrds.eta' '--pid=Microsoft-MIEngine-Pid-1gkoyt03.vnr' '--db
64\ucrt64\bin\gdb.exe' '--interpreter=mi'
55
140
1.5
PS C:\Users\USER\OneDrive\CADT_YEAR_2\term-1\Structure>
```

Exercise 5

lab\_ex5.cpp X launch.json test.cpp

week1 > lab\_ex5.cpp > main()

```
1  #include <iostream>
2  using namespace std;
3  int main () {
4      int array[3];
5      int max =array[0];
6      int sum = 0;
7      for(int i = 0 ; i<3 ;i++){
8          cout<<"input number: ";
9          cin>>array[i];
10     }
11     for (int i = 0 ; i < 3 ; i++){
12         sum += array[i];
13     }
14     float average =(float)sum / 3;
15     cout <<"Average of array : "<< average << endl;
16     cout <<"Array :";
17     for (int i = 0 ; i <3 ; i++){
18         cout<< array[i] << " ";
19     }
20     for (int i = 0 ; i<3 ; i++){
21         if (array[i] > max){
22             max = array[i];
23         }
24     }
25     cout <<"\nmax number is : "<< max <<endl;
26     cout <<"array at position 3 is "<< array[2]<<endl;
27     cout <<"Reverse Array :";
28     for (int i=2 ; i>=0 ; i--){
29         cout<<array[i]<<" ";
30     }
31 }
```

OUTPUT DEBUG CONSOLE TERMINAL PORTS PROBLEMS

```
Error-xrbhenle.a35' '--pid=Microsoft-MIEngine-Pid-4ov3lhxd.zea' '--dbgExe=C:\msys64\ucrt64\bin\gdb.exe' '--interpreter=mi'
input number: 2
input number: 3
input number: 4
Average of array :3
Array :2 3 4
max number is : 4
array at position 3 is 4
Reverse Array :4 3 2
```