

## Supplement V.A: Input/Output Redirection

For Introduction to C++ Programming  
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The Unix/Linux/Mac OS X and Windows operating systems support input and output redirection.

Normally the user enters input values from the keyboard. For example, Listing 1 prompts the user to enter three integers:

Listing 1 EnterIntegers.cpp

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

int main()
{
    // Prompt the user to enter an integer
    cout << "Enter three integers: ";
    int n1, n2, n3;
    cin >> n1 >> n2 >> n3;

    cout << "You entered " << n1 << " " << n2 << " " << n3 << endl;

    return 0;
}
```

**<output>**

Enter three integers: 2 4 1

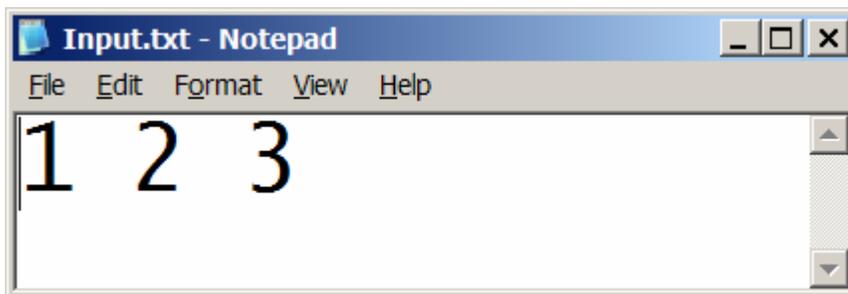
You entered 2 4 1

**<end of output>**

You can store the input values in a text file and use the following input redirection command to read data from file:

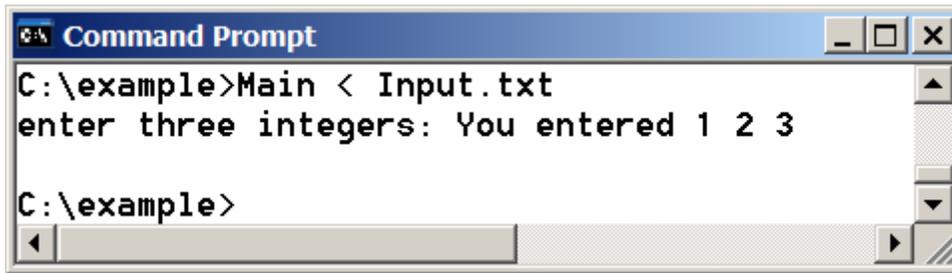
```
C:\example>EnterIntegers < Input.txt
```

Suppose Input.txt contains 1 2 3, as shown in Figure 1. The output is shown in Figure 2.



**Figure 1**

*The file contains integer values.*



**Figure 2**

*The input redirection command < reads data from a file instead of from the keyboard.*

Input redirection automatically reads input from a file. You can also use the output redirection to write data to a file instead to the console by simply using the following command:

```
C:\example>EnterIntegers < Input.txt > Output.txt
```

This command redirects the output to Output.txt. Figure 3 shows the contents in Output.txt.



**Figure 3**

*The output redirection command > writes data to a file instead of the console.*

The output redirection > writes data to a file. If the file already exists, the previous data in the file is replaced by the new data. You can use the >> operator to append new data to the existing file. For example, the following command appends the output to Output.txt.

```
C:\example>EnterIntegers < Input.txt >> Output.txt
```



```
C:\example>Main < Input.txt
enter three integers: You entered 1 2 3
C:\example>
```

**Figure 4**

*The output redirection command  $\geq$  writes data to a file instead of the console.*