

CIS 3303 Supplement - Justification¹

When you specify a field width for the subsequent output, the output will appear right justified by default.

```
cout << setw(8) << 3 << "Hello";
```

```
 3Hello
```

You can force left justification by turning on `ios::left`, the flag for left justification.

```
cout << setiosflags(ios::left)
     << setw(8) << 3 << setw(8) << "Hello";
```

```
3      Hello
```

There are actually three justification flags, `ios::left`, `ios::internal` and `ios::right`. Even though the default justification is right, all of those flags, including `ios::right`, are initialized to off.

When more than one justification flag is on at the same time, the format of the output is unpredictable.

Unlike the field width, the justification flags are persistent. They remain in effect until they are reset. To turn off the left-adjust flag, use the manipulator `resetiosflags()`.

```
cout << resetiosflags(ios::left);
```

To turn off the right-adjust flag, use the manipulator `resetiosflags()`.

```
cout << resetiosflags(ios::right);
```

```
Enter number of washers at the beginning of the month: 1000
Enter number of washers purchased: 500
Enter number of washers sold: 1400
```

BEGINNING	PURCHASED	SOLD	ENDING
----- 1000	----- 500	----- 400	----- 1100

* See Code Below

¹ Perry, Jo Ellen and Harold Levin, "An Introduction to Object-Oriented Design in C++", Addison-Wesley, 1996

```

#include<iostream.h>
#include<iomanip.h>

int main()
{
    // variable declarations
    int begWashers, purWashers, soldWashers, endWashers;

    // prompt and input values using cout and cin object
    cout << "Enter number of washers at the beginning of the month: ";
    cin >> begWashers;
    cout << "Enter number of washers purchased: ";
    cin >> purWashers;
    cout << "Enter number of washers sold: ";
    cin >> soldWashers;

    // calculate the number of washers in stock at the end of the month
    endWashers = (begWashers + purWashers) - soldWashers;

    // display the number of washers in stock at the end of the month
    cout << "\n";

    cout << setiosflags(ios::left); // set left justification

    cout << setw(12) << "BEGINNING"
        << setw(12) << "PURCHASED  "
        << setw(12) << "SOLD"
        << setw(12) << "ENDING"  << endl;

    cout << setw(10) << "----- "
        << setw(10) << "----- "
        << setw(10) << "----- "
        << setw(10) << "-----" << endl;

    cout << resetiosflags(ios::left); // turns left justification off

    cout << setw(10) << setiosflags(ios::right) << begWashers << " ";
    cout << setw(10) << setiosflags(ios::left) << purWashers << " ";

    cout << resetiosflags(ios::left); // turns left justification off

    cout << setw(10) << setiosflags(ios::right) << soldWashers << " ";
    cout << setw(10) << setiosflags(ios::right) << endWashers << endl;

    return 0;
}

```