The output manipulators \texttt{dec}, \texttt{hex}, and \texttt{oct} are used for converting different bases, as the next example illustrates.

**EXAMPLE G.1 Using Output Manipulators**

This shows how both the value and the address of a variable can be printed:

```cpp
int main()
{
    int n = 1492; // base 10
    cout << "Base 8: n = " << oct << n << endl;
    cout << "Base 10: n = " << n << endl;
    cout << "Base 16: n = " << hex << n << endl;
}
```

<table>
<thead>
<tr>
<th>Base 8: n = 2724</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 10: n = 1492</td>
</tr>
<tr>
<td>Base 16: n = 5d4</td>
</tr>
</tbody>
</table>

Here the manipulator \texttt{oct} is used to convert the next output to octal form. Note that the output reverts back to decimal until the \texttt{hex} manipulator is used.

The next example shows how to input integers in octal and hexadecimal. Octal numerals are denoted with a \texttt{0} prefix, and hexadecimal numerals are denoted with a \texttt{0x} prefix.

**EXAMPLE G.2 Using Input Manipulators**

This shows how both the value and the address of a variable can be printed:

```cpp
int main()
{
    int n;
    cout << "Enter an octal numeral (use 0 prefix): ";
    cin >> oct >> n;
    cout << "Base 8: n = " << oct << n << endl;
    cout << "Base 10: n = " << dec << n << endl;
    cout << "Base 16: n = " << hex << n << endl;
    cout << "Enter a decimal numeral: ";
    cin >> dec >> n;
    cout << "Base 8: n = " << oct << n << endl;
    cout << "Base 10: n = " << dec << n << endl;
    cout << "Base 16: n = " << hex << n << endl;
    cout << "Enter a hexadecimal numeral (use 0x prefix): ";
    cin >> hex >> n;
    cout << "Base 8: n = " << oct << n << endl;
    cout << "Base 10: n = " << dec << n << endl;
    cout << "Base 16: n = " << hex << n << endl;
}
```

<table>
<thead>
<tr>
<th>Enter an octal numeral (use 0 prefix): 0777</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 8: n = 777</td>
</tr>
<tr>
<td>Base 10: n = 511</td>
</tr>
<tr>
<td>Base 16: n = 1ff</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enter a decimal numeral: 511</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base 8: n = 777</td>
</tr>
<tr>
<td>Base 10: n = 511</td>
</tr>
</tbody>
</table>