For Loops

```
using namespace std;
#include <iostream>
int main ()
{int id;
     double gross, hours, rate, net, fed, state, fica, total;
     //-----
        cout << "Enter Employee Id: ";</pre>
        cin >> id;
        cout << "Enter Employee hours worked: ";</pre>
        cin >> hours;
        cout << "Enter Employee pay rate: ";</pre>
        cin >> rate;
        gross = hours* rate;
        fed=gross*0.2;
        state=gross*0.05;
        fica=gross*0.0765;
        total=fed+state+fica;
        net = gross-total;
     //-----
        cout.setf(ios::fixed);
        cout.setf(ios::showpoint);
        cout.precision(2);
        cout << "Gross : $ " << gross << "\t";</pre>
        cout << "Hours : " << hours << endl;</pre>
        cout << "Rate : " << rate << endl;</pre>
        cout << "net : " << net << endl;</pre>
return (0);
```

```
The integer variable i is initialized to 0;
                         then checked each time to see if it has
using namespace std;
                         reached the stop value of 10; and then
#include <iostream>
                        incremented by 1.
int main ()
{int i, id;
      double gross, hours, rate, net, fed, state, fica,
      total;
     for (i=0;i<10;i++)
         cout << "Enter Employee Id: ";</pre>
         cin >> id;
         cout << "Enter Employee hours worked: ";</pre>
         cin >> hours;
         cout << "Enter Employee pay rate: ";</pre>
         cin >> rate;
      //----
         gross = hours* rate;
         fed=gross*0.2;
         state=gross*0.05;
         fica=gross*0.0765;
         total=fed+state+fica;
         net = gross-total;
         cout.setf(ios::fixed);
         cout.setf(ios::showpoint);
         cout.precision(2);
```

cout << "Gross : \$ " << gross << "\t";</pre>

cout << "Hours : " << hours << endl;
cout << "Rate : " << rate << endl;</pre>

cout << "net : " << net << endl;</pre>

return (0);

This is a *for* loop.

While Loops

```
using namespace std;
                                                                  using namespace std;
#include <iostream>
                                                                  #include <iostream>
int main ()
                                                                 int main ()
{int id;
                                                                  {int id;
      double gross, hours, rate, net, fed, state, fica, total;
                                                                       double gross, hours, rate, net, fed, state, fica,
                                                                       total;
                                                                       cout << "Enter Employee Id: " ;</pre>
                     This is a while loop primed by a beginning value
                                                                    → cin >> id;
                     for the employee id.
                                                                                                  The brackets show where the
                                                                       while (id > 0)
                                                                                                  beginning and ending of the loop
         cout << "Enter Employee Id: ";</pre>
         cin >> id;
         cout << "Enter Employee hours worked: " ;</pre>
                                                                           cout << "Enter Employee hours worked: " ;</pre>
         cin >> hours;
                                                                           cin >> hours;
         cout << "Enter Employee pay rate: ";</pre>
                                                                           cout << "Enter Employee pay rate: ";</pre>
         cin >> rate;
                                                                           cin >> rate;
                                                                       //----
         gross = hours* rate;
                                                                           gross = hours* rate;
         fed=gross*0.2;
                                                                           fed=gross*0.2;
         state=gross*0.05;
                                                                           state=gross*0.05;
        fica=gross*0.0765;
                                                                           fica=gross*0.0765;
         total=fed+state+fica;
                                                                           total=fed+state+fica;
         net = gross-total;
                                                                           net = gross-total;
      //-----
                                                                       //----
         cout.setf(ios::fixed);
                                                                           cout.setf(ios::fixed);
         cout.setf(ios::showpoint);
                                                                           cout.setf(ios::showpoint);
         cout.precision(2);
                                                                           cout.precision(2);
         cout << "Gross : $ " << gross << "\t";</pre>
                                                                          cout << "Gross : $ " << gross << "\t";</pre>
         cout << "Hours : " << hours << endl;</pre>
                                                                           cout << "Hours : " << hours << endl;</pre>
         cout << "Rate : " << rate << endl;</pre>
                                                                           cout << "Rate : " << rate << endl;</pre>
         cout << "net : " << net << endl;</pre>
                                                                           cout << "net : " << net << endl;</pre>
                                                                           cout << "Enter Employee Id: " ;</pre>
 return (0);
                                                                        → cin >> id;
                   This set of statements is to insure the loop will
                                                                         1 ←
                   have the next person's id to check.
                                                                  return (0);
```

Do While Loops

```
using namespace std;
using namespace std;
#include <iostream>
                                                            #include <iostream>
                                                            int main ()
int main ()
{int id;
                                                            {int count,id;
                                                                 double gross, hours, rate, net, fed, state, fica,
     double gross, hours, rate, net, fed, state, fica, total;
                   This is a do while loop.
                                                                count =0;
                                                                do
                                                                   { count=count+1;
                                                                 //-----
        cout << "Enter Employee Id: ";</pre>
                                                                    cout << "Enter Employee Id: ";</pre>
        cin >> id;
                                                                    cin >> id;
        cout << "Enter Employee hours worked: ";</pre>
                                                                    cout << "Enter Employee hours worked: ";</pre>
        cin >> hours;
                                                                    cin >> hours;
        cout << "Enter Employee pay rate: ";</pre>
                                                                    cout << "Enter Employee pay rate: ";</pre>
        cin >> rate;
                                                                    cin >> rate;
     //-----
                                                                 //----
        gross = hours* rate;
                                                                    gross = hours* rate;
        fed=gross*0.2;
                                                                    fed=gross*0.2;
        state=gross*0.05;
                                                                    state=gross*0.05;
        fica=gross*0.0765;
                                                                    fica=gross*0.0765;
        total=fed+state+fica;
                                                                    total=fed+state+fica;
        net = gross-total;
                                                                    net = gross-total;
     //-----
                                                                 //-----
        cout.setf(ios::fixed);
                                                                    cout.setf(ios::fixed);
        cout.setf(ios::showpoint);
                                                                    cout.setf(ios::showpoint);
        cout.precision(2);
                                                                    cout.precision(2);
        cout << "Gross : $ " << gross << "\t";</pre>
                                                                    cout << "Gross : $ " << gross << "\t";</pre>
        cout << "Hours : " << hours << endl;</pre>
                                                                    cout << "Hours : " << hours << endl;</pre>
                                                                    cout << "Rate : " << rate << endl;</pre>
        cout << "Rate : " << rate << endl;</pre>
        cout << "net : " << net << endl;</pre>
                                                                    cout << "net : " << net << endl;</pre>
return (0);
                                                              \rightarrow while (count < 10);
                  This set of statements is to check to see if the
                                                            return (0);
                 loop needs to be executed again or terminates.
```

Nested For Loops

This is a nested *for* loop.

The new inside loop uses the integer

```
variable j and is initialized to 0; then
using namespace std;
                                                               using namespace std;
#include <iostream>
                                                               #include <iostream>
                                                                                       checked each time to see if it has reached
                                                                                       the stop value of 7; and then incremented
int main ()
                                                               int main ()
                                                                                       by 1.
{int i, id;
                                                               {int i, j, id;
                                                                     double gross, hours, rate, net, fed, state, fica,
     double gross, hours, rate, net, fed, state, fica, total;
                                                                     total, totalhrs; ←
  for (i=0;i<10;i++)
                                                                    for (i=0; i<10; i++)
              _____
                                                                             _____
        cout << "Enter Employee Id: ";</pre>
                                                                        cout << "Enter Employee Id: ";</pre>
        cin >> id;
                                                                        cin >> id;
        cout << "Enter hours worked: ";</pre>
                                                                        totalhrs=0;
        cin >> hours;
                                                                        for (i=0; i<7; i++)
                                                                          {cout << "Enter hours for day " << j<<" :" ;
                         These two lines in the left box have now been
                                                                           cin >> hours;
                                                                           totalhrs+=hours;
                         replaced by the expanded set of code on the right side.
        cout << "Enter Employee pay rate: ";</pre>
                                                                        cout << "Enter Employee pay rate: ";</pre>
        cin >> rate;
                                                                        cin >> rate;
                                                                        gross = totalhrs* rate;
        gross = hours* rate;
        fed=gross*0.2;
                                                                        fed=gross*0.2;
        state=gross*0.05;
                                                                        state=gross*0.05;
        fica=gross*0.0765;
                                                                        fica=gross*0.0765;
        total=fed+state+fica;
                                                                        total=fed+state+fica;
        net = gross-total;
                                                                        net = gross-total;
      //----
                                                                     //----
        cout.setf(ios::fixed);
                                                                        cout.setf(ios::fixed);
        cout.setf(ios::showpoint);
                                                                        cout.setf(ios::showpoint);
        cout.precision(2);
                                                                        cout.precision(2);
        cout << "Gross : $ " << gross << "\t";</pre>
                                                                        cout << "Gross : $ " << gross << "\t";</pre>
                                                                        cout << "Hours : " << totalhrs << endl; ←
        cout << "Hours : " << hours << endl;</pre>
        cout << "Rate : " << rate << endl;</pre>
                                                                        cout << "Rate : " << rate << endl;</pre>
        cout << "net : " << net << endl;</pre>
                                                                        cout << "net : " << net << endl;</pre>
 return (0);
                                                                return (0);
```