

## Background

In class we talked about scope. We said that some variables have "local" scope. They are defined in a function or other block and the computer can only access them from within that block. Other variables have "global" scope. They are defined outside of any function (usually near the top of a file) and can be accessed from anywhere in the file.

In this project, we will look at some common mistakes that programmers make involving scope. I will give you code for a program which has some very obvious errors. Your assignment is to fix the problems and make the program work correctly.

## Setting Up

Make a new folder named "Project5". In that folder create a file named "bad.cc". In that file, add the following lines of code:

```
#include <iostream>
#include <iomanip>

using namespace std;

int num_berries;
int num_drinks;

int add_berry(){
    num_berries++;
    return num_berries;
}

int lose_berries(int num_berries){
    num_berries -= num_berries;
    return num_berries;
}

int make_juice(){
    int amt_juice;
    lose_berries(3);
    amt_juice++;
}

int drink_juice(){
    amt_juice--;
    num_drinks++;
}

int main(){
    for (int i=0;i<10;i++){
        int num;
        cout << "How many berry bushes should we add?" << endl;
        cin >> num;

        for (int i=0;i<num;i++){
            add_berry();
        }

        amt_juice = 10;
        while (num_berries > 0){
            make_juice();
        }

        while (amt_juice > 0){
```

```
        drink_juice();
    }
    cout << "The player had " << num_drinks << " drinks." << endl;
}
```

Fix all the errors in this program so that it:

1. Compiles without errors
2. Correctly computes the number of drinks the player can make, given the number of berry bushes he has added. The formula for how many drinks is given by:

$$\text{num\_drinks} = 10 + \text{num\_bushes}/3$$

### **Submitting**

As usual, create a tarball of your Project5 folder with:

```
cd ..
tar czpvf Project5.tar.gz Project5/
```

Then upload your Project5.tar.gz file to <https://narnia.homeunix.com/~robert/submit/>