

# CS 12: Assignment 2

Handed out: January 19, 1996

Due: January 28, 1996, Midnight

## Topics covered

This programming assignment covers the design of classes, writing and compiling programs that span several files, and designing your own Makefile.

## Program 2 - Frog Class

Repackage the frog from the first assignment into its own class. A Frog object should have the following public methods:

- Constructor, which takes as a parameter the number of stpes the frog should hop.
- `Position()` – returns the current position of the frog. Note that for a one-dimensional frog, this function returns an `int`. If your frog hops in two dimensions, something more complex needs to be returned.
- `Steps()` – `int` function, returns the number of steps taken so far by the frog.
- `Farthest()` – returns the farthest position of the frog from the origin. The return type should be the same as for the `Position()` method.
- `Display()` – `void` function, displays the current position of the frog.
- `First()` – `void` function, in which the frog takes the first step.
- `Next()` – `void` function, in which the frog takes the next step.
- `Done()` – `int` function, returns 1 when the frog has hopped the number of steps specified when it was constructed, 0 otherwise.

Your frog may have as many private fields and methods you feel are necessary. Since `First()` and `Next()` do essentially the same thing, you may want to have a private method `Hop()` which they both call.

The `main()` function should create a frog that hops a user-specified number of steps, and prints out the end position and farthest position. Part of the code could look something like this:

```
Frog hop(steps);

For (hop.First(); ! hop.Done(); hop.Next())
{
    hop.Display();
}

cout << "Final position after " << hop.Steps() << " steps: "
     << hop.Position() << endl;
```

## Makefile

For this assignment, you should turn in a Makefile with your program. The label for the compile command should be `hop`, so that you can compile the program by typing `make hop`. The executable should be called `leap`.

## Turning in your program

You are to turn in both a paper copy and an electronic version of your program. The paper copy should be handed to me at classtime, or placed in the box under the desk in the CS office (A242 Bourns). Please do not slide hardcopies under my door.

The turnin directory for this assignment is called `frog`

## Grading

Programs are due at midnight at the end of the due date (in this case, the midnight between Sunday the 21st and Monday the 22nd). You lose 5% of the total for each day late, up to one week. Lateness is measured from the time of electronic submission. Assignments are not accepted more than a week late.