

# CSIS0230A Principle of Operating Systems (Class A)

## Tutorial 1

### C++ to C translation

The following C++ program does a very simple thing: to ask for the description of some circles, and then display ASCII drawing of all of them. Your task: understand it and translate it to C.

```
#include <iostream>
#include <vector>
using namespace std;

class Circle {
public:
    Circle(int yy, int xx, int rr): y(yy), x(xx), r(rr) {}
    bool in_figure(int y, int x) {
        int ydiff = y - this->y, xdiff = x - this->x;
        return ydiff * ydiff + xdiff * xdiff <= r * r;
    }
    static Circle* read() {
        int y, x, r;
        cout << "y? "; cin >> y;
        cout << "x? "; cin >> x;
        cout << "r? "; cin >> r;
        return new Circle(y, x, r);
    }
private:
    int y, x, r;
};
vector<Circle *> figures;

// Ask for a full list of figures
void ask_for_figures() {
    for (;;) {
        char done;
        cout << "Done? (y/n) "; cin >> done;
        if (done=='y')
            break;
        else
            figures.push_back(Circle::read());
    }
}

// Draw the figures to the screen
void draw_figures() {
    for (int y = 0; y < 24; ++y) {
        for (int x = 0; x < 79; ++x) {
            char c = '.';
            for (vector<Circle *>::iterator i = figures.begin(); i != figures.end(); ++i)
                if ((*i)->in_figure(y, x)) {
                    c = 'O';
                    break;
                }
            cout << c;
        }
        cout << endl;
    }
}

int main() {
    ask_for_figures();
    draw_figures();
}
```