TIC1001—Introduction to Computing and Programming
National University of Singapore

Lecture 7: Strings and Vectors

Consider the following function:

In [ ]:
```
int foo(int x) {
    switch(x) {
        case 0:
            x += 1;
        case 4:
            x /= 2;
            break;
        case 2:
            x += 3;
            break;
        case 1:
            x += 2;
        default:
            x *= 2;
    }
    return x;
}
```

Which of the following statements show the corresponding output with the given input?

foo(0) -> 0
foo(1) -> 6
foo(2) -> 5
foo(3) -> 6
foo(4) -> 2

Implement the function int days_of_month(int m) using a switch...case statement that return the number of days of the given month of the year.

In [ ]:
```
using namespace std;
int days_of_month(int m)
{
    int days = 0;
    switch (m)
    {
        case 1:
            days = 31;
            break;
        case 2:
            days = 28;
            break;
        case 3:
            days = 31;
            break;
        case 4:
            days = 30;
            break;
        case 5:
            days = 31;
            break;
        case 6:
            days = 30;
            break;
        case 7:
            days = 31;
            break;
        case 8:
            days = 31;
            break;
        case 9:
            days = 30;
            break;
        case 10:
            days = 31;
            break;
        case 11:
            days = 30;
            break;
        case 12:
            days = 31;
            break;
    }
    return days;
}
```

Implement the function bool find(int x, vector v) which returns true if the integer x is an element of the vector v, and false otherwise.

In [ ]:
```
using namespace std;
bool find(int x, vector<int> v)
{
    int count = 0;
    for (int i = 0; i < v.size(); i++)
    {
        if (v[i] == x)
        {
           count += 1;
        }
    }

    if ( count > 0 )
    {
        return 1;
    }
    else
    {
        return 0;
    }
}
```

The function void invert(vector &v) takes in a vector of bool, and inverts the elements, i.e. true becomes false, and vice versa. Provide an implementation of the function invert.

In [ ]:
```
void invert(vector<bool> &v)
{
    for (int i = 0; i < v.size(); i++)
    {
        if (v[i] == 1)
        {
           v[i] = 0;
        }
        else
        {
            v[i] = 1;
        }
    }
}
```

The logical operator and returns true only if both inputs are true. The function vector And(vector v1, vector v2) takes as input two vectors of equal length, and returns a new vector where each element is a logical and of the two vectors. i.e., vi = true if v1i and v2i are both true, for all elements i.

In [ ]:
```
vector<bool> And(vector<bool> v1, vector<bool> v2)
{
    vector<bool> out;

    for (int i = 0; (i < v1.size()); i++)
    {
        if (v1[i] == v2[i] && (v1[i] == 1 || v2[i] == 1) )
        {
           v1[i] = 1;
        }
        else
        {
            v1[i] = 0;
        }
    }
    return v1;
}
```

-END-