

3.5 Problem set

Problem 3.5.1. Implement **Ninety nine bottles of beer on the wall** as described in section 1.21.9 using only `std::string`. You must write both the *reference* version and the *pointer* version of the song as explained in 3.8, 3.9 and 3.10

Ninety nine bottles of beer using STL string

ninetynine.cpp

```

void ninetynine::run() {
    cout << "REFERENCE BASED SONG\n" ;
    for (int i = MAX; i > 0; --i) {
        stanzaReference_(i);
    }
    cout << "POINTER BASED SONG\n" ;
    for (int i = MAX; i > 0; --i) {
        stanzaPointer_(i) ;
    }
}

```

NOTHING CAN BE CHANGED in run()

YOU NEED TO WRITE CODE IN
 1.ninetynine.h
 2.ninetynine.cpp
 3.ninetyninereferencebased.cpp
 4.ninetyninepointerbased.cpp

Nothing can be changed in
 ninetyninetest.cpp

```

/*-----
Ninety nine bottles of beer on the wall,
Ninety nine bottles of beer,
Take one down, pass it around,
Ninety eight bottles of beer on the wall.

(91)
a = Ninety
b = one
bool true
(90)
c = Ninety
d = ""
bool true

YOU GET a,b, bool
YOU GER c,d, bool

PRINT ONE STANZA HERE
-----*/
void ninetynine::print_(/* WRITE INTERFACE */) {
    ninetynine.cpp
}

```

Figure 3.8: ninetynine.cpp

Ninety nine bottles of beer using STL string
ninetyninereferencebased.cpp

```

void ninetynine::stanzaReference_(int n) {
    string a{} ;//null string
    string b{} ;
    string c{} ;
    string d{} ;

    //WRITE CODE
    //MUST CALL compute_string_
    //MUST CALL print_
}

/*-----
compute strings object based
YOU GET
n
and you have to generate a and b

if n = 90
a = string Ninety
b = empty string
bool is true

if n = 1
a = string one
b = empty string
bool is false
-----*/
bool ninetynine::compute_string_(/*WRITE INTERFACE*/) {
    bool plural = true;
    //WRITE CODE
    return plural;
}

```

Figure 3.9: ninetyninereferencebased.cpp

Ninety nine bottles of beer using STL string
ninetyninepointerbased.cpp

```

void ninetynine::stanzaPointer_(int n) {
    const string* a = nullptr ;
    const string* b = nullptr ;
    const string* c = nullptr ;
    const string* d = nullptr ;

    //WRITE CODE
    //MUST CALL compute_string_
    //MUST CALL print_
}

/*-----
compute strings pointer based

YOU GET
n
and you have to generate pointer to string a and pointer to string b

if n = 90
a points to string ninety
b points to empty string
bool is true

if n = 1
a points to string One
b points to empty string
bool is false

-----*/
bool ninetynine::compute_string_(/*WRITE INTERFACE*/) {
    bool plural = true;
    //WRITE CODE
    return plural;
}
    
```

Figure 3.10: ninetyninepointerbased.cpp