```cpp
#include <iostream>
#include <vector>

using namespace std;

int main()
{
    //initialize in every way
    vector<int> ivec1(5), ivec2;
    vector<double> dvec1{5.1}, dvec2(5,1.5);
    vector<string> svec1 = {"hello", "world"};
    vector<string> svec2{"hello", "world"};
    vector<int> ivec3=ivec1;
    vector<int> ivec4(ivec3);

    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:ivec1)   //print ivec1
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:ivec3)   //print ivec3 which is copy of ivec1
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:ivec4)   //print ivec4 which is copy of ivec3
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:dvec1)   //print dvec1
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:dvec2)   //print dvec2
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:svec1)   //print svec1
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    for(auto i:svec2)   //print svec2
        cout << i << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    cout << "Original size: " << ivec2.size() << endl;
    ivec2.push_back(50);
    cout << "New size: " << ivec2.size() << "\nAdded element: " << ivec2[0] << endl;
    cout << "\n----------------------------------------------------------------------" << endl;

    //Take in ints from cin
    //EXERCISE 3.14
    vector<int> input;
```

```
    int num;

    cout    << "\nEnter numbers for vector (enter -1 to quit)\n"
            << "? ";
    cin     >> num;
    while(num!=-1){
        input.push_back(num);
        cout    << "? ";
        cin     >> num;
    }
    for(auto i:input)   //print input
        cout << i << endl;
    cout << "\n--------------------------------------------------------------------" << endl;

    //Take in strings from cin
    //EXERCISE 3.15
    vector<string> input2;
    string word;
    string end="DONE";

    cout    << "\nEnter strings for vector (enter DONE to quit)\n"
            << "? ";
    cin     >> word;
    while(word!=end){
        input2.push_back(word);
        cout    << "? ";
        cin     >> word;
    }
    for(auto i:input2)  //print input
        cout << i << endl;
    cout << "\n--------------------------------------------------------------------" << endl;

    //USE OPERATIONS FROM TABLE 3.5
    cout    <<  "\nempty?\t"    << ivec2.empty()
            <<  "\nsize?\t"     << ivec2.size()
            <<  "\nivec2[0]=\t" << ivec2[0]<<endl;
    ivec2=ivec1;
    cout    <<  "\nempty?\t"    << ivec2.empty()
            <<  "\nsize?\t"     << ivec2.size()
            <<  "\nivec2[0]=\t" << ivec2[0] <<endl;

    cout    <<  "\nivec1=ivec2?\t";
    if (ivec1==ivec2)
        cout << "TRUE" <<endl;
    else
        cout << "FALSE" <<endl;

    return 0;
}
```