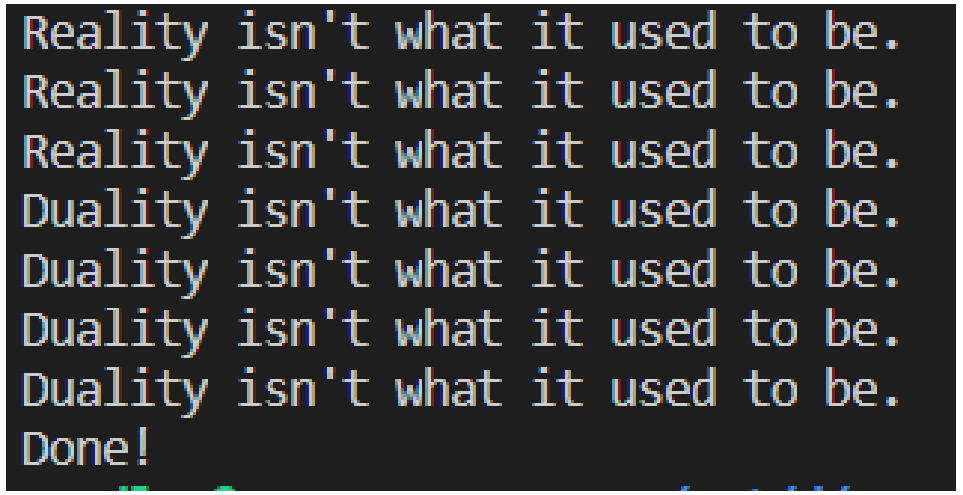
3 Exercises

1. The following is a program skeleton:

```
#include <iostream>
#include <cstring>    //for strlen(), strcpy()

struct stringy{
    char * str;   // points to a string
    int ct;       // length of string(not counting '\0')
};

// prototypes fo set(),show() and show() go here

int main()
{
    stringy beany;
    char testing[] = "Reality isn't what it used to be.";

    set(beany,testing);   // first argument is a reference,
                // allocates space to hold copy of testing,
                // sets str member of beany to point to the
                // new block, copies testing to new block,
                // and sets ct member of beany
    show(beany);      //print member string once
    show(beany, 2);  //prints member string twice

    testing[0] = 'D';
    testing[1] = 'u';
    show(testing);       //prints testing string once
    show(testing, 3);   //prints test string thrice
    show("Done!");

    return 0;
}
```

Complete this skeleton by providing the described functions and prototypes. Note that there should be two **show()** functions, each using default arguments. Use **const** arguments when appropriate. Note that **set()** should use **new** to allocate sufficient space to hold the designated string.

A sample runs might look like this:



2. Write a template function max5() that takes as its argument an array of five items of type T and returns the largest item in the array. Test it in a program that uses the function with an array of five int values({1, 2, 3, 4 ,5}) and an array of five double values{1.1, 2.0, 3.0, 4.0, 5.5}.

A sample runs might look like this:

```
Max int = 5
Max double = 5.5
```