

ENGG1340 Computer Programming II
Module 6 Self-Review Exercise Solution

1. Write a single statement to accomplish each of following tasks:

- (a) Use a stream manipulator to ensure that floating-point values print in scientific notation for when using cout.
- (b) Use a stream manipulator to set the fill character to '*' for printing in field widths larger than the values being output using cout.
- (c) Print 6789 right justified in an 8-digit field.

```
(a) cout << scientific;
(b) cout << setfill( '*' );
(c) cout << setw( 8 ) << 6789;
```

2. Write a C++ statement that uses the manipulator `setfill` to output a line containing 40 pound signs, i.e., "#####".

```
cout << setfill('#') << setw(40) << "";
```

3. Identify error(s), if any, in the following array declarations. If a statement is incorrect, provide the correct statement.

- (a) `double weights[100];`
- (b) `int age[0..80];`
- (c) `int100 list[];`
- (d) `double[50] salaries;`

```
(a) correct
(b) should be: int age[80];
(c) should be: int list[100];
(d) should be: double salaries[50];
```

4. Correct the following code so that it correctly sets the value of each element of `myList` to the index of the element.

```
int myList[10];
for (int i = 1; i <= 10; i--)
    myList[i] = [i];
```

```
int myList[10];
for (int i = 0; i < 10; i++)
    myList[i] = i;
```

5. What is stored in `list` after the following C++ code executes?

```
int list[10];

list[0] = 2;
list[1] = 3;
for (int i = 2; i < 10; i++)
{
    list[i] = list[i - 1] + list[i - 2];
    if (i > 7)
        list[i] = 2 * list[i] - list[i - 2];
}
```

2 3 5 8 13 21 34 55 144 343

6. Determine whether the following array declarations are valid. If a declaration is valid, determine the size of the array.

- (a) `int list[] = {18, 13, 14, 16};`
- (b) `int x[10] = {1, 7, 5, 3, 2, 8};`
- (c) `double y[4] = { 2.0, 5.0, 8.0, 11.0, 14.0} ;`
- (d) `int list[7] = {12, 13, , 14, 16, , 8};`

- (a) Valid. Array size = 4.
- (b) Valid. Array size = 10.
- (c) Invalid.
- (d) Invalid.

7. Write a single statement for each of the following one-dimensional array operations:

- (a) Initialize the 10 elements of integer array `counts` to zero.
- (b) Add 1 to each of the 15 elements of the integer array `bonus`.
- (c) Read 12 values for double array `scores` from the keyboard.

- (a)

```
for (int i = 0; i < 10; ++i)
    counts[i] = 0;
```
- (b)

```
for (int i = 0; i < 15; ++i)
    bonus[i]++;
```
- (c)

```
for (int i = 0; i < 12; ++i)
    cin >> scores[i];
```

8. Write a code segment that finds the minimum and maximum values contained in a 99-element double array `w`.

```
double min, max;
min = max = w[0];
for (int i = 1; i < 99; ++i)
{
    if (w[i] < min)
        min = w[i];
    else if (w[i] > max)
        max = w[i];
}
```

9. Write a code segment that finds the minimum and maximum values contained in a 4-by-6 int array t. (The declaration for t is `int t[4][6];`)

```
double min, max;
min = max = t[0][0];
for (int i = 0; i < 4; ++i)
    for (int j = 0; j < 6; ++j)
    {
        if (t[i][j] < min)
            min = t[i][j];
        else if (t[i][j] > max)
            max = t[i][j];
    }
```

10. Consider the following C++ code:

```
string str1;
string str2;
char ch;
int index;
cin >> str1;
cin >> str2;
cin >> index;
ch = str1[index];
str1[index] = str2[index];
str2[index] = ch;
cout << str1 << " " << str2 << endl;
```

Answer the following questions:

- (a) What is the output if the input is Hello There 2?
- (b) What is the output if the input is Diamond Gold 0?
- (c) What is the output if the input is C++ Java 1?

- (a) Heelo Thlre
- (b) Giamond Dold
- (c) Ca+ J+va

11. What is the value of str after the following C++ code is executed?

```
string str1 = "Trip to Hawaii";
string str2 = "Summer or Fall";
string newStr;
newStr = str2 + ' ' + str1;
cout << newStr << endl;
cout << str1 + " in " + str2 << endl;
cout << newStr.length() << endl;
cout << str1.find('H') << endl;
cout << str2.find("or") << endl;
cout << newStr.substr(10, 19) << endl;
cout << newStr.replace(23, 6, "*****") << endl;
string str = "C++ Programming";
cout << str << endl;
cout << str.length() << endl;
str[0] = 'J';
str[2] = '$';

cout << str << endl;
```

```
Summer or Fall Trip to Hawaii
Trip to Hawaii in Summer or Fall
29
8
7
Fall Trip to Hawaii
Summer or Fall Trip to *****
C++ Programming
15
J+$ Programming
```

12. Find the error(s) in each of the following, and explain how to correct it (them):

- (a) `string string1(28); // construct string1`
- (b) `string string2('z'); // construct string2`

Constructors for class string do not exist for integer and character arguments. Other valid constructors should be used—converting the arguments to strings if need be.