SQA Assignment 3 – Spring 2016

Due: Wednesday, March 9, 2016 (beginning of class)

Problem Descriptions:

The purpose of this assignment is to reinforce the lecture material on variable definition /usage and DU path. For each of the source code fragments below:

1) Construct a table listing all the line numbers where a variable is defined or used. You must list all the variables in each source code fragment.

2) Construct a DU Path table showing all paths from any definition **to usage of every variable.**

A sample example is given below:

```
1  int main()
2  {
3      int num1,
4      int num2,
5      int answer;
6      printf ("This program finds the product of two numbers\n");
7      printf ("What is your first number?\n");
8      scanf ("%d", &num1);
9      printf ("What is your second number?\n");
10     scanf ("%d", &num2);
11     answer = num1*num2;
12     printf ("Your first number was %15d\n", num1);
13     printf ("Your second number was %15d\n", num2);
14     printf ("The product is %22d\n", answer);
15     return 0;
16 }
```

DEF-USE Table

Variable	DEF	USE
num1	3,8	11,12
num2	4,10	11,13
answer	5,11	14

DU Path Table

Variable	#	DU Path
num1	1	8-9-10-11
	2	8-9-10-11-12
num2	1	10-11
	2	10-11-12-13
answer	1	11-12-13-14

Problem 1

```
1.  #include<iostream>
2.  using namespace std;
3.  int main()
4.  {
5.      int x, y, z, w;
6.
7.      cin >> x;
8.      cin >> y;
9.      cin >> z;
10.     cin >> w;
11.
12.     if (9 * x > y + 2)
13.     {
14.         z = 5;
15.         w = x * y;
16.     } else {
17.         x = 7 - y;
18.         w = x % 3;
19.         z = x * w;
20.     }
21.
22.     if ( x > y + z )
23.     {
24.         x = y - z;
25.         z = x * w;
26.         w = x - 3;
27.     }
28.
29.     if ( x == z + 2 )
30.     {
31.         y = z % 3;
32.         z = y + w;
33.     }
34.
35.     cout << x << endl << y << endl << z << endl << w;
36.     return 0;
37. }
```

Problem 2

```
1.  #include<iostream>
2.  using namespace std;
3.  int main()
4.  {
5.      double furniture;
6.      double food;
7.      double kitchen;
8.      double Total;
9.      double FinalMoney;
10.     cout << "How much have you spent on furniture? ";
11.     cin >> furniture;
12.     cout << "How much have you spent on food? ";
13.     cin >> food;
14.     cout << "How much have you spent on kitchen items? ";
15.     cin >> kitchen;
16.     Total = furniture + food + kitchen;
17.     if ( Total < 1000 )
18.        FinalMoney = Total;
19.     if ( Total >= 1000 && Total < 5000)
20.     {
21.        FinalMoney = 1000 + ( Total - 1000 ) * 0.95;
22.     }
23.     if ( Total >= 5000 )
24.     {
25.        FinalMoney = 1000 + 4000 * 0.95 + ( Total - 5000 ) * 0.9;
26.     }
27.     cout << "You should Pay: ";
28.     cout << FinalMoney;
29.     return 0;
30. }
```