SQA Assignment 3 – Fall 2019

Due: 11:59PM, Monday, October 28

Questions? Contact TA Xiaopu Peng <xzp0007@auburn.edu>

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.      char operator;
3.      double firstNumber, secondNumber;
4.      printf("Enter an operator (+, -, *,): ");
5.      scanf("%c", & operator);
6.      printf("Enter two operands: ");
7.      scanf("%lf %lf", & firstNumber, & secondNumber);
8.      if (operator == '+') {
9.          printf("%.1lf + %.1lf = %.1lf", firstNumber, secondNumber, firstNumber + secondNumber);
10.     } else if (operator == '-') {
11.         printf("%.1lf - %.1lf = %.1lf", firstNumber, secondNumber, firstNumber - secondNumber);
12.     } else if (operator == '*') {
13.         printf("%.1lf * %.1lf = %.1lf", firstNumber, secondNumber, firstNumber * secondNumber);
14.     } else if (operator == '/') {
15.         printf("%.1lf / %.1lf = %.1lf", firstNumber, secondNumber, firstNumber / secondNumber);
16.     } else {
17.         printf("Error! operator is not correct");
18.     }
19.     return 0;
20. }
```

DEF –USE Table:

Variable	DEF	USE
operator	2, 5	8, 10, 12, 14

firstNumber	**3, 7**	**9, 11, 13, 15**
secondNumber	**3, 7**	**9, 11, 13, 15**

DU Path Table:

Variable	#	DU Path
operator	**1**	**5-6-7-8**
	2	**5-6-7-8-10**
	3	**5-6-7-8-10-12**
	4	**5-6-7-8-10-12-14**
firstNumber	**1**	**7-8-9**
	2	**7-8-10-11**
	3	**7-8-10-12-13**
	4	**7-8-10-12-14-15**
secondNumber	**1**	**7-8-9**
	2	**7-8-10-11**
	3	**7-8-10-12-13**
	4	**7-8-10-12-14-15**

Problem 1

```
1	#include <stdio.h>
2	void main()
3	{
4		float testWeight=0.5;
5		float testGrade, hwGrade;
6		printf("Input the values for test grade and homework grade : ");
7		scanf("%f %f",&testGrade,&hwGrade);
8		float finalGrade = testGrade * testWeight + hwGrade * (1-testWeight);
9		if( finalGrade >= 90 ){
10			printf("test grade %f  homework grade %f result an A.\n", testGrade, hwGrade);}
11		else if( finalGrade >= 80 && finalGrade < 90){
12			printf("test grade %f  homework grade %f result an B.\n", testGrade, hwGrade);}
13		else if( finalGrade >= 70 && finalGrade < 80){
14			printf("test grade %f  homework grade %f result an C.\n", testGrade, hwGrade);}
15		else if( finalGrade > =60 && finalGrade < 70){
16			printf("test grade %f homework grade %f result an D.\n", testGrade, hwGrade);}
17		else{
18			printf("test grade %f  homework grade %f result an F.\n", testGrade, hwGrade);}
19	}
```

Problem 2

```
1   #include<iostream>
2   using namespace std;
3   int main() {
4       int orange;
5       double orangePrice;
6       int apple ;
7       double applePrice;
8       double total;
9       double money;
10      cout << "How many orange did you buy? ";
11      cin >> orange;
12      cout<<”what’s the price of each orange today?”
13      cin>>orangePrice;
14      cout << "How many apple did you buy? ";
15      cin >> apple;
16      cout << "what’s the price of each apple today? ";
17      cin >> applePrice;
18      cout << “How much money did you have?”;
19      cin >> money;
20      total = apple * applePrice + orange * orangePrice;
21      if (total > money){
22          cout << "You don't have enough money."}
23      else {
24          cout << “You should pay: ”;
25          cout << total;
26          money = money – total;
27          cout << “You left: ”;
28          cout << money;
29      }
```

```
30                  return 0;
31          }
```