SQA Assignment 3 – Spring 2020

Due: 11:59PM, Friday, October 9, Submit through Canvas

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 1stNum, 2ndNum;
4.      printf("Enter an operator (+, -, *,): ");
5.      scanf("%c", & operator);
6.      printf("Enter two operands: ");
7.      scanf("%lf %lf", & 1stNum, & 2ndNum);
8.      if (operator == '+') {
9.          printf("%.1lf + %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum + 2ndNum);
10.     } else if (operator == '-') {
11.         printf("%.1lf - %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum - 2ndNum);
12.     } else if (operator == '*') {
13.         printf("%.1lf * %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum * 2ndNum);
14.     } else if (operator == '/') {
15.         printf("%.1lf / %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum / 2ndNum);
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

1stNum	**3, 7**	**9, 11, 13, 15**
2ndNum	**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**
1stNum	**1**	**7-8-9**
	2	**7-8-10-11**
	3	**7-8-10-12-13**
	4	**7-8-10-12-14-15**
2ndNum	**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       int main() {
2               char op;
3               double 1stNum, 2ndNum;
4               printf("Enter an operator (+, -, *,): ");
5               scanf("%c", & op);
6               printf("Enter two operands: ");
7               scanf("%lf %lf", & 1stNum, & 2ndNum);
8               if (op == '+') {
9                       printf("%.1lf + %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum + 2ndNum);
10              }
11              else if (op == '-') {
12                      printf("%.1lf - %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum - 2ndNum);
13              }
14              else if (op == '*') {
15                      printf("%.1lf * %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum * 2ndNum);
16              }
17              else if (op == '/') {
18                      printf("%.1lf / %.1lf = %.1lf", 1stNum, 2ndNum, 1stNum / 2ndNum);
19              }
20              else {
21                      printf("Error! operator is not correct");
22              }
23              return 0;
24      }
```

Problem 2

```
1	#include<iostream>
2	using namespace std;
3	int main() {
4		double bread;
5		double drink;
6		double salad;
7		double total;
8		double money;
9		cout<<”Let’s check out:”;
10		cout << "How much have you spent on bread? ";
11		cin >> bread;
12		cout << "How much have you spent on drink? ";
13		cin >> drink;
14		cout << "How much have you spent on salad? ";
15		cin >> salad;
16		cout << “How much money did you have?”;
17		cin >> money;
18		total = bread + drink + salad;
19		if (total > money)
20			cout << "You don't have enough money."
21		else {
22			cout << “You should pay: ”;
23			cout << total;
24			money = money – total;
25			cout << “You left: ”;
26			cout << money;
27		}
28		return 0;
29	}
```