

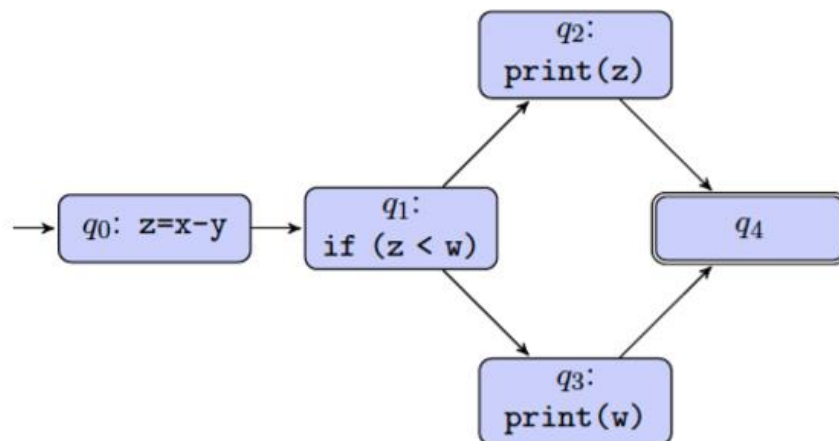
## Workshop 4 (Week 5) – Data Flow Testing

The purpose of this workshop is to practice and develop an understanding of Data Flow testing.

### 1. Concepts

- 1) What is a definition-use pair (“du-pair”) ?
- 2) What is a definition clear (“def-clear”) path?
- 3) How to achieve All-Defs coverage?
- 4) How to achieve All-Uses coverage?

2. Consider the following code, identify all the definition-use pairs (du-pairs):



### 3. Password Tester

Consider the *isStrong* function in the PasswordTester class, answer the following questions:

- 1) Identify all the definition-use pairs (du-pairs).
- 2) Design test cases to achieve All-Defs coverage
- 3) Design test cases to achieve All-Uses coverage
- 4) Implement your test cases in junit.

```

public class PasswordTester {

    public static boolean isStrong(String password) {
        boolean isStrong = true;
        if(password.length() < 8) {
            System.out.println("Notice: Your password has less than 8 characters.");
            isStrong = false;
        }
        if(!Pattern.compile("[a-z]").matcher(password).find()) {
            System.out.println("Notice: Your password does not contain a lower case letter.");
            isStrong = false;
        }
        if(!Pattern.compile("[A-Z]").matcher(password).find()) {
            System.out.println("Notice: Your password does not contain an upper case letter.");
            isStrong = false;
        }
        if(!Pattern.compile("[0-9]").matcher(password).find()) {
            System.out.println("Notice: Your password does not contain a number.");
            isStrong = false;
        }
        if(!Pattern.compile("[!@#\\$%\\^&\\*\\(\\)]").matcher(password).find()) {
            System.out.println("Notice: Your password does not contain a special.");
            isStrong = false;
        }
        if(isStrong) {
            System.out.println("Result: Strong password.");
        } else {
            System.out.println("Result: Weak Password.");
        }
        return isStrong;
    }
}

```

## 4. Try the Web: Code In Game

<https://www.codingame.com/ide/puzzle/temperatures>