

## Software Testing Homework3: Test for Stutter

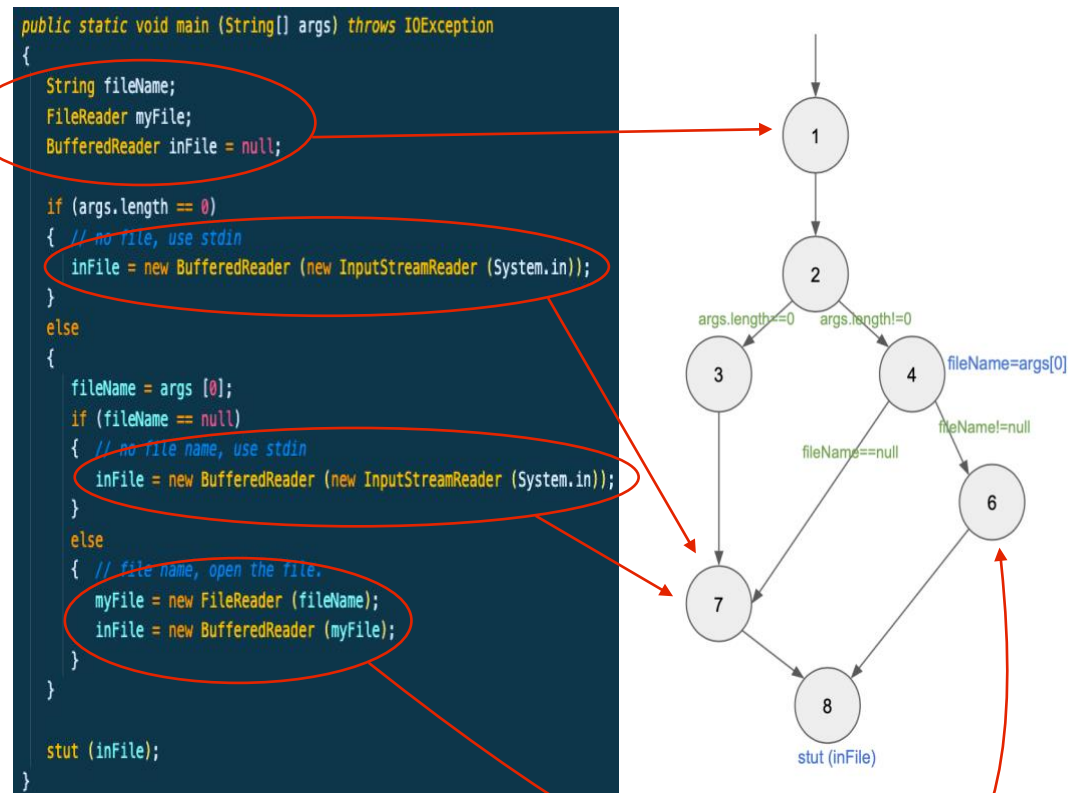
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Use the class Stutter for questions a-d. A compilable version is available in <https://cs.gmu.edu/~offutt/softwaretest/java/Stutter.java>. A line-numbered version is in <https://cs.gmu.edu/~offutt/softwaretest/java/Stutter.num>.

a. Draw control flow graphs for the methods in Stutter.

(Main)

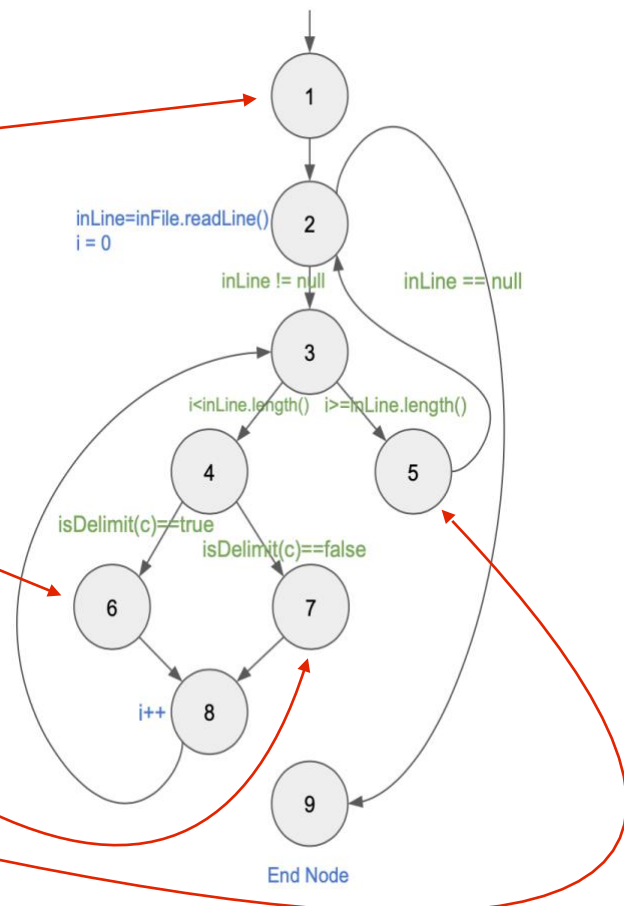


(Stut)

```
private static void stut (BufferedReader inFile)
    throws IOException
{
    String inLine;
    char c;
    int linecnt = 1;
    while ((inLine = inFile.readLine()) != null)
    { // For each line

        for (int i=0; i<inLine.length(); i++)
        { // for each character
            c = inLine.charAt(i);

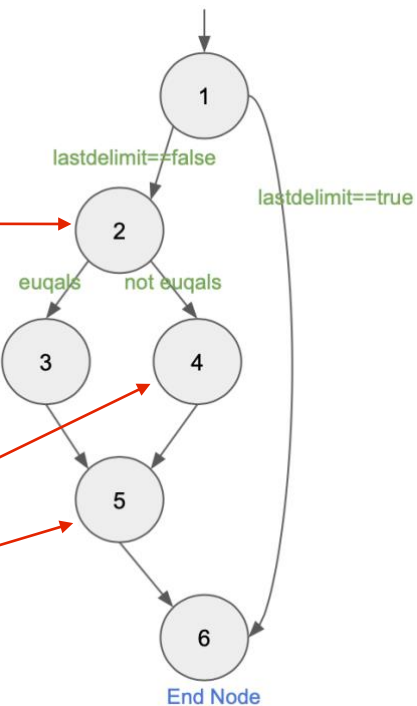
            if (isDelimit (c))
            { // Found an end of a word.
                checkDups (linecnt);
            }
            else
            {
                lastdelimit = false;
                curWord = curWord + c;
            }
        }
        checkDups (linecnt);
        linecnt++;
    }
} // end Stut
```



(checkDupes)

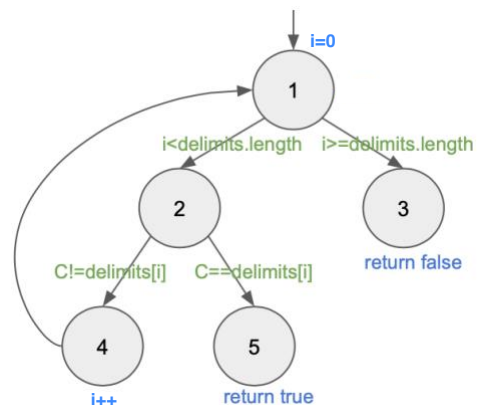
```
private static void checkDupes (int line)
{
    if (lastdelimit)
        return; // already checked, keep skipping

    lastdelimit = true;
    if (curWord.equals(prevWord))
    {
        System.out.println (
            "Repeated word on line "
            + line + ": " +
            prevWord + " " + curWord);
    }
    else
    {
        prevWord = curWord;
    }
    curWord = "";
} // end checkDupes
```



(isDelimit)

```
private static boolean isDelimit (char C)
{
    for (int i = 0; i < delimits.length; i++)
        if (C == delimits [i])
            return (true);
    return (false);
} // end class Stutter
```



b. List all the call sites

(以 <https://cs.gmu.edu/~offutt/softwaretest/java/Stutter.num> 的行數說明)

行數	Call name
46	stut(inFile)
63	isDelimit(c)
65	checkDupes(linecnt)
73	checkDupes(linecnt)

c. List all coupling du-pairs for each call site.

	Last-Def	First-Use
1	(main(), inFile, 30)	(stut(), inFile, 56)
2	(main(), inFile, 37)	(stut(), inFile, 56)
3	(main(), inFile, 42)	(stut(), inFile, 56)
4	(stut(), c, 61)	(isDelimit(), C, 102)
5	(stut(), linecnt, 55)	(checkDupes(), line, 88)
6	(stut(), linecnt, 74)	(checkDupes(), line, 88)
7	(isDelimit, 無變數名稱, 103)	(stut(), 無變數名稱, 63)
8	(isDelimit, 無變數名稱, 104)	(stut(), 無變數名稱, 63)

d. Create test data to satisfy All-Coupling User Coverage for Stutter

	args.length	args[0]	inFile
1	0		"abc def" (System.in)
2	1	null	"abc def" (System.in)
3	1	"testFile"	"abc def" (From file)
4	1	"testFile"	"abc def" (From file)
5	1	"testFile"	"abc+def" (From file)
6	1	"testFile"	"abc \n def" (From file)
7	1	"testFile"	"abc+def" (From file)
8	1	"testFile"	"abcdef" (From file)