

Software Testing HW3 : Test for Stutter

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

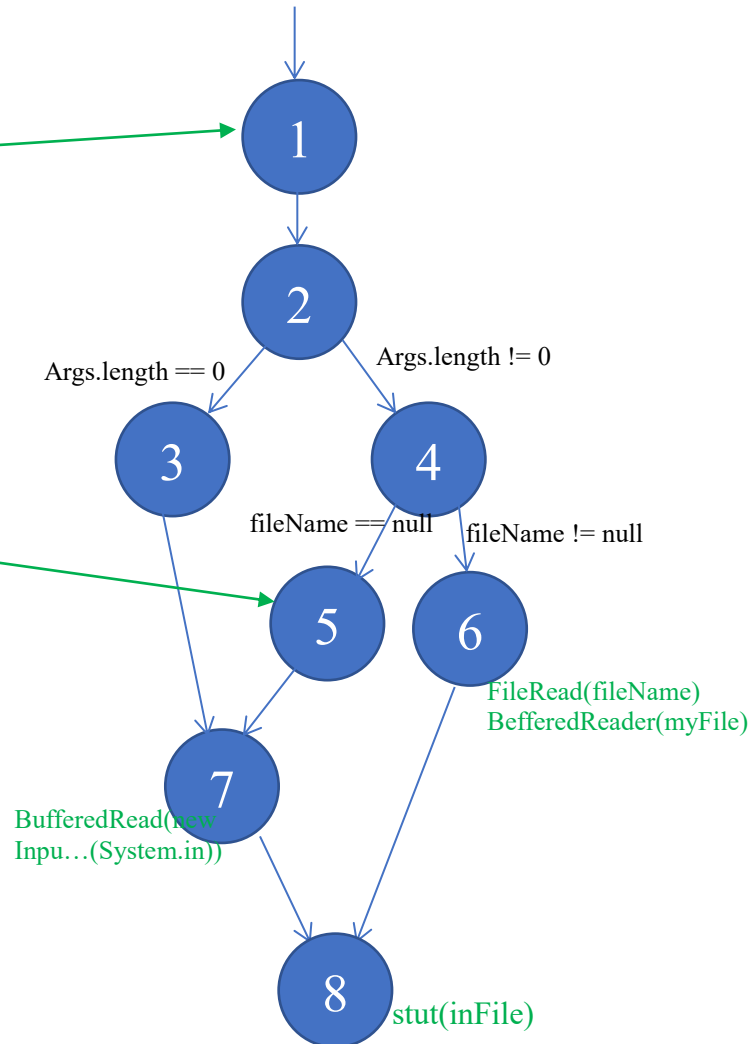
(CFG 中黑字是 Edge 條件判斷，綠字圈跟文字是註解 Node 執行內容)

Main()

```
public static void main (String[] args) throws IOException
{
    String fileName;
    FileReader myFile;
    BufferedReader inFile = null;

    if (args.length == 0)
    { // no file, use stdin
        inFile = new BufferedReader (new InputStreamReader (System.in));
    }
    else
    {
        fileName = args [0];
        if (fileName == null)
        { // no file name, use stdin
            inFile = new BufferedReader (new InputStreamReader (System.in));
        }
        else
        { // file name, open the file.
            myFile = new FileReader (fileName);
            inFile = new BufferedReader (myFile);
        }
    }

    stut (inFile);
}
```



Stut()

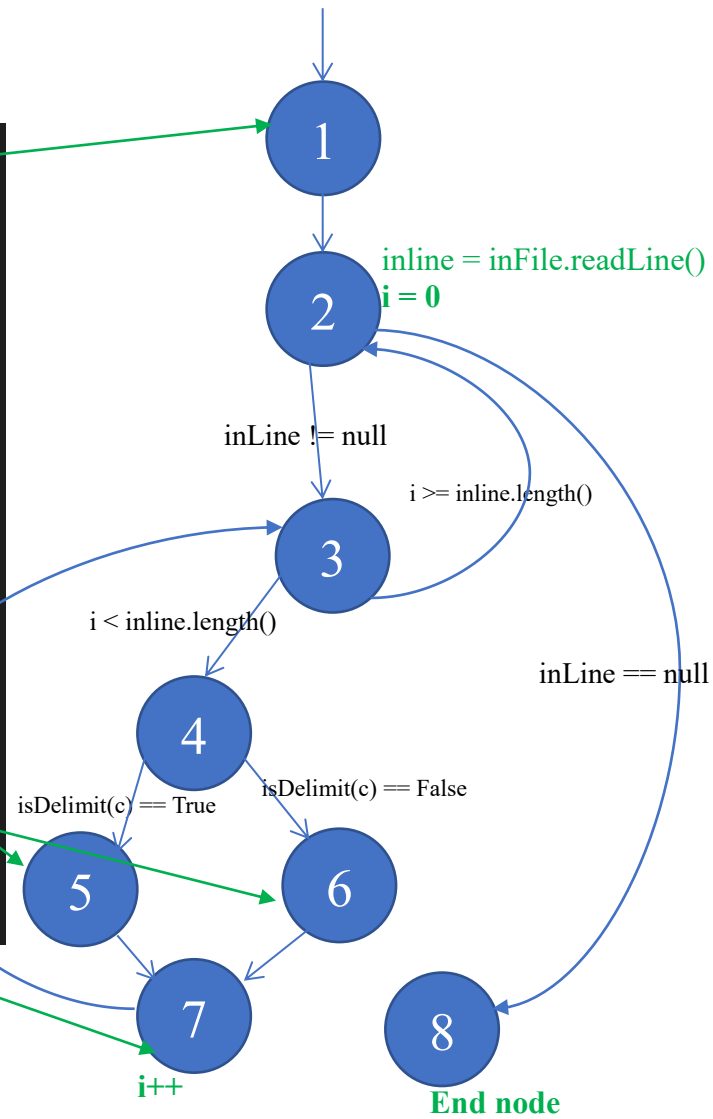
```

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

```



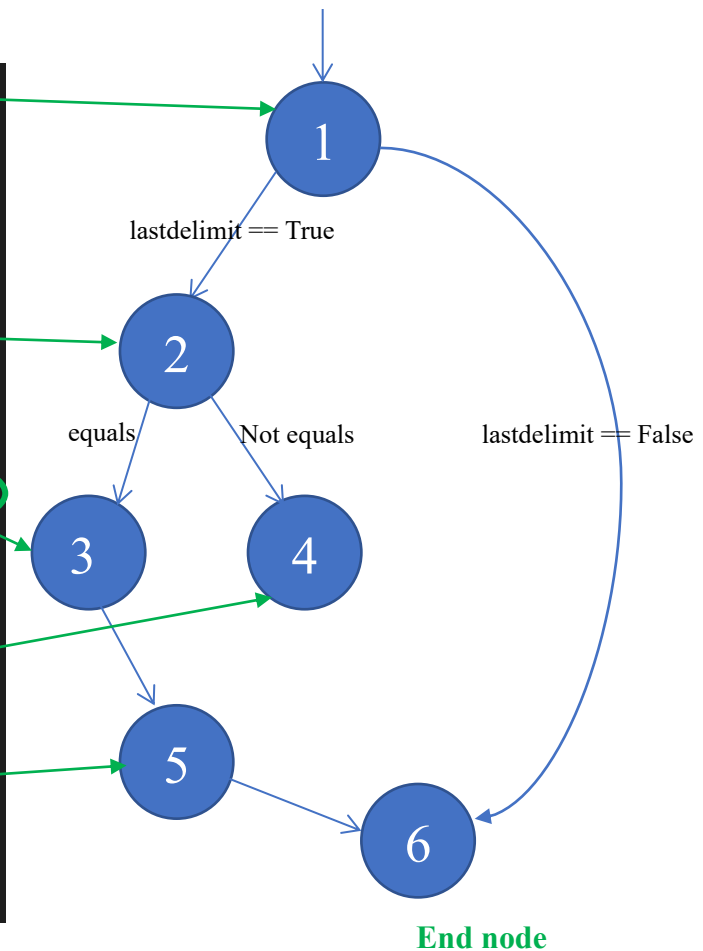
checkDups()

```

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

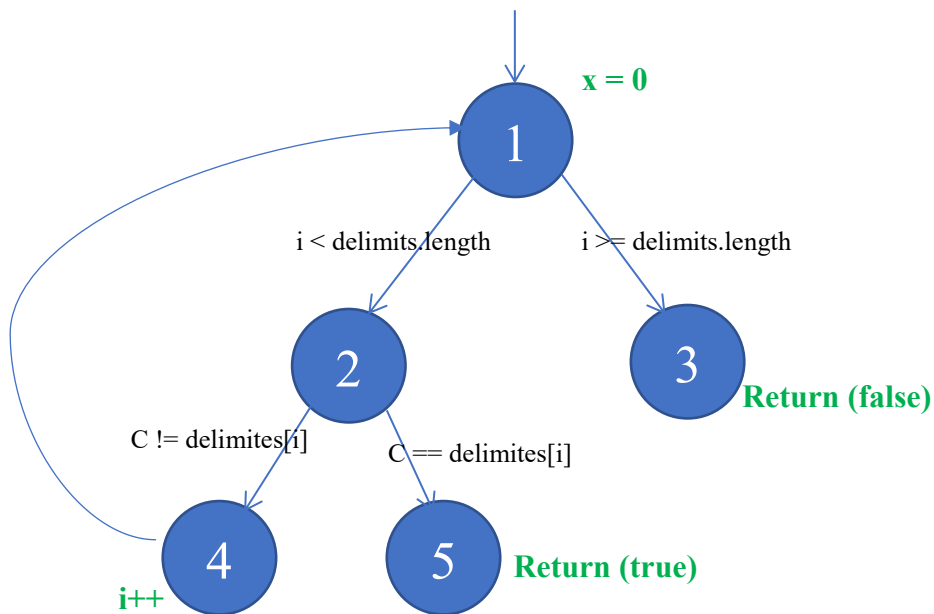
    lastdelimit = true;
    if (curWord.equals(prevWord))
    {
        System.out.println ("Repeated word on line " + line + ": " +
            prevWord + " " + curWord);
    }
    else
    {
        prevWord = curWord;
    }
    curWord = "";
} // end checkDups

```



isDelimit()

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



(b) List all the call sites. (假定 call 是自己寫的 function 才算 call site)(以此網頁

<https://cs.gmu.edu/~offutt/softwaretest/java/Stutter.num> 的行數為基礎說明)

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

(c) List all coupling du-pairs for each call site. (以此網頁

<https://cs.gmu.edu/~offutt/softwaretest/java/Stutter.num> 的行數為基礎說明)

	Last-def (Method name, variable name, line)	First-Use(Method name, variable name, line)
1	(main, inFile, 30)	(stut, inFile, 56)
2	(main, inFile, 37)	(stut, inFile, 56)
3	(main, inFile, 42)	(stut, inFile, 56)
4	(stut, linecnt, 55)	(checkDupes, line, 88)
5	(stut, linecnt, 74)	(checkDupes, line, 88)
6	(stut, c, 61)	(isDelimit, C, 102)
7	(isDelimit, *沒有 variable name, 103)	(isDelimit, *沒有 variable name, 63)
8	(isDelimit, *沒有 variable name, 104)	(isDelimit, *沒有 variable name, 63)

(d) Create test data to satisfy All-Coupling Use Coverage for Stutter.

	args.length	args[0]	inFile
1	0		“HelloWorld” (System.in)
2	1	null	“HelloWorld” (System.in)
3	1	“myFileName”	“HelloWorld” (File content)
4	1	“myFileName”	“Hello;Hello”
5	1	“myFileName”	“Hello\nHello” (\n 是換行符號)
6	1	“myFileName”	“Hello;Hello”
7	1	“myFileName”	“Hello;Hello”
8	1	“myFileName”	“Hello;Hello”

4、6、7、8 相同，可以當作只用一個 test case 達成