Laboratory 7
(week 14-20 November 2017)

TASKS:

A. Please continue to work on the Lab-Assignment 4 . The deadline of Lab-Assignment 4 is week 8 (21-27 November 2017).

B. Please start to work on the Lab-Assignment 5.

The deadline of Lab-Assignment 5 is week 10 (4-8 December 2017).

Lab-Assignment 5

You must extend the JAVA project from Lab-Assignment 4. Please implement the followings:

1. Boolean Expressions: Define and integrate the following boolean expressions:

exp1 < exp2
exp1<=exp2
exp1==exp2
exp1!=exp2
exp1> exp2
exp1>=exp2

Since in our toy language we do not have boolean values, you must use the c-like convention: 0 represents False and any other integer value represents True. For the expression evaluation you must ignore the precedence order of the operators. The order is given by the user when the expression is introduced.
Example: 10 + (2<6) evaluates to 11
(10+2)<6 evaluates to 0

2. While Statement: Define and integrate the following While statement:

while (expression) statement

The statement evaluation rule is as follows:
Stack1={while (exp1) Stmt1 | Stmt2|...}
SymTable1
Out1
HeapTable1
FileTable1
==>
If exp1 is evaluated to 0 then Stack2={Stmt2|...}
Else Stack2={Stmt1 | while (exp1) Stmt1 | Stmt2|...}
SymTable2=SymTable1
Out2=Out1
HeapTable2=HeapTable1
FileTable2=FileTable1
Example: v=6; (while (v-4) print(v);v=v-1);print(v)

3. Close all opened files on all possible execution paths. Our mini-interpreter for ToyLanguage programs have many possible errors. One of them could occur when the ToyLanguage programs is

terminated without closing the opened files. Please fix this error in **a functional manner** (see garbage collector code). You may want to add your apropriate code at the following position indicated in the method allStep, as follows:

```
void allStep(){
        PrgState prg = repo.getCrtPrg();
        try{
            while(true){
               oneStep(prg);
                prg.getHeap().setContent(conservativeGarbageCollector(
                    prg.getSymTable().getContent().values(),
                    prg.getHeap().getContent()));
                repo. logPrgStateExec();
            }
        }
        catch(MyStmtExecException e) {}
        catch(...) ...
        finally {
          //HERE – please close all opened files of the Toy Language programs
        }
    }
```

Please note that a non-functional solution is not accepted!