End-term

Due No due date **Points** 15 **Questions** 3
Available Nov 17 at 10:20am - Nov 17 at 11:45am about 1 hour **Time Limit** 70 Minutes

This quiz was locked Nov 17 at 11:45am.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	49 minutes	13 out of 15

Correct answers are hidden.

Score for this quiz: **13** out of 15
Submitted Nov 17 at 11:12am
This attempt took 49 minutes.

Question 1 — 5 / 5 pts

Between operator

Before you start off:

- *Download the following zip file: **between.zip***
- *Check the "tests" directory for further examples*
- *Extract the contents into a folder with the same name. Edit the source code of the compiler to implement the solution to the task. Check your solution with the tests found under the directory "tests" in the zip file.*

A three-argument operator for integers was added to While, to check whether a value is between two bounds. The between operator is denoted as **<expr1> / <expr2> / <expr3>**

This operator returns true if *<expr1>* **<** *<expr2>* **<** *<expr3>* holds - <expr2> is strictly bigger then <expr1> but strictly smaller then <expr3> -, otherwise it is false

Semantics:

- the operator is only working on integer numbers and yields a boolean value

Before submitting your work, compile and test your solution, perhaps create a couple of additional test cases (.while files), check your compiler thoroughly. If necessary, add comments in the source for clarification. Make sure your compiler is correct by testing it for valid and invalid cases.

between.zip (https://canvas.elte.hu/files/1982253/download)

Question 2

3.5 / 5 pts

Const

Before you start off:

- *Download the following zip file: **const.zip***
- *Check the "tests" directory for further examples*
- *Extract the contents into a folder with the same name. Edit the source code of the compiler to implement the solution to the task. Check your solution with the tests found under the directory "tests" in the zip file.*

The "const" keyword can be applied to any variable declaration. As a result, the corresponding variable can be assigned only once. So any const variable's first assignment sets its final value, while any further attempt to assign other value to that variable should result in an error.

Semantics:

- a const variable can only appear once as a left-value (in an assignment) or in a read
- const integer is not a new type, rather a modifier (meaning that such a variable can not change its assigned value)
- a const integer and an integer variable in case of binary operators should type-check the same way as two integer variable
- hint: extend the var_data struct with two new fields:
  - is_const field -> was the variable declared as const?
  - is_assigned -> is the variable is const, has it been already assigned?

Before you proceed, compile and test your solution, perhaps create a couple of additional test cases (.while files), check your compiler thoroughly. If

necessary, add comments in the source for clarification. Make sure your compiler is correct by testing it for valid and invalid cases.

const.zip (https://canvas.elte.hu/files/1982254/download)

semantic checks for 'read' is missing

Question 3

4.5 / 5 pts

Date

Before you start off:

- *Download the following zip file: **date.zip***
- *Check the "tests" directory for further examples*
- *Extract the contents into a folder with the same name. Edit the source code of the compiler to implement the solution to the task. Check your solution with the tests found under the directory "tests" in the zip file.*

A date_type type, a YYYY-MM-DD literal (>1970-01-01), and a few function(year, month, day) have been added to the While language.

Semantics:

- the year(...), month(...), and day(...) function should only accept date_type typed expression and yield an integer value
- the + operator should also type check if one of its arguments is a date_type typed expression while the other is an integer. This expression should yield a new, incremented date.
- other operators and instructions should yield type error if used with a date_type

Before you proceed, compile and test your solution, perhaps create a couple of additional test cases (.while files), check your compiler thoroughly. If necessary, add comments in the source for clarification. Make sure your compiler is correct by testing it for valid and invalid cases.

date.zip (https://canvas.elte.hu/files/1982256/download)

typecheck for T_EQ is not proper

Quiz Score: **13** out of 15