

# Compiler Construction

## Assignment 4

Kacper Multan

### Exercise 1:

TAC code:

```
Assumptions:
- print function is an external function that takes any amount of arguments and combines them in given order into
one string

extern func print(...)

func main()
  n = 5
  l = n + 1
  a = 0
  b = 1
  result = 0
  i = 1
  if i < l goto FIBONACCI
  goto END

FIBONACCI:
  result = a + b
  a = b
  b = result
  i = i + 1
  if i < l goto FIBONACCI
  goto END

END:
  param "The "
  param n
  param "th number in the sequence is: "
  param result
  call print, 4
  return 0

call main, 0
```

### Exercise 2:

Results:

```
zzzdream@KacperMultanLap:~/compiler/assignment_4/ps4_skeleton/vsl_programs$ make ps4-check
cd ps4-symbols; \
find * -wholename "suggested/*.symbols" | awk -F/ '{print $0 " " $2}' | xargs -L 1 diff -s --unified=0
Files suggested/strings.symbols and strings.symbols are identical
Files suggested/shadowing.symbols and shadowing.symbols are identical
Files suggested/locals.symbols and locals.symbols are identical
Files suggested/globals.symbols and globals.symbols are identical
No differences found in PS4!
zzzdream@KacperMultanLap:~/compiler/assignment_4/ps4_skeleton/vsl_programs$
```

Valgrind output:

```
RETURN_STATEMENT
ARRAY_INDEXING
  IDENTIFIER_DATA(arr) GLOBAL_ARRAY(4)
  NUMBER_DATA(5)
==3028==
==3028== HEAP SUMMARY:
==3028==    in use at exit: 0 bytes in 0 blocks
==3028==   total heap usage: 176 allocs, 176 frees, 25,691 bytes allocated
==3028==
==3028== All heap blocks were freed -- no leaks are possible
==3028==
==3028== For lists of detected and suppressed errors, rerun with: -s
==3028== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
zzzdream@KacperMultanLap:~/compiler/assignment_4/ps4_skeleton$
```