**Regras:**

1. Se este template não for submetido e preenchido corretamente, será atribuída a cotação zero ao laboratório;
2. Não se esqueça de submeter a pasta com o projeto do laboratório (código-fonte + makefile); sem código é atribuído zero ao laboratório.
3. Não “falsifique” os outputs dos níveis; alguma situação dessas resultará na atribuição de zero a dois laboratórios consecutivos.

# Identificação Alunos

* 190221093 | Alexandre Coelho
* 190221128 | Sérgio Veríssimo

# Nível 1 – Código de teste + output

**Output:**

i) +5\*79-4

ii) \*+579-4

iii) /\*+5633

iv) /+37-62

# Nível 2 – Código de teste + output

**Output:**

i) 579-4\*+

ii) 57+9-4\*

iii) 563+\*3/

iv) 37+-62/

# Nível 3 – Código de teste + output

char\* expression1 = "579-4\*+";

char\* expression2 = "57+9-4\*";

char\* expression3 = "563+\*3/";

char\* expression4 = "37+-62/";

int result = 0;

bool evaluatePostFix;

evaluatePostFix = evaluatePostfixExpression(expression1,&result);

if(evaluatePostFix)

printf("The result is: %d\n",result);

else

printf("The expression is not in postfix form!\n");

Output:

==1245== Memcheck, a memory error detector

==1245== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==1245== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==1245== Command: ./prog

==1245==

==1245== error calling PR\_SET\_PTRACER, vgdb might block

Stack contents (top to bottom):

5

--- bottom ---

Stack contents (top to bottom):

7

5

--- bottom ---

Stack contents (top to bottom):

9

7

5

--- bottom ---

Stack contents (top to bottom):

2

5

--- bottom ---

Stack contents (top to bottom):

4

2

5

--- bottom ---

Stack contents (top to bottom):

8

5

--- bottom ---

Stack contents (top to bottom):

13

--- bottom ---

The result is: 13

==1245==

==1245== HEAP SUMMARY:

==1245== in use at exit: 0 bytes in 0 blocks

==1245== total heap usage: 3 allocs, 3 frees, 1,068 bytes allocated

==1245==

==1245== All heap blocks were freed -- no leaks are possible

==1245==

==1245== For counts of detected and suppressed errors, rerun with: -v

==1245== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)

# Nível 4 – Código de teste + output

/\*char\* expression1 = "+5\*79-4";

char\* expression2 = "\*+579-4";

char\* expression3 = "/\*+5633";

char\* expression4 = "/+37-62";\*/

char\* newExpression1;

/\* char\* newExpression2;

char\* newExpression3;

char\* newExpression4;\*/

convertInfixToPostfix("5 + (3 \* 2)", &newExpression1);

printf("\n%s\n", newExpression1);

/\*convertInfixToPostfix(expression1, &newExpression1);

printf("\n%s\n", newExpression1);

convertInfixToPostfix(expression2, &newExpression2);

printf("\n%s\n", newExpression2);

convertInfixToPostfix(expression3, &newExpression3);

printf("\n%s\n", newExpression3);

convertInfixToPostfix(expression4, &newExpression4);

printf("\n%s\n", newExpression4);\*/

Output:

==19039== Memcheck, a memory error detector

==19039== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==19039== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==19039== Command: ./prog

==19039==

==19039== error calling PR\_SET\_PTRACER, vgdb might block

Queue contents (front to rear):

(

------------------------------

Queue contents (front to rear):

(

5

+

(

3

\*

2

)

)

------------------------------

Enter: +

Enter: \*

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x108DE1: convertInfixToPostfix (main4.c:120)

==19039== by 0x108943: main (main4.c:25)

==19039==

QUEUE FI:

(Queue Empty)

STACK:

(Stack Empty)

QUEUE FP:

Queue contents (front to rear):

5

3

2

\*

------------------------------

==19039== Use of uninitialised value of size 8

==19039== at 0x108F27: convertInfixToPostfix (main4.c:144)

==19039== by 0x108943: main (main4.c:25)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4E97A41: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Use of uninitialised value of size 8

==19039== at 0x4C32CF2: strlen (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4E994D2: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Use of uninitialised value of size 8

==19039== at 0x4C32D04: strlen (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4E994D2: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4EC7A57: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1239)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Use of uninitialised value of size 8

==19039== at 0x4EC7A5D: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1241)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4EC7A80: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1239)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Use of uninitialised value of size 8

==19039== at 0x4EC7A74: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1241)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4C37143: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4C37149: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4C37158: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4C371E6: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Conditional jump or move depends on uninitialised value(s)

==19039== at 0x4C371AD: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Use of uninitialised value of size 8

==19039== at 0x4C371B8: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

==19039== Use of uninitialised value of size 8

==19039== at 0x4C371C6: mempcpy (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19039== by 0x4EC7993: \_IO\_file\_xsputn@@GLIBC\_2.2.5 (fileops.c:1258)

==19039== by 0x4E98FEA: vfprintf (vfprintf.c:1643)

==19039== by 0x4EA0F25: printf (printf.c:33)

==19039== by 0x10895B: main (main4.c:26)

==19039==

532\*

==19039==

==19039== HEAP SUMMARY:

==19039== in use at exit: 0 bytes in 0 blocks

==19039== total heap usage: 8 allocs, 8 frees, 1,160 bytes allocated

==19039==

==19039== All heap blocks were freed -- no leaks are possible

==19039==

==19039== For counts of detected and suppressed errors, rerun with: -v

==19039== Use --track-origins=yes to see where uninitialised values come from

==19039== ERROR SUMMARY: 29 errors from 16 contexts (suppressed: 0 from 0)

# Nível 5 – Código de teste + output

char\* expression;

int result = 0;

char response = 'Y';

bool eval = false;

while(true){

printf("Insert an infix expression (single-digit only) >");

scanf("%s", expression);

eval = evaluatePostfixExpression(expression, &result);

printf("The result is: %d\n", result);

printf("More calculations(Y/N)?\n");

scanf("%s", &response);

if (response == 'N' || response == 'n')

break;

}

**Output:**

==19226== Memcheck, a memory error detector

==19226== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al.

==19226== Using Valgrind-3.13.0 and LibVEX; rerun with -h for copyright info

==19226== Command: ./prog

==19226==

==19226== error calling PR\_SET\_PTRACER, vgdb might block

Insert an infix expression (single-digit only) >2+2

==19226== Conditional jump or move depends on uninitialised value(s)

==19226== at 0x4EAC071: \_IO\_vfscanf (vfscanf.c:1021)

==19226== by 0x4EB7FD7: \_\_isoc99\_scanf (isoc99\_scanf.c:37)

==19226== by 0x1089D8: main (main5.c:22)

==19226==

==19226== Use of uninitialised value of size 8

==19226== at 0x4EA8FDD: \_IO\_vfscanf (vfscanf.c:1103)

==19226== by 0x4EB7FD7: \_\_isoc99\_scanf (isoc99\_scanf.c:37)

==19226== by 0x1089D8: main (main5.c:22)

==19226==

==19226== Use of uninitialised value of size 8

==19226== at 0x4EAA942: \_IO\_vfscanf (vfscanf.c:1188)

==19226== by 0x4EB7FD7: \_\_isoc99\_scanf (isoc99\_scanf.c:37)

==19226== by 0x1089D8: main (main5.c:22)

==19226==

==19226== Use of uninitialised value of size 8

==19226== at 0x4C32CF2: strlen (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19226== by 0x108DCF: convertInfixToPostfix (main5.c:118)

==19226== by 0x1089EB: main (main5.c:24)

==19226==

==19226== Use of uninitialised value of size 8

==19226== at 0x4C32D04: strlen (in /usr/lib/valgrind/vgpreload\_memcheck-amd64-linux.so)

==19226== by 0x108DCF: convertInfixToPostfix (main5.c:118)

==19226== by 0x1089EB: main (main5.c:24)

==19226==

Queue contents (front to rear):

(

------------------------------

==19226== Use of uninitialised value of size 8

==19226== at 0x108E8E: convertInfixToPostfix (main5.c:129)

==19226== by 0x1089EB: main (main5.c:24)

==19226==

Queue contents (front to rear):

(

2

+

2

)

------------------------------

Enter: +

==19226== Conditional jump or move depends on uninitialised value(s)

==19226== at 0x10913D: convertInfixToPostfix (main5.c:177)

==19226== by 0x1089EB: main (main5.c:24)

==19226==

QUEUE FI:

(Queue Empty)

STACK:

(Stack Empty)

QUEUE FP:

Queue contents (front to rear):

2

2

+

------------------------------

==19226== Use of uninitialised value of size 8

==19226== at 0x109283: convertInfixToPostfix (main5.c:201)

==19226== by 0x1089EB: main (main5.c:24)

==19226==

==19226==

==19226== Process terminating with default action of signal 11 (SIGSEGV)

==19226== Bad permissions for mapped region at address 0x108880

==19226== at 0x109283: convertInfixToPostfix (main5.c:201)

==19226== by 0x1089EB: main (main5.c:24)

==19226==

==19226== HEAP SUMMARY:

==19226== in use at exit: 69 bytes in 6 blocks

==19226== total heap usage: 9 allocs, 3 frees, 2,120 bytes allocated

==19226==

==19226== LEAK SUMMARY:

==19226== definitely lost: 0 bytes in 0 blocks

==19226== indirectly lost: 0 bytes in 0 blocks

==19226== possibly lost: 0 bytes in 0 blocks

==19226== still reachable: 69 bytes in 6 blocks

==19226== suppressed: 0 bytes in 0 blocks

==19226== Rerun with --leak-check=full to see details of leaked memory

==19226==

==19226== For counts of detected and suppressed errors, rerun with: -v

==19226== Use --track-origins=yes to see where uninitialised values come from

==19226== ERROR SUMMARY: 14 errors from 8 contexts (suppressed: 0 from 0)

The result is: 2

More calculations(Y/N)?

n