# Submission Report

* Submission generated at 20250820\_235305
* Machine info: Linux pkrvmqc4gcfdwos 6.11.0-1018-azure #18~24.04.1-Ubuntu SMP Sat Jun 28 04:46:03 UTC 2025 x86\_64 x86\_64 x86\_64 GNU/Linux

## Build Output Debug

make BUILD=debug  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
mkdir -p build/debug  
cc -g -O0 -DDEBUG -fno-omit-frame-pointer -fsanitize=address -c src/lab.c -o build/debug/lab.c.o  
mkdir -p build/debug  
cc -g -O0 -DDEBUG -fno-omit-frame-pointer -fsanitize=address -c src/main.c -o build/debug/main.c.o  
cc -g -O0 -DDEBUG -fno-omit-frame-pointer -fsanitize=address build/debug/lab.c.o build/debug/main.c.o -o build/debug/myapp\_d -fsanitize=address  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
make BUILD=release  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
mkdir -p build/release  
cc -Wall -Wextra -O2 -fPIE -MMD -MP -Wformat -Wformat=2 -Wconversion -Wsign-conversion -Wimplicit-fallthrough -fstrict-flex-arrays=3 -fstack-protector-strong -Werror=format-security -Werror=implicit -Werror=incompatible-pointer-types -Werror=int-conversion -c src/lab.c -o build/release/lab.c.o  
mkdir -p build/release  
cc -Wall -Wextra -O2 -fPIE -MMD -MP -Wformat -Wformat=2 -Wconversion -Wsign-conversion -Wimplicit-fallthrough -fstrict-flex-arrays=3 -fstack-protector-strong -Werror=format-security -Werror=implicit -Werror=incompatible-pointer-types -Werror=int-conversion -c src/main.c -o build/release/main.c.o  
cc -Wall -Wextra -O2 -fPIE -MMD -MP -Wformat -Wformat=2 -Wconversion -Wsign-conversion -Wimplicit-fallthrough -fstrict-flex-arrays=3 -fstack-protector-strong -Werror=format-security -Werror=implicit -Werror=incompatible-pointer-types -Werror=int-conversion build/release/lab.c.o build/release/main.c.o -o build/release/myapp   
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
make BUILD=debug-test  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
mkdir -p build/debug-test  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c src/lab.c -o build/debug-test/lab.c.o  
mkdir -p build/debug-test  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c src/main.c -o build/debug-test/main.c.o  
mkdir -p build/debug-test/harness/  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c tests/harness/unity.c -o build/debug-test/harness/unity.c.o  
mkdir -p build/debug-test/  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c tests/lab-test.c -o build/debug-test/lab-test.c.o  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address build/debug-test/lab.c.o build/debug-test/main.c.o build/debug-test/harness/unity.c.o build/debug-test/lab-test.c.o -o build/debug-test/myapp\_td -fsanitize=address  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
make BUILD=test  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
mkdir -p build/tests  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c src/lab.c -o build/tests/lab.c.o  
mkdir -p build/tests  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c src/main.c -o build/tests/main.c.o  
mkdir -p build/tests/harness/  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c tests/harness/unity.c -o build/tests/harness/unity.c.o  
mkdir -p build/tests/  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c tests/lab-test.c -o build/tests/lab-test.c.o  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage build/tests/lab.c.o build/tests/main.c.o build/tests/harness/unity.c.o build/tests/lab-test.c.o -o build/tests/myapp\_t -fprofile-arcs -ftest-coverage  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
All builds completed: debug, release, and test.

## Coverage Report

rm -f -rf build  
make BUILD=test  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
mkdir -p build/tests  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c src/lab.c -o build/tests/lab.c.o  
mkdir -p build/tests  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c src/main.c -o build/tests/main.c.o  
mkdir -p build/tests/harness/  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c tests/harness/unity.c -o build/tests/harness/unity.c.o  
mkdir -p build/tests/  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage -c tests/lab-test.c -o build/tests/lab-test.c.o  
cc -g -O0 -DTEST -fprofile-arcs -ftest-coverage build/tests/lab.c.o build/tests/main.c.o build/tests/harness/unity.c.o build/tests/lab-test.c.o -o build/tests/myapp\_t -fprofile-arcs -ftest-coverage  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
make BUILD=test \_report-txt  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
Generating text coverage report...  
./build/tests/myapp\_t  
Setting up tests...  
Tearing down tests...  
tests/lab-test.c:44:test\_get\_greeting:PASS  
Setting up tests...  
Tearing down tests...  
tests/lab-test.c:45:test\_add:PASS  
Setting up tests...  
Tearing down tests...  
tests/lab-test.c:46:test\_subtract:PASS  
  
-----------------------  
3 Tests 0 Failures 0 Ignored   
OK  
gcovr --txt -r . --exclude-directories build/tests/harness --exclude '.\*main\.c$' --exclude '.\*test\.c$'  
(INFO) Reading coverage data...  
  
(INFO) Writing coverage report...  
  
------------------------------------------------------------------------------  
 GCC Code Coverage Report  
Directory: .  
------------------------------------------------------------------------------  
File Lines Exec Cover Missing  
------------------------------------------------------------------------------  
src/lab.c 12 12 100%  
------------------------------------------------------------------------------  
TOTAL 12 12 100%  
------------------------------------------------------------------------------  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'

## Memory Leak Report

make BUILD=debug-test  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
mkdir -p build/debug-test  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c src/lab.c -o build/debug-test/lab.c.o  
mkdir -p build/debug-test  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c src/main.c -o build/debug-test/main.c.o  
mkdir -p build/debug-test/harness/  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c tests/harness/unity.c -o build/debug-test/harness/unity.c.o  
mkdir -p build/debug-test/  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address -c tests/lab-test.c -o build/debug-test/lab-test.c.o  
cc -g -O0 -DDEBUG -DTEST -fno-omit-frame-pointer -fsanitize=address build/debug-test/lab.c.o build/debug-test/main.c.o build/debug-test/harness/unity.c.o build/debug-test/lab-test.c.o -o build/debug-test/myapp\_td -fsanitize=address  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
make BUILD=debug-test \_leak-test  
make[1]: Entering directory '/home/runner/work/makefile-project-starter/makefile-project-starter'  
Running memory leak on unit tests ...  
ASAN\_OPTIONS="detect\_leaks=1" ./build/debug-test/myapp\_td  
Setting up tests...  
Tearing down tests...  
tests/lab-test.c:44:test\_get\_greeting:PASS  
Setting up tests...  
Tearing down tests...  
tests/lab-test.c:45:test\_add:PASS  
Setting up tests...  
Tearing down tests...  
tests/lab-test.c:46:test\_subtract:PASS  
  
-----------------------  
3 Tests 0 Failures 0 Ignored   
OK  
Memory leak check complete. Check the output above for any leaks.  
make[1]: Leaving directory '/home/runner/work/makefile-project-starter/makefile-project-starter'

## lab.c Content

#include "lab.h"  
#include <stdio.h>  
#include <stdlib.h>  
  
int add(int a, int b) {  
 return a + b;  
}  
  
int subtract(int a, int b) {  
 return a - b;  
}  
  
char \*get\_greeting(const char \*restrict name)  
{  
 if (name == NULL)  
 {  
 return NULL;  
 }  
  
 // Allocate memory for the greeting message  
 int length = snprintf(NULL, 0, "Hello, %s!", name);  
 if (length < 0) // GCOVR\_EXCL\_START  
 {  
 return NULL; // snprintf failed  
 } // GCOVR\_EXCL\_STOP  
  
 //Casting is safe here because we know length is non-negative  
 size\_t alloc\_size = (size\_t) length + 1; // +1 for the null terminator  
 char \*greeting = malloc( alloc\_size);  
  
  
 if (greeting == NULL) // GCOVR\_EXCL\_START  
 {  
 return NULL; // Memory allocation failed  
 } // GCOVR\_EXCL\_STOP  
  
  
 // Create the greeting message  
 snprintf(greeting, alloc\_size, "Hello, %s!", name);  
  
 return greeting;  
}

## lab.h Content

#ifndef LAB\_H  
#define LAB\_H  
  
/\*\* \* @brief Returns a greeting message.  
 \*  
 \* This function returns a string that contains a greeting message.  
 \* The string is allocated with malloc and should be freed by the caller.  
 \* @param name The name to include in the greeting.  
 \* @return A greeting string.  
 \*/  
char\* get\_greeting(const char\* restrict name);  
  
/\*\* \* @brief Adds two integers.  
 \*  
 \* This function adds two integers and returns the result.  
 \* @param a The first integer.  
 \* @param b The second integer.  
 \* @return The sum of a and b.  
 \*/  
int add(int a, int b);  
  
/\*\* \* @brief Subtracts two integers.  
 \*  
 \* This function subtracts the second integer from the first and returns the result.  
 \* @param a The first integer.  
 \* @param b The second integer.  
 \* @return The result of a - b.  
 \*/  
int subtract(int a, int b);  
  
  
  
#endif // LAB\_H