

# IRSmk

## Summary Version

1.0

## Purpose of Benchmark

This single-CPU C program is intended to be an optimization and SIMD compiler challenge.

## Characteristics of Benchmark

The benchmark is a small fragment of a larger benchmark and uses a coding style in wide use at LLNL. There is one routine containing a single set of nested do-loops that perform a matrix multiply. The instruction mix is 47% load/store, 24% floating point (68% of which are in FMA instructions), 26% integer, and 4% branches.

## Limitations of Benchmark

Single CPU only.

## Mechanics of Building Benchmark

One Makefile is used to build the code. It will require manual modifications (such as compiler, compiler flag, etc.) prior to attempting to build the code. The benchmark has been compiled using `icc`, `xlc`, and `PathC` and has been run on Xeon, POWER5, and Opteron CPU-based computers.

## Mechanics of Running Benchmark

Copy one of the input decks (`irsmk_input_25/50/100`) to `irsmk_input` (e.g., `cp irsmk_input_25 irsmk_input`).

```
./IRSmk > myoutput
```

where `IRSmk` is the executable and `myoutput` is an arbitrarily named output file of your choosing.

## Verification of Results

Examples of output (`irsmk_output_25/50/100`) are provided in the tar file.