

Exercise 3:

Write a Pintool in JIT mode and in Probe mode.

The pintool receives 2 possible knobs: “-prof” and “-inst” that are to be applied as follows:

1. `<pindir>/pin -t ex3.so -prof -- ./bzip2 -k -f input.txt`
2. `<pindir>/pin -t ex3.so -inst -- ./bzip2 -k -f input.txt`

When applied with the “-prof” knob the pintool should run exercise 2 and print out loop trip count information into the file “**loop-count.csv**” according to the instructions of exercise 2.

When applied with the “-inst” knob the pintool should run in probe mode and generate the binary code of the top 10 routines (based on total dynamic count of the instructions in the routine) according to the gathered profiling data from previous run.

Place the translated routines in an allocated memory area and patch them to the original image code.

The top 10 routines should be only from the MainExecutable image.

No need to instrument routines from other images.

For the exercise it is recommended to use the provided pintool source code “**rtn-translation.cpp**” located at:

<https://moodle.technion.ac.il/mod/resource/view.php?id=455978>

In both modes **-prof** and **-inst** the pintool should not run more than 30% slower compared to the same run of the **bzip2** using pin but without the **ex3.so** pintool, as measured by the ‘time’ command.

Test your pintool:

In the moodle you’ll find the input binary file called “**bzip2.gz**” along with an input file to give it called “**input.txt.gz**”.

Ftp the files to your Linux account and open them using the **gunzip** command.

To run it simply type: `$./bzip2 -k -f input.txt`

This will compress the file **input.txt** and generate a new file **input.txt.bz2**

To test your pintool on the above **bzip2** binary file, simply type:

`$ time <pindir>/pin -t ex3.so <-prof/-inst> -- ./bzip2 -k -f input.txt`

Submission requirements:

The submission of this exercise is **in pairs only**.

Submit 1 compressed file called “**ex3.zip**” into the moodle exercise 3 [link](#) containing the following files:

1. The binary of your pintool **ex3.so** (compiled, and tested by you that it runs and gives the result).
2. A directory called: ‘src’ containing all the sources of your pintool along with the make files ‘**makefile**’, **makefile.rules**’ and a **REDAME.txt** file that includes the following:
 - a. names + id numbers
 - b. How to run the tool.

Submission deadline: postponed until midnight Sunday, June 19 2022.