A taste of compiler optimization

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Part I. Answer the following questions. You may check the manual page of cc or gcc (with `man cc’’ on unix systems or using google to search for the cc manual page).

1. What optimizations are included with the –O1 option?
2. What optimizations are included with the –O2 option?
3. What optimizations are included with the –O3 option?

Part II. Write a report on your experiment.

**A brief introduction.**

…

… write something here …

…

**Experimental environment.**

Platform1:

Machine: Mac Mini (2011)

CPU: 2.5Ghz Intel Core i5

Clock rate:

Memory size: 4 GB 1333 MHz DDR3

Operating system and version: OSX Yosemite version 10.10.5

Compiler and version: clang 6.1.0

Benchmark: P10-1.c and P10-2.c

Platform2:

Machine: Desktop--Genuine (2011)

CPU:3.07GHz Intel Core i7

Clock rate:

Memory size: 8.00GB

Operating system and version: Ubuntu 14.04.5 LTS

Compiler and version: gcc 4.8.5

Benchmark: P10-1.c and P10-2.c

**Experimental results.**

…

… write something here …

…

Tables of execution time (seconds):

Platform1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Plain (no special options) | -O1 | -O2 | -O3 |
| P10-1 | 76.3 | 40.1 | 29.6 | 29.7 |
| P10-2 | 79.8 | 40.4 | 25.6 | 25.7 |

Platform2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Plain (no special options) | -O1 | -O2 | -O3 |
| P10-1 | 79.021 | 33.062 | 31.811 | 29.499 |
| P10-1  (add -sort) | 72.533 | 21.067 | 19.060 | 17.887 |
| P10-2  (add -sort) | 96.413 | 34.116 | 29.113 | 27.485 |

**Conclusion.**

…

… write something here …

…