Graphical user interface, text, application, table

Description automatically generated

Execution time = # of instructions x CPI x CPU cycle time

Let’s say CPU cycle time is t.

Firstly, I calculated the total execution time for the program:

* 50x106x2xt + 30x106x4xt + 20x106x3xt = 280x106xt

Secondly, I want to make the common case fast. The I-Type instructions need the most cycle number. Therefore if we improve I-Type with 50%, we get:

* 50x106x2xt + 30x106x2xt + 20x106x3xt = 220x106xt

At the end, we improve the whole program by:

* = 1.27 times