Lab3: Y86-64 ISA + SEQ implementation

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Overview

- **In this lab,**
  - You will learn about the design and implementation of sequential Y86-64 processor
- **Part A : Y86-64 Assembly Programming**
  - Write programs in Y86-64 assembly : **sum**, **rsum**, **copy**
- **Part B : Sequential Implementation**
  - Implement a new Instruction : **IADDQ**

Configuration

- **A Linux environment**
  - with flex and bison (installed on Martini)
  - Martini recommended, but not necessary

- **Download archlab-handout.tar from eTL**

```
$> tar xvf archlab-handout.tar
$> cd sim
$> make
```

Part A : Y86-64 Assembly Programming

- **Your Task : Write sum, rsum, copy in Y86-64 assembly**
  - Working directory : sim/misc
  - File to modify and submit : sum.ys, rsum.ys, copy.ys
  - C versions of the programs : sim/misc/examples.c
  - To test :

```
$> cd sim/misc
$> make
$> ./yas sum.ys
$> ./yis sum.yo
```

Part B : Sequential Implementation

- **Your Task : Implement IADDQ instruction**
  - Working directory : sim/seq
  - File to modify and submit : seq-full.hcl
  - Standard implementation (for reference) : seq-std.hcl
  - To test IADDQ :

```
$> cd sim/seq
$> make VERSION=full      // use seq-full.hcl to simulate
$> ../misc/yas ../y86-code/asmui.ys
$> ssim ../y86-code/asumi.yo
```

  - You can also test with the standard SEQ simulator

```
$> make    // use seq-std.hcl to simulate
$> ssim ../y86-code/you_want_to_execute.yo
```

Part B : Sequential Implementation

- **Verify your SEQ simulator by running tests**
  - First, prepare your version of simulator

```
$> cd sim/seq
$> make VERSION=full
```

  - To run the benchmark programs :

```
$> cd sim/y86-code
$> make testssim
```

  - To run the regression test :

```
$> cd sim/ptest
$> make SIM=../seq/ssim   // tests simulator except IADDQ
$> make SIM=../seq/ssim TFLAGS=-i    // including IADDQ
```

Submission Guideline

- **Zip your files into `Lab3.tar`**

```
$> tar cvf Lab3.tar sim/misc/*.ys \
   sim/seq/seq-full.hcl
```

- **Submit `Lab3.tar` on eTL**

- **Due Date: Oct 30th(Tue) 11:59PM**
  - Cut-off Date : Nov 2nd(Fri) 11:59PM

Grading Policy

- **Part A : 45 points**
  - 15 points for each program's correctness
- **Part B : 55 points**
  - 25 points for passing the benchmark programs
  - 30 points for passing the regression tests in `/ptest`

- **Check `archlab.pdf` for more details**

- **[Important] Next homework will be implemented based on current homework.**

Grading Policy

- **Late submission penalty**
  - ~ 24 hrs: -20% of maximum score
  - ~ 48 hrs: -40% of maximum score
  - ~ 72 hrs: -60% of maximum score
  - 72 hrs ~: cut-off (no more submission)
  - Grace Days: no late penalties up to 3 days through this semester (automatically applied to HW #1 through #5)

- **Plagiarism**
  - 0 for all assignments (worth of 35% of total grade!)
  - We may use a plagiarism detector program over your codes
  - OK to discuss ideas, but never share your codes in any form

Q&A

- Thank you for paying attention.