Lab 6: Register Allocation

Description

Finish register allocation in your tiger compiler.

Related files for this lab are:

- **src/tiger/liveness/.*** Files related to liveness analysis
- **src/tiger/regalloc/.*** Files related to register allocation

To finish this lab, you will only need to finish the following modules: { liveness analysis } { register allocation } you can modify any file to finish your design.

In your generated code, you should do what you can to **avoid unnecessary stack accesses** (push and pop), which means placing as many variables as possible in registers by **escape analysis** in register allocation phase. Otherwise, you will NOT get the full scores!

Notice: Before you start this lab, you should carefully read the chapter 10,11 of the textbook. And if you have any question about this lab, feel free to contact Zulai Wang, who is the teaching assistant responsible for lab 6.

Environment

You will use the same code framework that you had set up when you worked on lab6 and use the code you written in previous labs. What you need to do now is to pull the latest update of the code framework if there are any. You may have to do some code merging jobs. If you have any difficulties in merging codes, you can ask TAs in our Wechat group.

```
shell% git fetch upstream
shell% git checkout -b lab6 upstream/lab6
shell% git push -u origin
shell% git merge lab5-part2

shell% git add files
shell% git commit -m "[lab6] merge lab5-part2"
shell% git push origin lab6
```

If you haven't set it up before, you should follow the instructions here to set up your lab environment.

Grade Test

The lab environment contains a grading script named as **grade.sh**, you can use it to evaluate your code, and that's how we grade your code, too. If you pass all the tests, the script will print a successful hint, otherwise, it will output some error messages. You can execute the script with the following commands.

```
Remember grading your lab under docker or unix shell! Never run these commands under windows cmd.
shell% make gradelab6
shell% ...
shell% [^_^]: Pass #If you pass all the tests, you will see these messages.
shell% TOTAL SCORE: 100
```

Handin

The deadline of this lab is on Tuesday 12:00 AT NOON, Dec 19, 2023, and if you miss the deadline, points will be deducted based on the number of days you are late!

After you have passed the grade test, you need first commit your modification, then push it to your remote repository on gitlab. You can use the following commands to finish this step.

```
shell% git add files
shell% git commit -m "[lab6] finish lab6"
shell% git push origin lab6
```

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