Week 10 Practical Exam

Due 13 Oct by 10:00 **Points** 100 **Available** 13 Oct at 9:00 - 13 Oct at 11:00 about 2 hours

This assignment was locked 13 Oct at 11:00.

Weighting and Due Date

- Marks for this practical exam contribute 5% of the overall course mark.
- All marks will be awarded automatically by the web submission system.
- **Due date: 10am Tuesday 13 October 2020.**
- **Late penalties:** late submissions will receive a mark of 0.
- **Core Body of Knowledge (CBOK) Areas:** abstraction, design, hardware and software, data and information, and programming.

Exam Setup

Note: this exam assumes that you have already created directories for every assignment, workshop, project, and exam in your svn repository, as described on the **Startup Files for Workshops and Assignments** page.

1. If required, checkout a working copy of the **exam2-primary** directory from your svn repository.
2. Change directory to the working copy of the **exam2-primary** directory.
3. Copy the newest zip file attached below into the updates sub-directory and add it to svn.
4. Run the following command to place the exam's startup files in the correct locations:

```
% make install
```

5. svn add the **question00.vm-asm** file to your svn repository and perform an svn commit.

```
svn add question00.vm-asm
svn commit -m exam2
```

6. Make a submission to the **web submission system (https://cs.adelaide.edu.au/services/websubmission)** *assignment* named: ***Practical Exam 2***

Exam Description

This exam is based on the second part of **Workshop 07 - Virtual Machine Translation**.

You will be required to write an implementation for one or more Hack Virtual Machine commands in Hack Assembly language. The startup files will provide the same testing tools as used in Workshop 07 but you will not be required to do any C++ programming. Instead you will be required to create a separate file of Assembly Language for each Virtual Machine command that you will be asked to implement.

You will need to create 10 question files that must be named **question01.vm-asm**, **question02.vm-asm** and so on. Each question file will start with either one or two Virtual Machine commands. You will be asked to implement the last command in each file by appending lines of Hack Assembler to the file. The web submission script will check the names of the files and that they start with the correct question.

The specific Virtual Machine commands that you will be asked to implement will be incrementally revealed to you by the web submission system as you complete each question in the exam. Once a particular command has been successfully implemented, the web submission system will show you the next three questions. The questions do not need to be completed in order.

In those cases where you need to use jump instructions, you need to know the name of the function that the command is part of so that you can construct the correct label names. To facilitate this, some of the question files will start with a function command and its implementation.

Testing

The startup files have the same structure as used in the workshops and programming assignments. If you wish to test your implementations without making a web submission, you can simply run the command:

```
% make
|      Test Input       |   Assembler   |       Simulator       |  Test Result
" cat question00.vm-asm | bin/assembler | bin/simulator test-it "  test passed
```

Initially the startup files contain a single question file, **question00.vm-asm**. This contains a single function command for a function that has no local variables. It also includes the implementation which in this case is a single Hack Assembly language label.

If your implementation of a command fails to assemble, you can use the commands shown between " " in the output of make to see the relevant error messages.

If your implementation of a command fails a test, you can use the commands shown between " " in the output of make to see a detailed execution trace of your code.

When you make a web submission, the test script will check the first few lines of a question file prior to attempting any testing. If the file is missing or the start of the file is not the expected question, you will be shown what the first lines in the question file must be.

Once you have successfully passed the example test for a given stage, the test script will automatically show you the next three questions. You can complete the visible questions in any order you like.

Note: The testing run on your own computer does not know what questions will be tested by the web submission system. That is why the web submission system shows you what the first few lines of each question file must be.

Marks

There are a total of 10 marked questions in the exam each of which is given a mark of 0 or 10.

Frequent Web Submissions

Remember to make frequent submissions to the web submission system

- a web submission is the only way to discover the next questions in the exam,
- late submissions receive a mark of 0.

Startup Files

The following zip file must be placed in the updates sub-directory and added to svn. When make is run, the zip file in the updates directory is used to update the startup files. Any files you are required to edit will not be updated but, a copy of the latest version of those files will be placed in the sub-directory originals.

- **exam2p-20200923-121112.zip**