

CMPT350: Lab Demo 7

Intro to Dynamic Memory

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Due: Wednesday, November 16th @ 17:00

In addition to static (fixed-size) memory allocation, we can also use system calls to dynamically allocate blocks of memory at runtime. This allows us much more flexibility in efficient memory management than we had previously with static memory buffers. To ease into dynamic memory allocation in MIPS, we will take a look at strings again.

Laboratory Procedure:

On the course Moodle page, look for the Demo 6 assignment in the Laboratories section. Inside is a premade skeleton MIPS file, `demo7.s`. Save this somewhere handy on your machine. You may use both the command line version, `spim`, and the GUI version, `QtSpim` to run your program. As well, you will need a text editor to edit your programs.

Assignment Requirements:

- Prompt the user for an integer, the number of characters in the user's name.
- Using this value, allocate an appropriate amount of memory dynamically to store the user's name in
- Prompt the user for their name
 - Remember, the syscall for reading in strings from the user is syscall 8
- Write the user's name into the memory allocated above.
- Display the user's name back to them.

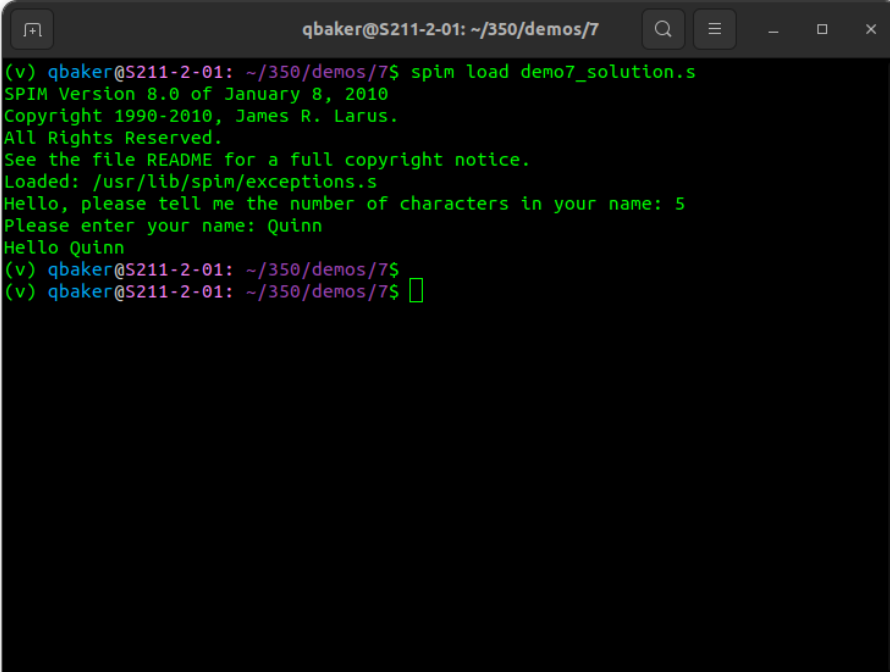
***** NOTE:** Your code **must compile and execute** within the **laboratory environment**. Failure to do so will result in a **mark of ZERO** for the program. *******

Submission

Your programs should be named using your name and end in a `.s` extension. For example, `BakerDemo7.s`

When you feel your programs meet all of the above requirements, call the lab coordinator to demonstrate your program, and create a zip archive with your code submission and trace file(s) included. An easy way to do this is with the `zip` command. For example, if your solution file and trace file are in a folder called `baker`, then the command `zip -r baker.zip baker/` will create a zip file containing your submission files called `baker.zip` (Replace this with your name when creating your zip file). Upload this zip file to Moodle.

Sample Run:



```
qbaker@S211-2-01: ~/350/demos/7
(v) qbaker@S211-2-01: ~/350/demos/7$ spim load demo7_solution.s
SPIM Version 8.0 of January 8, 2010
Copyright 1990-2010, James R. Larus.
All Rights Reserved.
See the file README for a full copyright notice.
Loaded: /usr/lib/spim/exceptions.s
Hello, please tell me the number of characters in your name: 5
Please enter your name: Quinn
Hello Quinn
(v) qbaker@S211-2-01: ~/350/demos/7$
(v) qbaker@S211-2-01: ~/350/demos/7$
```