Lab 4 Questions

Read and perform the lab guide posted on the course website. Answer the questions in the lab guide as you get to them in the spaces below. The numbers below refer to steps in the lab guide.

1. \texttt{fib} in \texttt{fib.asm} uses \texttt{s} registers to store both \texttt{n} and \texttt{fib(n - 1)}. Could \texttt{t} registers be used? Which would you choose?

2. While calculating \texttt{fib(4)}, how many times is \texttt{fib} called?

3. In your \texttt{fib} code, you should have two internal calls to \texttt{fib}. Set a breakpoint at the line AFTER the first internal call to \texttt{fib}. Then, while calculating \texttt{fib(4)}, observe the state of the stack when the breakpoint is hit (e.g. when recursion using the first \texttt{jal fib} is complete).

   Then, draw the state of your stack on the attached sheet. Each rectangle on the stack diagram represents a single stack frame. Your answer should show the name of the item on the stack and its value.

4. What happens if \texttt{fib} does not restore the return address before using \texttt{jr}?