Open Book/Notes quiz

**1)** **(20 points)** To be position independent and re-entrant, a subroutine must not disturb the state of the processor and ensure that on return from the subroutine that the state of the processor is what is was before the call.

Subroutine mysub is one such subroutine, which receives one argument passed on the stack. The argument is one word, 16 bits.

In the main program the setup and call of the subroutine is as follows:

 push R8

F832 call #mysub

 pop R8

The subroutine code uses R9,R10 and R11.

Show the code of needed at the start of the subroutine to save the processor state and retrieve the argument from the stack and place it in register R9.

mysub push SR

push R9

 push R10

 push R11

 mov 8(SP),R9

 Code of subroutine which

 places the return value in the same

 location as the argument passed to it.

 After pushing the return value onto the stack

 write the instructions needed to restore

 the state of the processors and return.

 mov R9,8(SP)

 pop R11

 pop R10

 pop R9

 pop SR

 ret