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CS 147
HW - 2
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Modify and make the assembly code for factorial procedure to work.

Modified C Code -

```
int main()
{
int n = 4;

int f = fact(n);

printf("fact(%d)=%d\n", n, f);

}

int fact(int n){

int fact (int n) {

   if (n < 1) return 1;

else return n * fact(n - 1);

 }
```

Assembly Code -

```
li $a0, 3  # saving n = 4 for this example

fact:

addi $sp, $sp, -8 # adjust stack for 2 items

sw   $ra, 4($sp) # save return address

sw   $a0, 0($sp) # save argument

slti $t0, $a0, 1     # test for n < 1

beq  $t0, $zero, L1

addi $v0, $zero, 1  # if so, result is 1

addi $sp, $sp, 8    #pop 2 items from stack
```

```
jr $ra                          #and return
L1: addi $a0, $a0, -1     # else decrement n
    jal  fact             # recursive call
lw $a0, 0($sp)      # restore original n
lw $ra, 4($sp)  # and return address
addi $sp, $sp, 8  # pop 2 items from stack
mul  $v0, $a0, $v0    # multiply to get result
jr   $ra    #jump to return address
```

Call Graph -