Due at the beginning of recitation R10 on Friday October 12.

Ben Bitdiddle has written and hand-compiled function \( f \) into the assembly code given below, but the code is not behaving as expected. Find the bugs in Ben’s assembly code and write a correct version that adheres to the RISC-V calling convention. Note that ‘\( g \)’ refers to another function whose specification is not provided to you.

C code for function \( f \)

```c
int f(int a, int b) {
    return g(a + b, b) + a;
}
```

Buggy assembly code for function \( f \)

```assembly
f:
    mv s1, a0
    add a0, a1, a0
    jal ra, g
    add a0, a0, s1
    ret

g:
```

Rewrite assembly code so that it behaves as expected and follows the RISC-V calling convention:

```assembly
f:
    addi sp, sp, -8
    sw s1, 0(sp)
    sw ra, 4(sp)
    mv s1, a0
    add a0, a1, a0
    jal ra, g
    add a0, a0, s1
    lw s1, 0(sp)
    lw ra, 4(sp)
    addi sp, sp, 8
    ret
```