

Name _____ **SOLUTIONS** _____

Monday, November 2

Email _____ 6.818-www@mit.edu _____

6.818 Fall 2020

Miniquiz #22

5 Minutes

The function below is called at a later point in the MITScript program:

```
baz = fun(y) {
    return y * y;
};
```

For each version of generated assembly below that implements this function, specify why errors could occur. (Remember that registers %rsp, %rbp, %rbx, and %r12-%r15 are the callee-saved registers, while registers %rax, %rcx, %rdx, %rsi, %rdi, and %r8-%r11 are caller-saved registers.)

```
push %rbp
mov %rsp, %rbp
mov %rdi, %r12
mul %rdi, %r12
mov %r12, %rax
pop %rbp
ret
```

The code snippet above modifies %r12, which is callee-save, without restoring its original value.

```
push %rbp
mov %rsp, %rbp
mov %rdi, %r11
mul %rdi, %r11
mov %r11, %r10
pop %rbp
ret
```

The code snippet above stores the return value in %r10, when the calling convention expects the return value to be saved in %rax.