

Monday, November 2

Name SOLUTIONS

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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.