

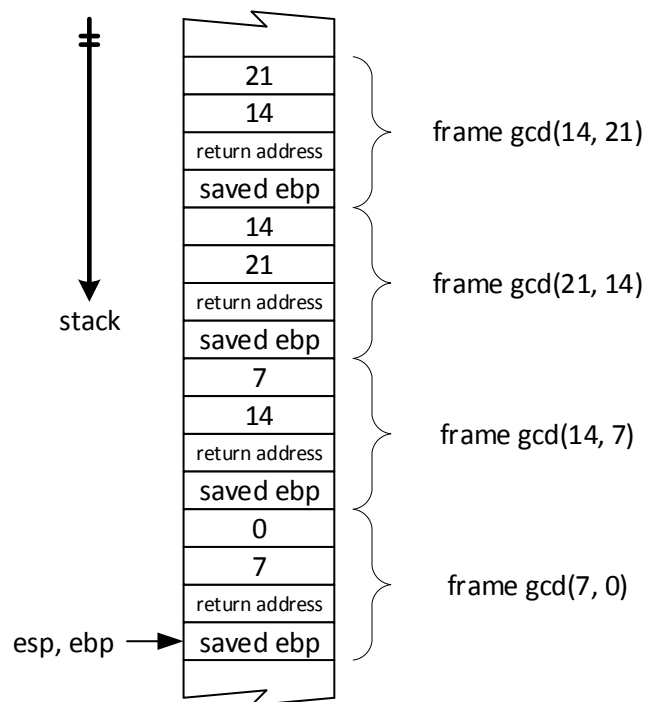
## CS3021/3421 Tutorial 1 Notes

- (i) `mov eax, [ebp+12]`  
`push eax`

can be simplified by using

`push [ebp+12]`

- (ii) Some students pushed the parameters (particularly to p) in the wrong order. Although function p would return the correct result, it is incorrect coding.
- (iii) `a%b` should be calculated using `idiv`. `idiv` uses signed arithmetic whilst `div` uses unsigned arithmetic. `idiv` divides `edx:eax` (64 bits) by the instruction operand (32 bits). The quotient is returned in `eax` and the remainder in `edx`. `edx` should be initialised using `cdq` as it sign extends `eax` across `edx`. Zeroing `edx` is not the same, although it will work with the examples given (need better test cases to catch this error)
- (iv) Some students had trouble with global variable `g` which needs to be allocated in `t1.asm` and its “interface” specified in `t1.h` (see sample answer).
- (v) Layout of stack frames must match submitted code. Some students thought that each function had its own stack which is not the case.



4 stack frames – 4 x 32 bit DWORDs per frame

- (vi) Some students had difficulties using a development environment. Computer Science / Engineering students need to be comfortable using environments such as Visual

Studio, Eclipse and QtCreator. They are all very similar. Command line and make files will only take you so far. This is a serious limitation for a year 3 Computer Science or year 4 Computer Engineering student which should be rectified.