

For loops

Structure:

```
for(①; ②; ④) {  
    ③;  
    :
```

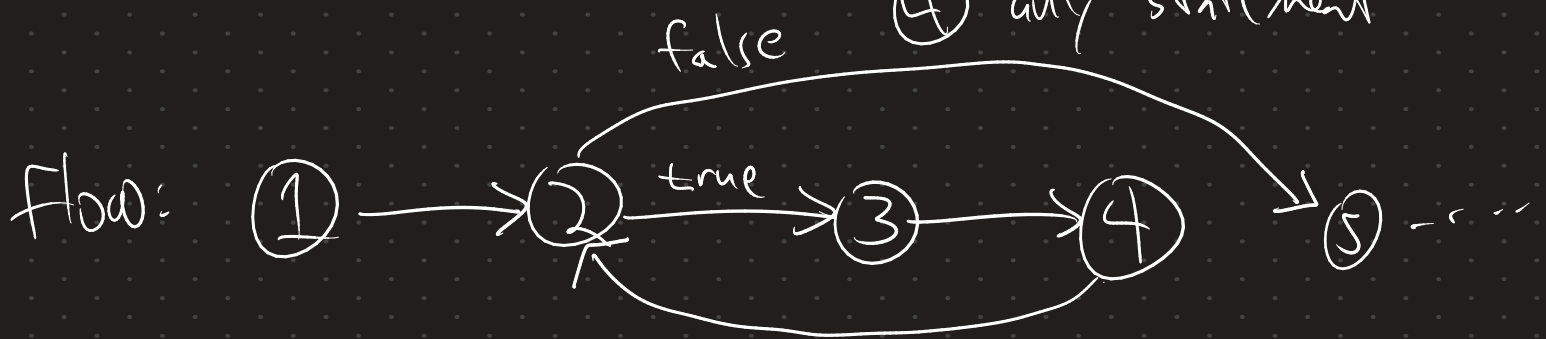
```
}  
// ⑤ rest of your code
```

① any statement

② boolean expr.

③ any statements

④ any statement



As a while loop:

```
①;  
while(②) {  
    ③; ...  
    ④;  
}
```

Exercise: find the greatest common divisor of two integers.

E.g., if $n = 22$, $m = 33$, $\text{gcd}(n, m) = 11$.

Note: there are very efficient ways to do this.
We'll not do it efficiently today.

Idea (inefficient): try all possible divisors,
keep the largest one.

possible divisors of n, m ?

$d = 1, 2, 3, \dots, \underline{\underline{\min(n, m)}}$

Test for d being a common divisor?

$(n \% d == 0 \ \&\& \ m \% d == 0)$

⊗ if we start from $\min(n, m)$ & work
backwards, can stop as soon as the
test passes.