

## Three practice exercises

Solve these three exercises in class using only pen and paper. Each of them requires only one code block of (1) four, (2) seven, and (3) eight lines of code.

1. Write a declaration of an array named `weekend` containing seven `bool` values. Include an initializer that makes the first and last values `true`; all other values should be `false`, and print the array.

*Tip: to get the `bool` type, you can include the `stdbool.h` file.*

```
#include <stdbool.h>
bool weekend[7] = {[0]=true,[6]=true};
for (int i = 0; i < 7; i++)
    printf("%d ", weekend[i]);
```

```
1 0 0 0 0 0 1
```

2. The Fibonacci numbers are 1,1,2,3,4,5,13,... where each number is the sum of the two preceding numbers. Write a program that declares an array named `fib` of length 20, fills the array with the first 20 Fibonacci numbers, and prints the array.

*Tip: Initialize the first two Fibonacci numbers as 1.*

```
int f[20], i;
f[0]=f[1]=1;
printf("%d %d ", f[0], f[1]);
for (i=2; i<20; i++) {
    f[i]=f[i-2]+f[i-1];
    printf("%d ", f[i]);
}
```

```
1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765
```

3. Initialize a 2 x 2 identity matrix `m` and print it:

```
1 0
0 1
```

*Hint: A two-dimensional array `a` is defined as `a[M][N]`.*

```
int i, j, m[2][2];
for (i=0; i<2; i++) {
    for (j=0; j<2; j++) {
        i==j ? (m[i][j]=1) : (m[i][j]=0);
        printf("%d ", m[i][j]);
    }
    puts("");
}
```