We organize computations to be reused.

1. Questions?

2. Converting feet and inches to centimeters and back.

3. A script, `dow.py`, to compute the day of the week according to the algorithm in Monday’s notes:

```python
# A script to compute the day of the week.
# (c) 2018 duane a. bailey
month = int(input("Month (1-12): "))
day = int(input("Day (1-31): "))
year = int(input("Year (1900-2099): "))

# this is a *list* containing 12 integers.
adjustments = [ 1,4,4, 0,2,5, 0,3,6, 1,4,6 ]

# the integers in the adjustment list are indexed 0 through 11
# madj is the adjustment based on the particular month
madj = adjustments[month-1]

# it’s best to think of the year as a value between 0 and 200
year -= 1900

# this is the main calculation:
sum = madj + day + (year//4) + year

# this is a correction for early in leap years
if (year%4 == 0) and (month <= 2) :
    sum -= 1

# a *list of strings*, indexed between 0 and 6 (remainders, mod 7)
dayName = ["Saturday", "Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday"]
print(dayName[sum%7])
```

Recall: to execute this script, we can type:

```
python3 dow.py
```

We can now reuse the code in the script, without re-typing the commands.
4. Functions (sometimes procedures or subroutines). Introduced with the keyword `def`.

(a) We use functions to gather together subordinate suites of statements that perform (at some level) a single, logical action. Some functions produce results. Others produce side-effects. This encapsulation allows us, again, to reuse computations whenever we wish.

(b) Functions are parameterized by arguments. For example, the trigonometry `math.sin` function takes an angle. The print takes an object. Within the function definition, expressions refer to arguments as formal parameters. When we call the function, the values we actually use are called actual parameters.

(c) Example: A function to detect odd integers. How about even integers?

(d) Example: A simple, but strange function, `syr`.

(e) Example: Printing the orbit of `syr`, `porb`.

(f) Example: Measuring the length of the orbit of `syr`, `morb`.

(g) Example application: Finding long orbits.