D-BAUG Informatik I

Exercise session: week 4

HS 2018

Homework

- Questions?

Recap

Arrays and reference types

Recap: Arrays

Write a program that reads ten integers from the input, and prints them out in the reverse order.

- Allocate an array of 10 integers;
- read the 10 integers from input;
- iterate over the array backwards and print out the elements.
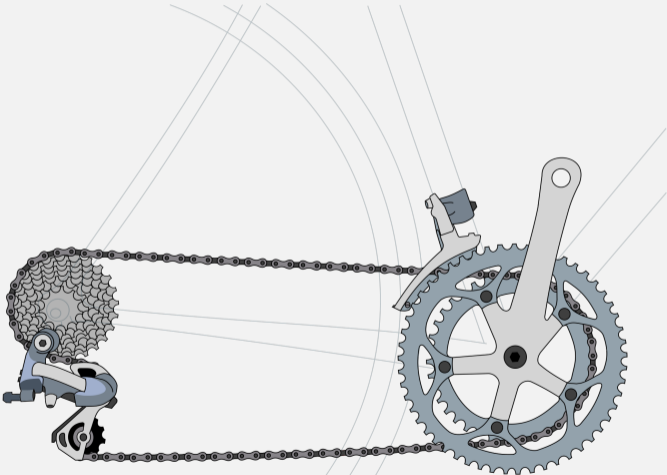
Recap: Reference types

Look at the code for "Reference types" on expert.

Use case

Bike gears

Gear ratios with loops and arrays

Bike gears

Bike gears

You're going uphill, and it's just a little too tiring. What's the next gear combination that makes it just a bit easier?

Gear ratio

$$\text{ratio} = \frac{\text{number of teeth in front chainring}}{\text{number of teeth in rear sprocket}}$$

Bike gear

front chainring:
44, 33, 22 teeth
rear sprocket:
11, 17, 24, 36 teeth

the lower the ratio, the easier
(and slower) it is

front	rear	ratio
44	11	4.00
44	17	2.59
44	24	1.83
44	36	1.22
33	11	3.00
33	17	1.94
33	24	1.38
33	36	0.92
22	11	2.00
22	17	1.29
22	24	0.92

Bike gear

- use arrays to store the number of teeth on the chainrings/sprockets
- read current front and rear gear (number of teeth)
- find the next gear combination that's just a bit easier