

cutting problems

digitalisierung und programmierung · prof. dr. nicolas meseth

- 1 you can already do this
- 2 the project's elephant
- 3 different ways to cut
- 4 a good cut is testable
- 5 cuts are agreements

how do you eat
an elephant?



part 1

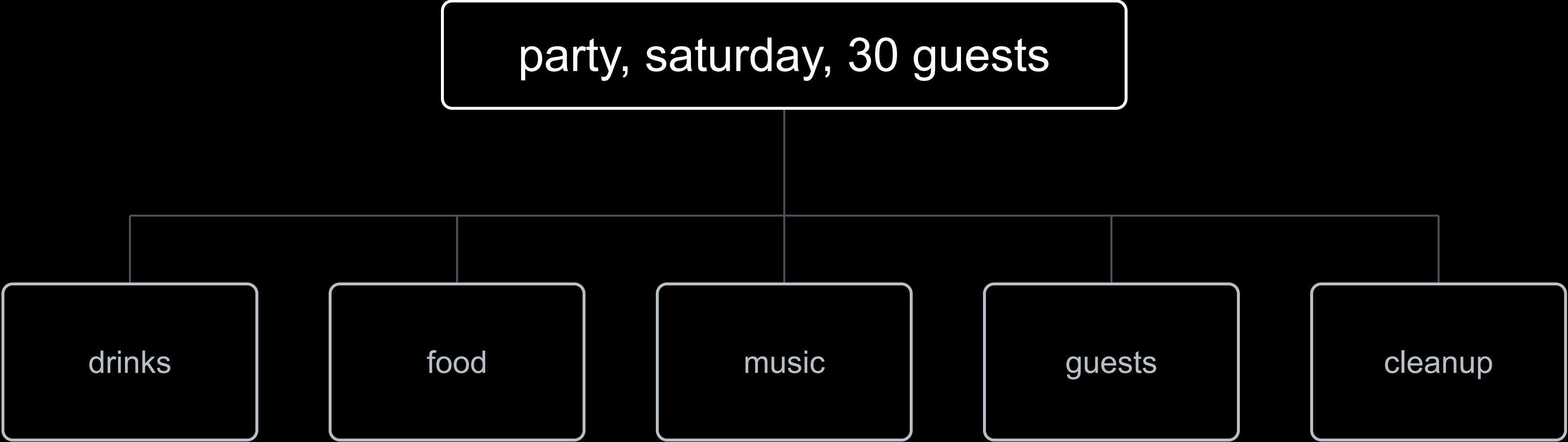
you can already do this

you plan like this without thinking

party, saturday, 30 guests

you can already do this

you plan like this without thinking



part 2

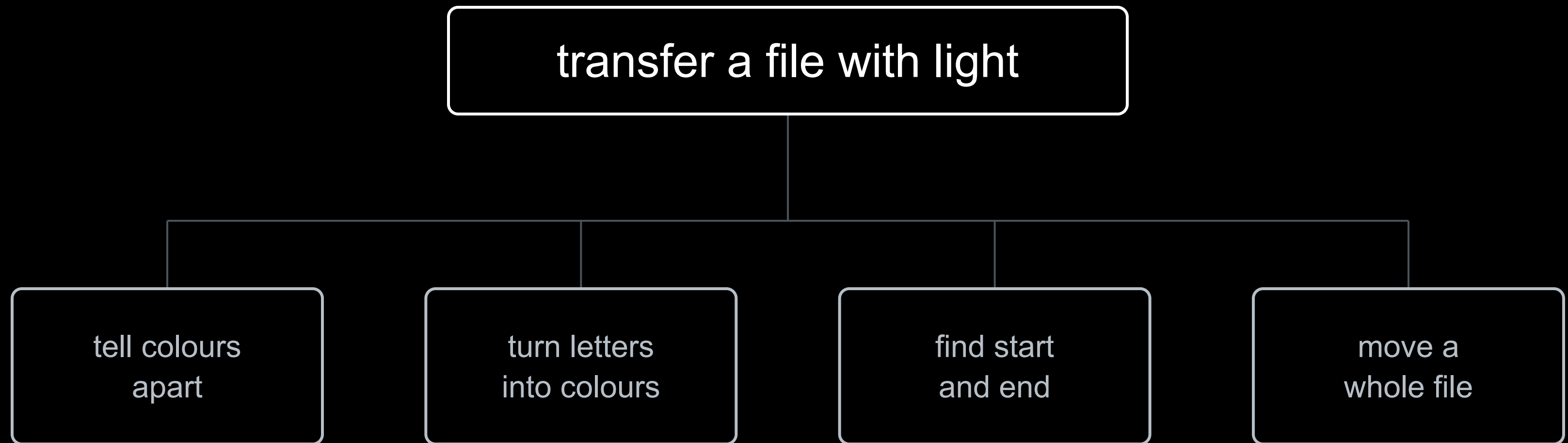
the project's elephant

transfer a file from one laptop
to another, using light.

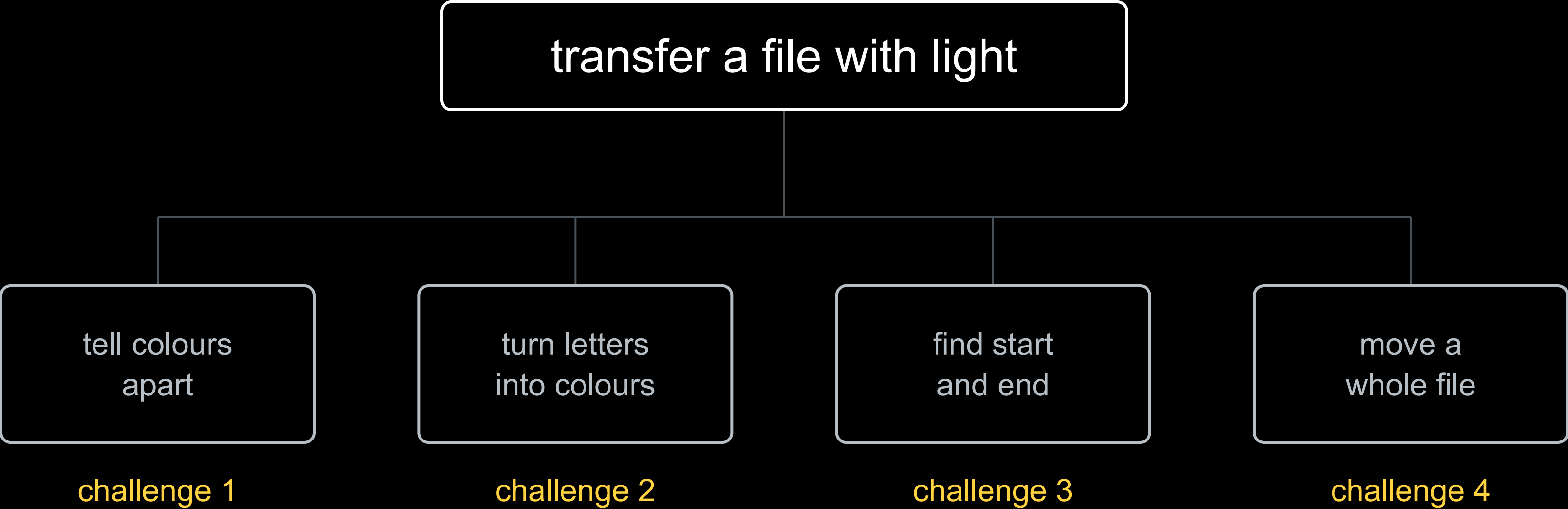
the same problem, cut

transfer a file with light

the same problem, cut

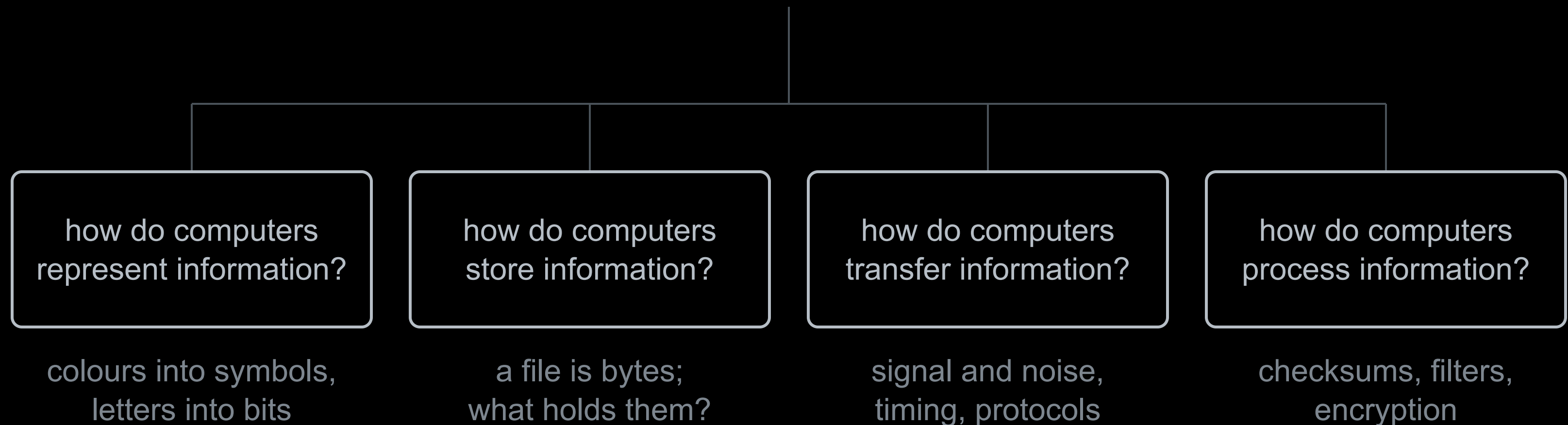


the same problem, cut



one question, four questions

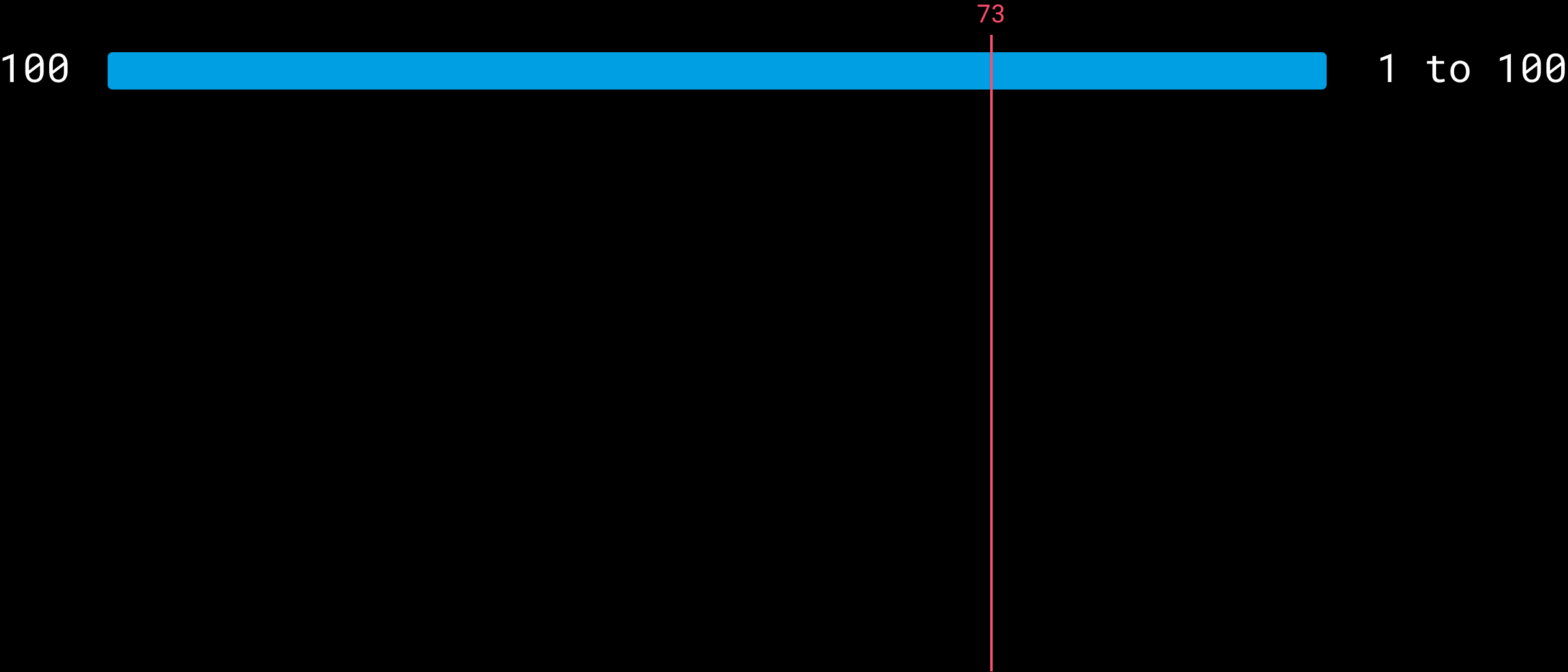
how do computers solve complex problems?



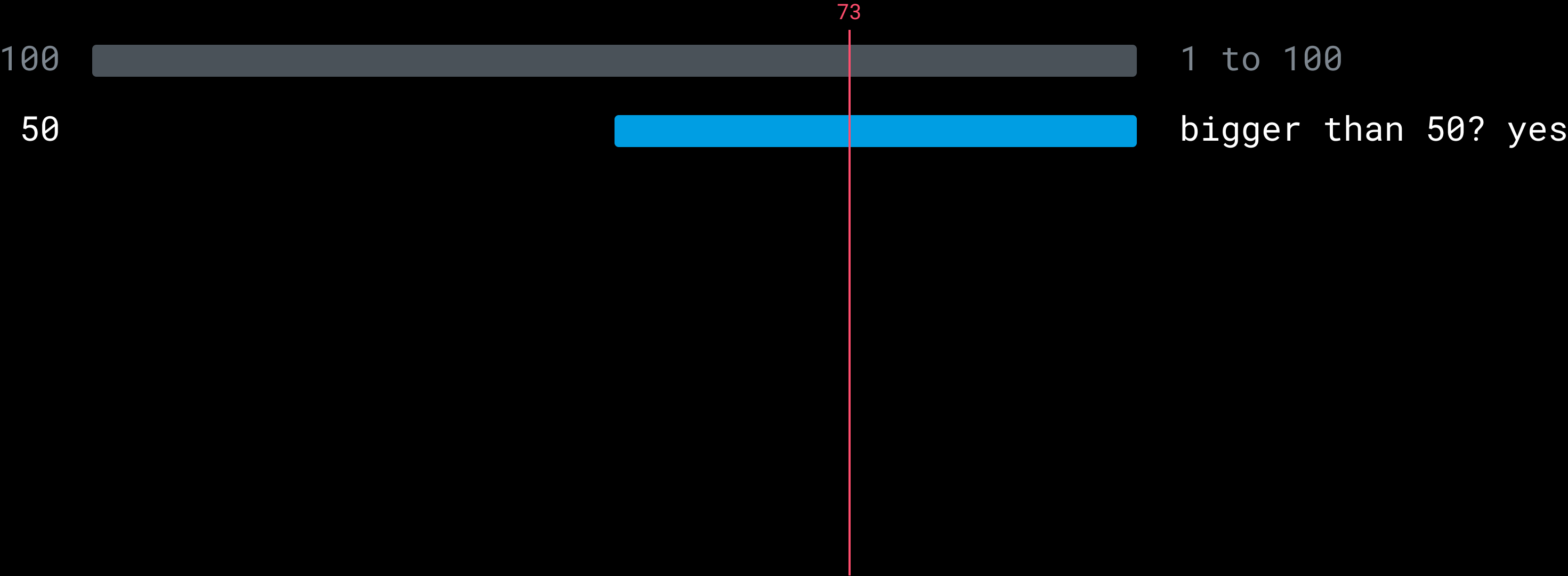
part 3

different ways to cut

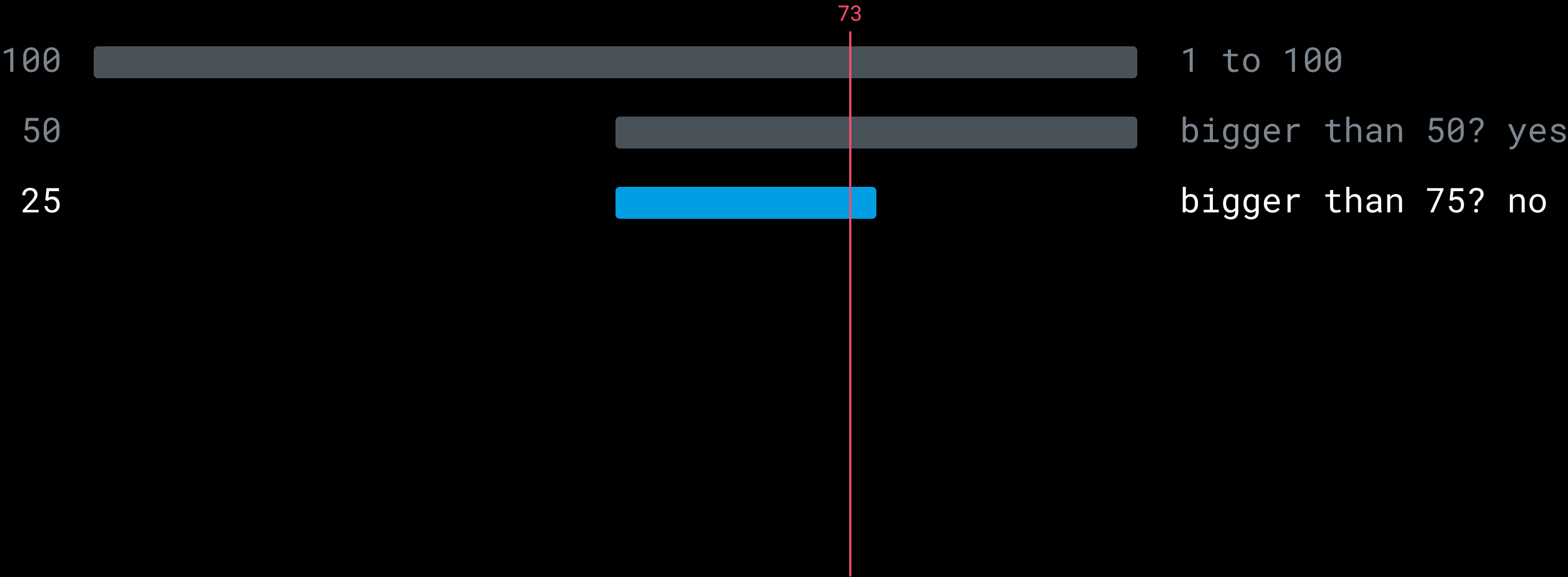
divide & conquer: halve until it's easy



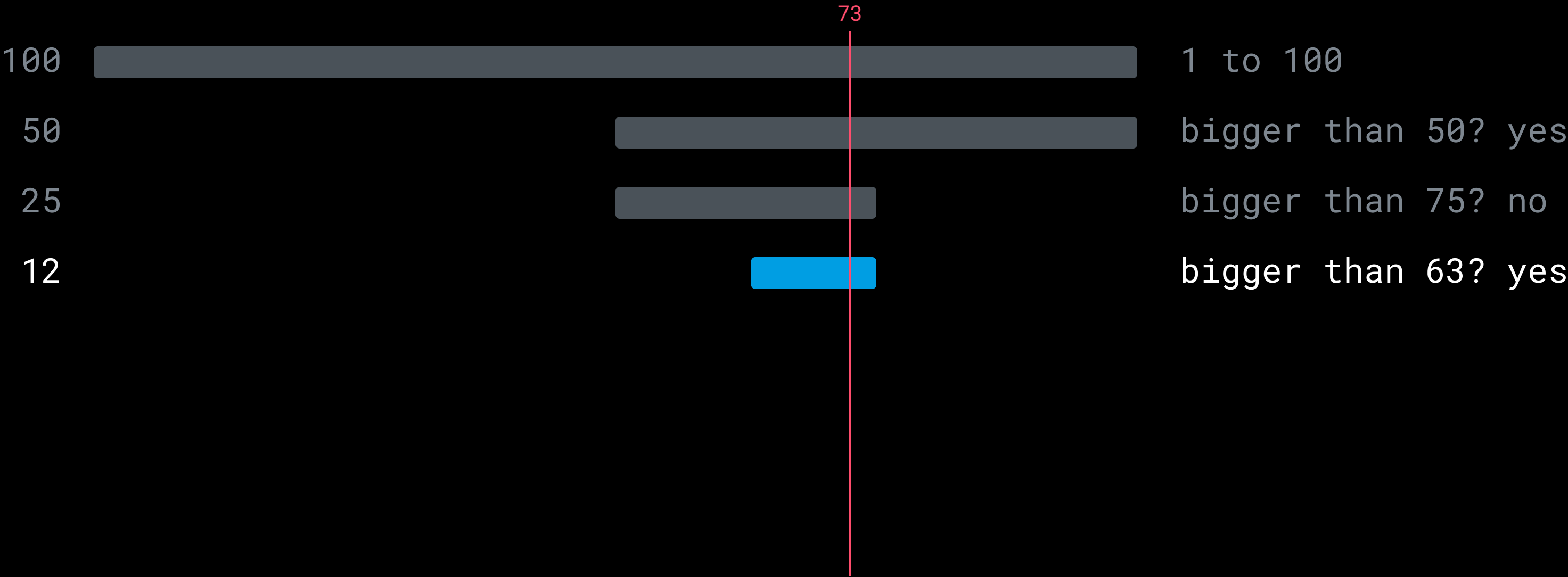
divide & conquer: halve until it's easy



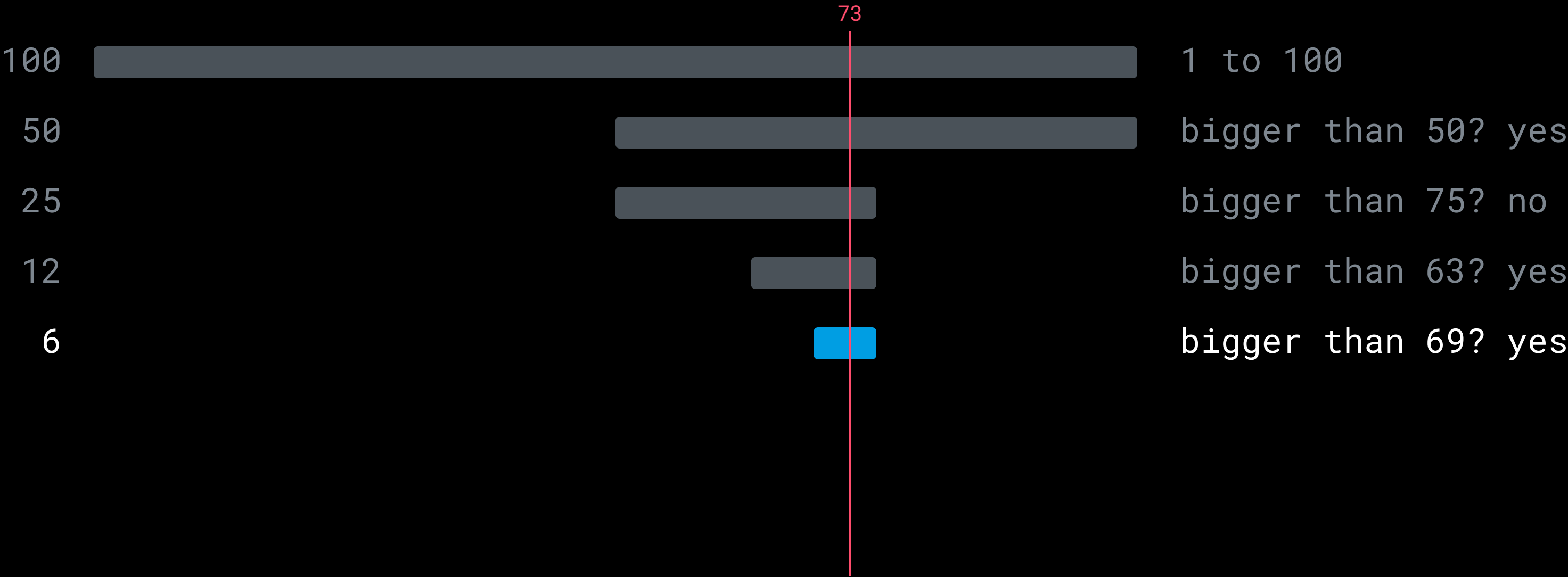
divide & conquer: halve until it's easy



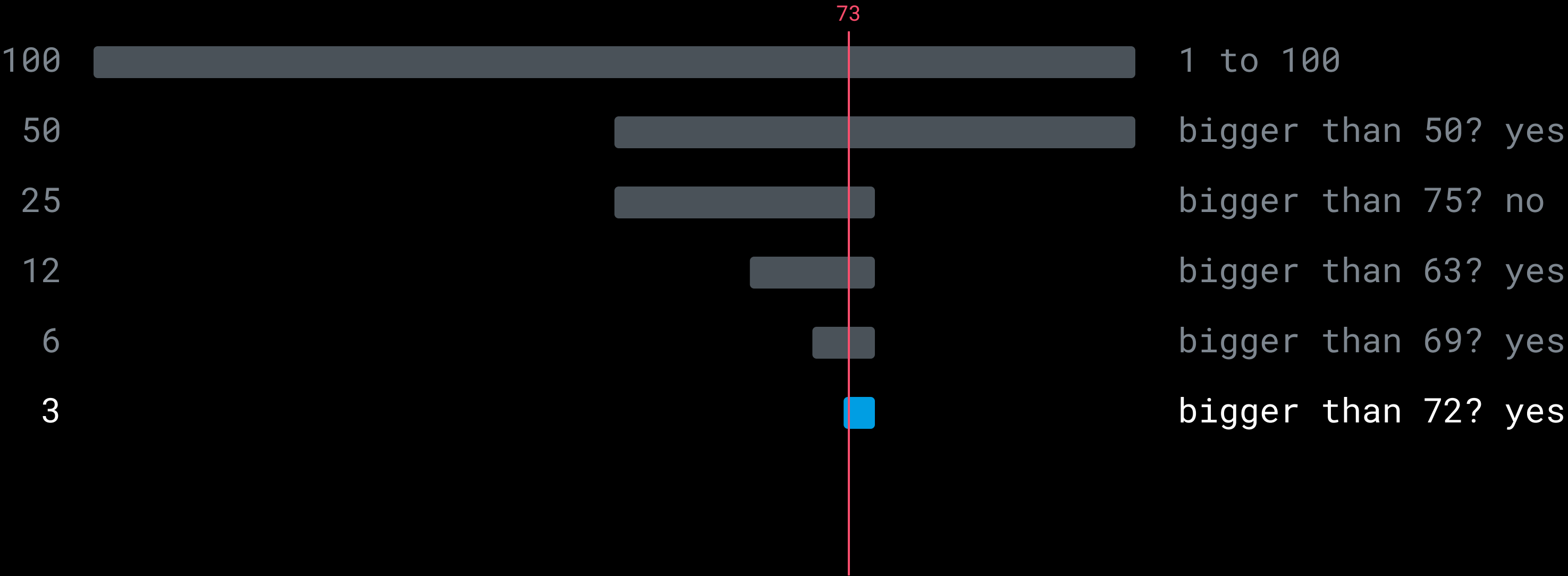
divide & conquer: halve until it's easy



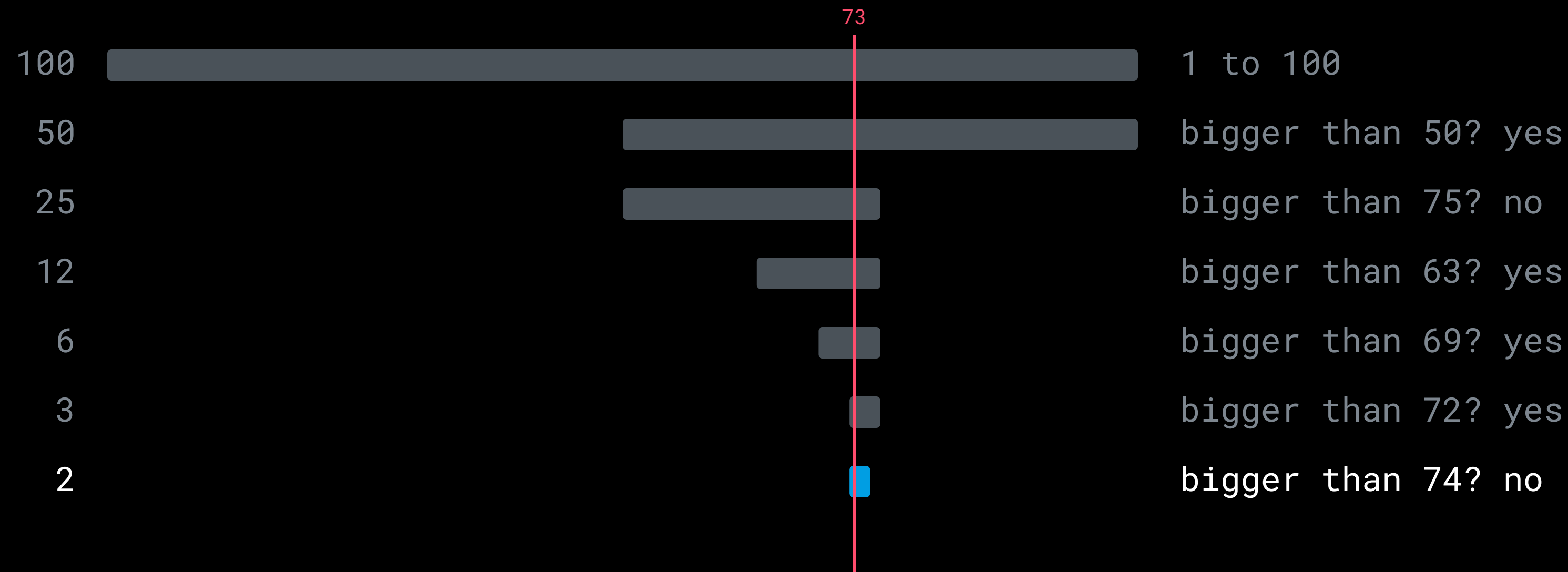
divide & conquer: halve until it's easy



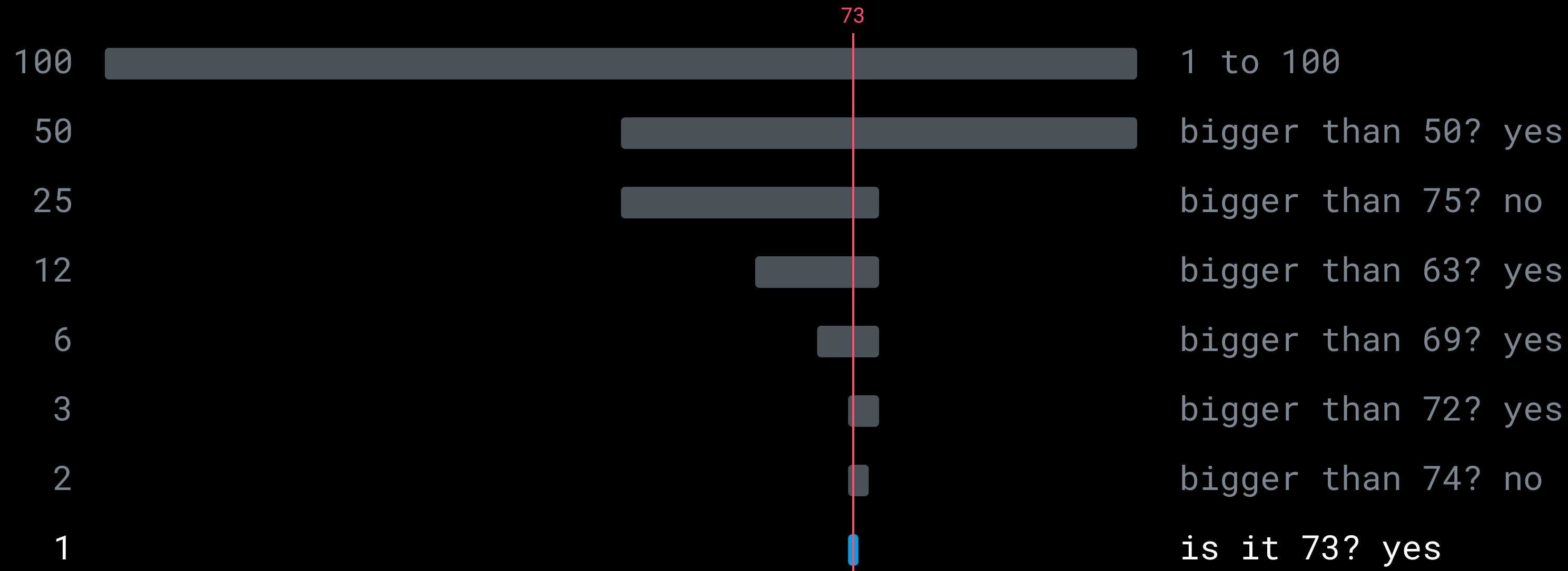
divide & conquer: halve until it's easy



divide & conquer: halve until it's easy



divide & conquer: halve until it's easy



seven questions are enough, whatever the number.

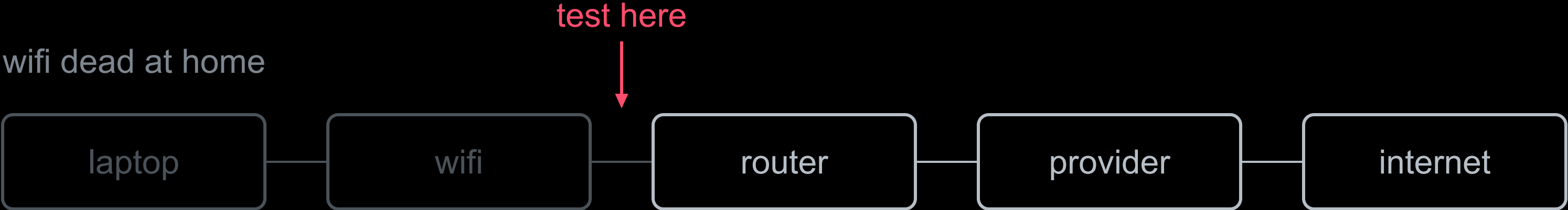
how many steps in general?

the same trick when something breaks

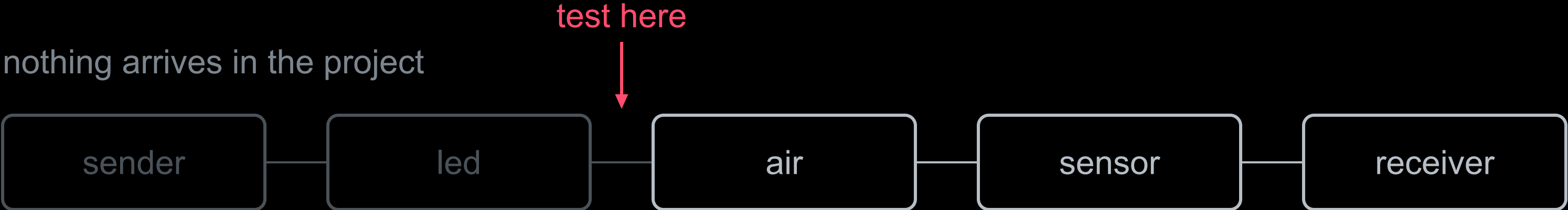
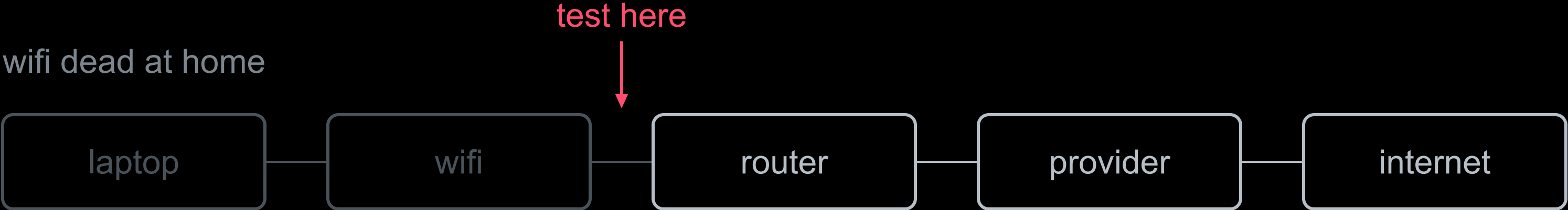
wifi dead at home



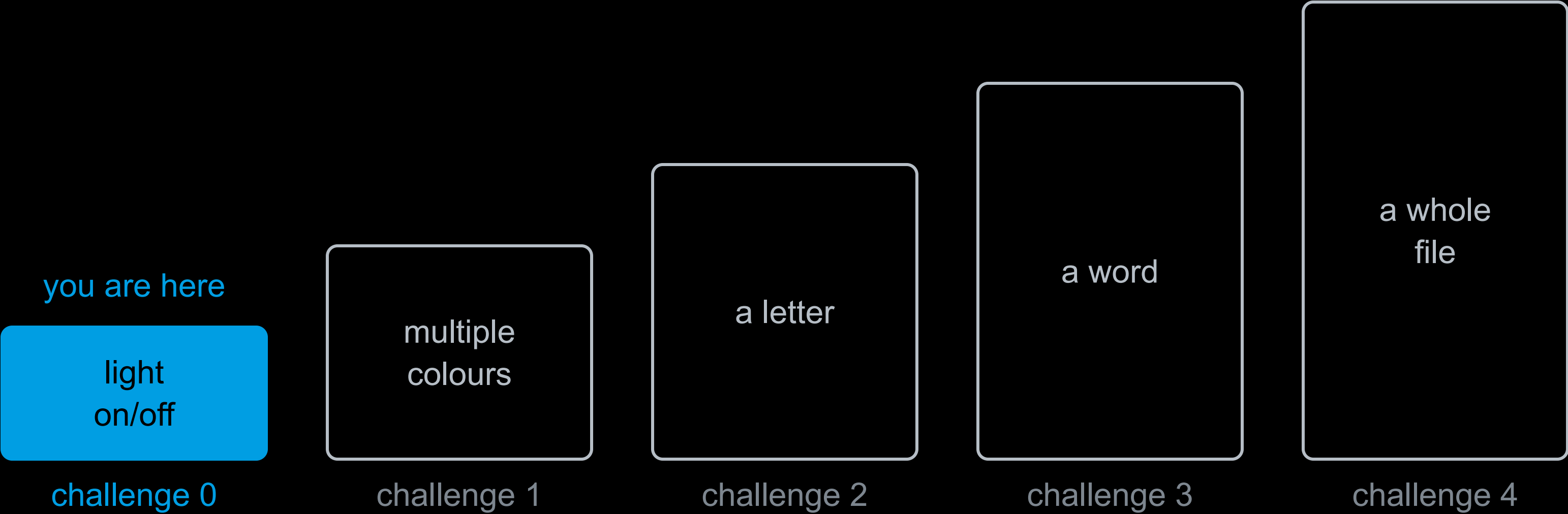
the same trick when something breaks



the same trick when something breaks



start smaller: solve an easier version first



part 4

a good cut is testable

which one are you actually preparing?

i need to learn maths.

i can pass the 2023 exam
in 90 minutes.

which one are you actually preparing?

i need to learn maths.

i can pass the 2023 exam
in 90 minutes.



the same, in this project

the receiver works.

red or blue?
right 50 times in a row.

the same, in this project

the receiver works.

red or blue?
right 50 times in a row.

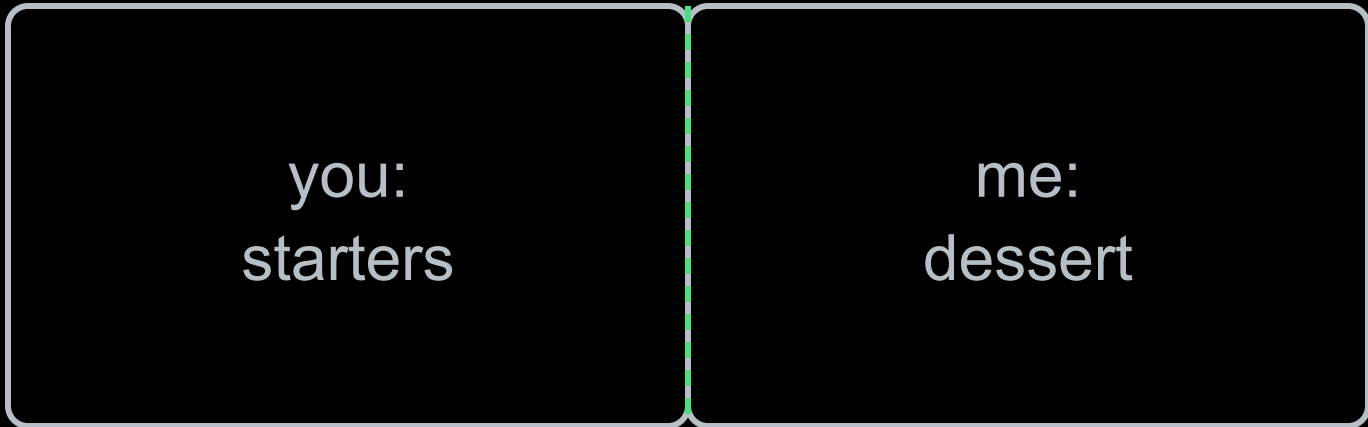


done means: the test passes.

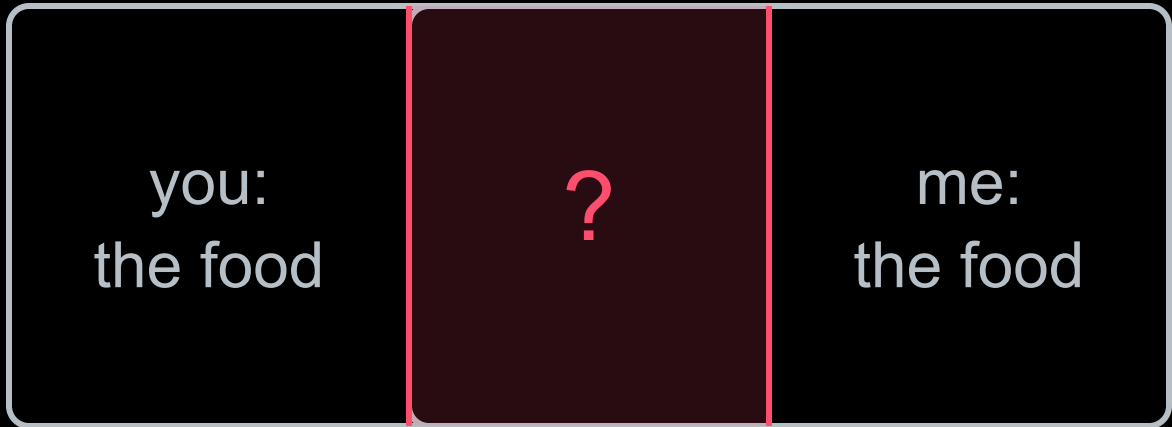
part 5

cuts are agreements

where you cut decides how much you must talk



works: the border is clear



chaos: who buys the bread?

and this is how you talk to the AI assistant

one big wish

```
build me the  
file transfer.
```

one small piece, with its test

```
read the sensor ten times  
and return the average.  
test: covered, it stays under 10.  
red led on, it goes over 100.
```

you cut. the assistant solves pieces. you check.

and this is how you talk to the AI assistant

one big wish

```
build me the  
file transfer.
```

one small piece, with its test

```
read the sensor ten times  
and return the average.  
test: covered, it stays under 10.  
red led on, it goes over 100.
```



you cut. the assistant solves pieces. you check.

one bite
at a time.



image: ai-generated (gpt-image-2)

cuts are agreements