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## A one-person version of the game

There is a variation of the demon's evil game that can be applied to a single individual.

Imagine that the demon whispers into your ear: "I am about to ask you an infinite sequence of questions  $q_1, q_2, q_3, \dots$ . Each time I ask you a question, you must answer *aye* or *nay*. If you answer *aye* at most finitely many times, you will receive a prize: as many gold coins as *aye*-answers you gave. If, however, you answer *aye* infinitely many times, I will see to it that you leave empty-handed."

Note that in order for this exercise to make sense there is no need to assume that you lead an infinitely long life. We can assume instead that you are able to answer the demon's questions faster and faster. Suppose, for example, that the second question is asked half an hour after the first, that the third question is asked a quarter of an hour after the second, and so forth. (In general, question  $q_{n+1}$  is asked  $1/2^n$  hours after question  $q_n$ .) This entails that the demon will have asked all his questions within the span of an hour. So as long as you're able to answer each of his questions before he asks the next one, you will have answered all of his questions within the span of an hour.

If you were able to commit once and for all to a plan about how to answer the demon's questions, you could end up with as many gold coins as you wanted. Just as in the multi-person case, you could simply select a number  $k$  and commit to answering *aye* to questions  $q_1, \dots, q_k$ , and no further.

But will you be able to stick to your plan?

Imagine that you've committed to answering *aye* to questions  $q_1, \dots, q_k$  and no further. You've responded *aye* to the first  $k$  questions, just as you had planned. And now the demon asks question  $q_{k+1}$ . If you respect the original plan, you should answer *nay*.

But why respect the original plan?

It seems clear that a better plan is available to you: answer *aye* to questions  $q_1, \dots, q_{k+1}$  and no further. This new plan will bring you all the benefits of the old plan, plus one gold coin!

The problem, of course, is that this process could be iterated. Each time your current plan commits you to answering *nay*, you will be tempted to switch plans. And if you switch plans every time, you'll end up empty-handed, since you will end up answering *aye* to every single question.

There are those who possess an unflappable will: people who are able to make a plan and stick to it even if a better plan presents itself further along the line. Sometimes one needs a trick to ensure that one sticks to one's plans. There is a famous example of this in Homer's *Odyssey*. Here is a paraphrase of the relevant passage:

So enchanting were the songs of the sirens, that no sailor could resist them. Bewitched, the sailor would follow the music into the sea, and drown. Odysseus wanted to hear the song of the sirens, but he didn't want to die. So he ordered his men to bind him to the mast of his ship, and made clear that he was not to be released until the deadly sirens had been left behind. He then ordered his men cover their own ears with wax. When the sirens began to sing, it seemed to Odysseus that his original plan ought to be replaced with a different one: the plan of following the sirens' songs. But his men forced him to stick to the original plan, and refused to release him until they were safely out of the sirens' reach.

There is an interesting analogy between Odysseus' predicament and the demon's game. In both cases, things are set up so that one is tempted to abandon one's original plan midway. In the case of Odysseus, the new plan will only seem like a good idea to someone who has fallen under the sirens' spell. When it comes to the demon's game, however, everyone should agree that switching plans is the rational thing to do. For even before the start of the game, everyone should agree that answering *aye* to the first  $k + 1$  questions (and *nay* to the rest) is better than answering *aye* to the first  $k$  questions (and *nay* to the rest).

You will only be able to beat the evil demon if you’re able to make decisions on the basis of plans that can be seen to be inferior from the start, and then stick to those plans. You’ll have to somehow find a way of "tying yourself to the mast". But, for most people, that is not easy to do.

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 One "Nay" and the Rest "Aye" ?

In a best case scenario, we would need to answer "Nay" once and "Aye" for the rest of the questi...

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