

## Hats

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Here is a hat problem due to Lionel Livine. It was Stan Wagon's problem of the week in April 2014. Despite a lot of effort, the problem remains open.

The problem has many forms. Here is one of them. After a long night of strategizing, Alice and Bob are no longer allowed to communicate. The evil king places an infinite sequence of randomly chosen white and black hats on each of their heads. Alice can see Bob's hats and Bob can see Alice's hats, but neither can see the hats on their own head. When the king says Go each of them points to a hat on their own head. If both of them choose a black hat they go free. Otherwise they are immediately executed. What is their best strategy?