Team: Smart Pillow
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Problem authors studied:

Inconsistencies in interpreting the behavior of trigger-action programs, and errors made in creating programs with a desired behavior.

Examples of trigger-action rules:

If the door open, send an email to me.
If I am sleeping, turn the stereo off.

What are mental model ambiguities:

The lack of distinction between different trigger and action types, especially in the context of trigger conjunctions.

Specific examples:

If the doorbell rings, send an email notification.
If it is raining, turn the lights on.

	Study1	Study2
Purpose	To understand how user interpret different trigger and action types.	To confirm whether program creation mitigates the ambiguities observed in the first study.
How many people	60	42
How long	Not mentioned	20 minutes
Method	A paid web-based survey on Amazon Mechanical Turk.	Questionnaire, includes program behaviors and multiple choice questions. It was implemented through Amazon Mechanical Turk.
Results	1. Respondents had different expectations for when actions should be triggered depending on whether the trigger was an event or a state trigger. 2. User expectations varied even between 2 different event triggers or 2 different state triggers. 3. There was more consistency for the triggers involving time. 4. Participants mostly agreed on the behavior for rules that combined one event trigger and one state trigger.	1. Multiple event triggers were practical; 2. Reason of event & state triggers were difficult; 3. Different users had their own mental models for state triggers; 4. Users did not agree on sustained actions and forgot to cancel them. 5. User interpretations were not uniform, and were subjected by existing products.