OOP via Python: Recap Session 02

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The Initialisation Problem

- Many algorithms have a fairly simple repetitive step but a tricky setup.
- Range Extract is tricky because "try_add" requires a RangeOfPages and at the beginning of the algorithm there's no "current" RangeOfPages.
- We explored three solutions.

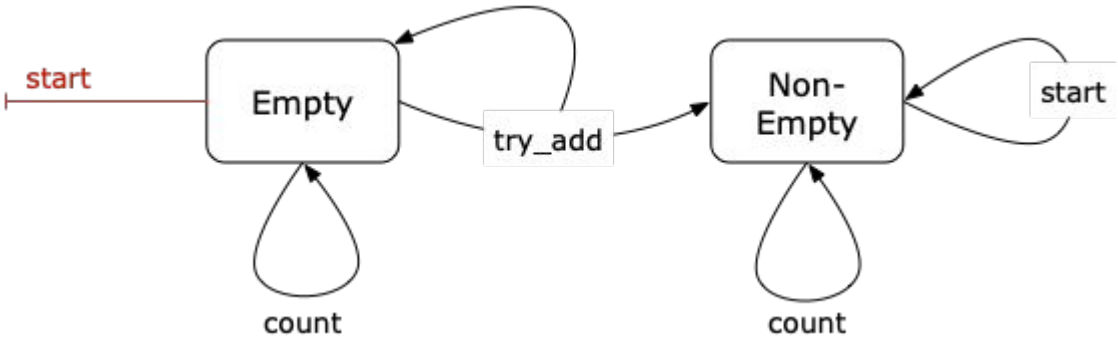
Three Solutions

- Start the current `RangeOfPages` with `None`. It only supports very generic methods - we used `bool` - to avoid the use of `try_add`.
- Invent a new class `TryAddRefusnik` that allows `try_add` but refuses to add a page.
- Extend the existing `RangeOfPages` to support an empty range. This allows `try_add` but does not allow methods such as `start`.

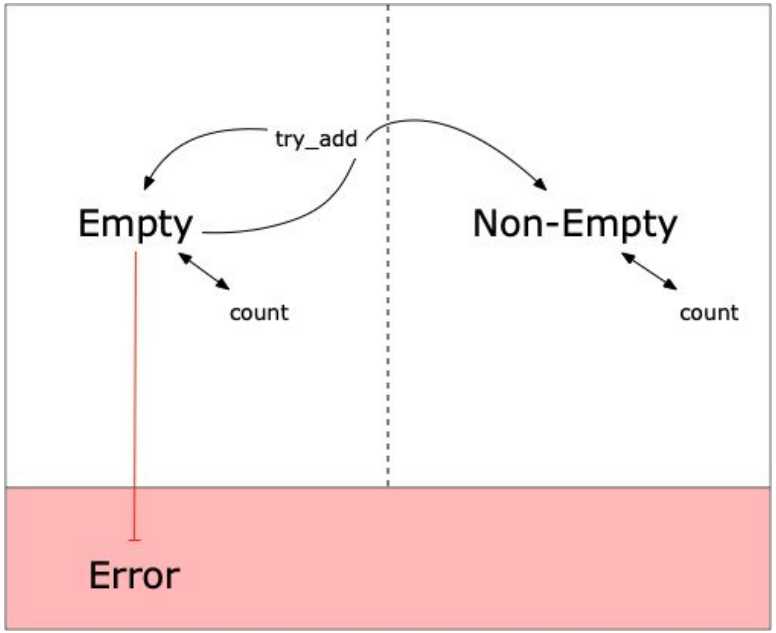
Types vs Set of Behaviours

	bool	try_add	count	start	etc...
None	✅	❌	❌	❌	…
TryAddRefusnik	✅	✅	❌	❌	…
RangeOfPages (Empty)	✅	✅	✅	❌	…
RangeOfPages (Non-empty)	✅	✅	✅	✅	✅

Same Class but Different Behaviours



Phase Diagram



Classes do not guarantee behaviour

- Accurately tracking the set of guaranteed methods is a core skill.
- "Set of guaranteed methods" is unfortunately usually called "state" (badly ambiguous)
  - Going forward we will use the phrase "phase" to unambiguously reference the set-of-methods. But the literature will usually call this "the state".
- Python's protocols roughly correspond to phases & can be used to help document them.