I've created a comprehensive guide for Mongoose sub-document CRUD operations! Here's a summary of the key concepts:

**Important Distinctions:**

**Sub-Document Types:**

1. **Single Embedded** - Single nested object (e.g., address: addressSchema)
2. **Array of Sub-Documents** - Array of nested objects (e.g., comments: [commentSchema])

**Key Differences from Regular CRUD:**

**CREATE:**

* push() - Most common, adds to end
* addToSet() - Prevents duplicates (useful for tags, categories)
* Must call save() on parent document

**READ:**

* id() - Unique to sub-documents, finds by \_id
* Can use regular array methods (find, filter, map)
* Use dot notation in queries to find parent documents

**UPDATE:**

* Direct assignment requires save()
* $ positional operator updates first match
* arrayFilters can update multiple matching sub-docs
* More efficient to use query-based updates for single operations

**DELETE:**

* pull() - Removes by condition (very flexible)
* remove() - Called on specific sub-document instance
* $pop - Quick way to remove first or last item
* $unset - Removes single embedded sub-documents

**Critical Point:** Methods called on the parent document instance require await parent.save(), while query-based methods (findOneAndUpdate with $pull, $set, etc.) handle saving automatically!

Retry

[Claude can make mistakes.   
Please double-check responses.](https://support.anthropic.com/en/articles/8525154-claude-is-providing-incorrect-or-misleading-responses-what-s-going-on)