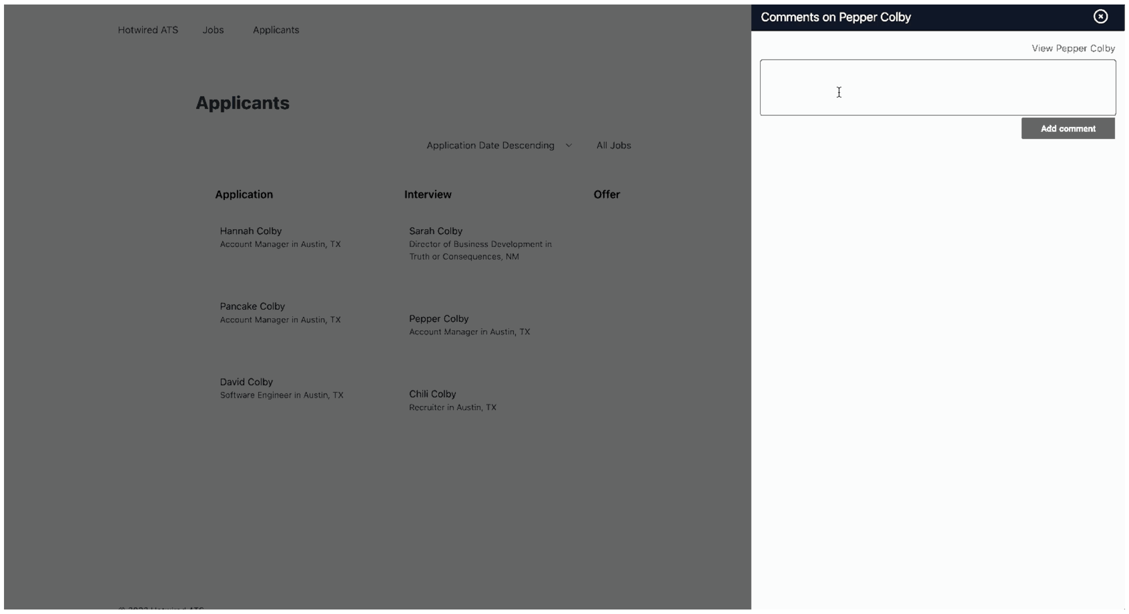
# Applicant comments and user mentions

In most team-based SaaS products, communicating with each other and leaving internal notes on records are core functions. Applicant tracking systems are no different — a basic function of an ATS is the ability for users to leave internal notes on applicants, for themselves or for their team members.

Users may want to record their thoughts after an interview, remind themselves of something an applicant mentioned, or ask a teammate to review an applicant. In our application, we will address this need by building a reusable **`` `Comment` ``** model.

We will allow users to leave comments on an applicant, review existing comments, and send notifications to other users by mentioning them in a comment. We will also add **Sidekiq** to the application and move notification creation into background jobs.

When we finish with the work in this chapter, the commenting system will work like this:



## Building the comment resource

In this book we will only add comments to applicants. In a commercial application, it is likely that over time users would want to add comments to other types of resources, like job postings.

For this reason, we will create a generic `Comment` model that can be reused with other resources in the future, rather than tying comments directly to applicants.

To get started, create a new `Comment` model from your terminal:

```
rails g model Comment user:references
commentable:references{polymorphic}
rails db:migrate
```

Instead of a direct `applicant` reference on the `Comment` model, we instead create a polymorphic `commentable` relationship that can be used with applicants, jobs, or anything else we like.

Head to `app/models/user.rb` to setup the user relationship with comments:

```
app/models/user.rb
```

```ruby
has_many :comments, dependent: :destroy
```

And then add the `commentable` association to the `Applicant` model:

app/models/applicant.rb

```ruby
has_many :comments, as: :commentable, dependent: :destroy, counter_cache: :commentable_count
```

Note here the addition of the counter_cache option to the relationship. We will use the counter cache to easily and efficiently display the number of comments an applicant has on the applicants index page.

While the Rails guides indicate that you do not need to specify the `counter_cache` relationship on the `has_many` side of a relationship, that is not true in the case of polymorphic relationships.

Before the counter cache will work, we need to add the `commentable_count` column to the applicants table. Generate a new migration from your terminal:

```
rails g migration AddCommmentableCountToApplicants commentable_count:integer
rails db:migrate
```

In the `Comment` model, update it to set a `counter_cache` value and to add a `comment` rich text field:

app/models/comment.rb

```ruby
class Comment < ApplicationRecord
  belongs_to :user
  belongs_to :commentable, polymorphic: true, counter_cache: :commentable_count
  has_rich_text :comment
end
```

With the `Comment` model in place, we need a controller and views to handle creating and viewing comments. From your terminal:

```
rails g controller Comments
touch app/views/comments/_comments.html.erb
app/views/comments/_form.html.erb
app/views/comments/_comment.html.erb
```

Update the `CommentsController`:

app/controllers/comments_controller.rb

```
class CommentsController < ApplicationController
  before_action :set_commentable

  def index
    comments =
@commentable.comments.includes(:user).with_rich_text_comm
:desc)
    html = render_to_string(partial: 'comments',
locals: { comments: comments, commentable: @commentable
})
    render operations: cable_car
      .inner_html('#slideover-content', html: html)
      .text_content('#slideover-header', text:
"Comments on #{@commentable.name}")
  end

  def create; end

  private

  def comment_params
    params.require(:comment).permit(:comment)
  end

  def set_commentable
    commentable_param = params.keys.detect{ |key|
key.include?('_id') }

    @commentable =
commentable_param.remove('_id').classify.constantize.find
  end
end
```

Comments will be viewed and created in our trusty slideover drawer. The `index` action inserts existing comments for the `@commentable` resource into the slideover as usual.

The `set_commentable` method is translating a param like `applicant_id` from the url into a matching class. This extra bit of work is not necessary while our application only supports commenting on applicants because we know that `@commentable` will always be an applicant.

We implemented the more complicated version of `set_commentable` to demonstrate that this controller can be reused for other resources in the future. `@commentable` could be a `Job` and `set_commentable` would still find the correct record.

Head to `config/routes.rb` to define the new `comment` routes:

config/routes.rb

```ruby
concern :commentable do
  resources :comments, only: %i[index create]
end

resources :applicants, concerns: :commentable do
  # Snip
end
```

We added a `commentable` concern to the route definitions and then used that concern on the `applicants` resource in service of our more complicated but reusable `Comment` implementation.

This change results in two new nested routes for the applicant resource:

```
rails routes =>
applicant_comments GET
/applicants/:applicant_id/comments(.:format) comments#index
POST /applicants/:applicant_id/comments(.:format)
comments#create
```

Now we will update the partials we need to render comments in the slideover. In `app/views/comments/_comments.html.erb`:

app/views/comments/_comments.html.erb

```
<div class="text-right mb-2">
  <%= link_to "View #{commentable.name}",
polymorphic_path(commentable), class: "text-blue-600
hover:text-blue-700" %>
</div>
<%= render "form", comment: Comment.new, commentable:
commentable %>
<div class="py-4 divide-y divide-gray-300"
id="comments">
  <%= render comments %>
</div>
```

Note the `polymorphic_path` call here, which will result in a link to the show page of the `commentable` resource passed to the method. For us, this means the applicant show page. Again, slightly more complicated so we can see how to reuse the comment resource across the application.

And `app/views/comments/_comment.html.erb`:

app/views/comments/_comment.html.erb

```
<div class="py-4 bg-gray-100">
  <div>
    <%= comment.comment %>
  </div>
  <p class="mt-1 text-sm text-gray-500">
    <%= time_ago_in_words(comment.created_at) %> ago by
<%= comment.user.name %>
  </p>
</div>
```

And `app/views/comments/_form.html.erb` where we use `polymorphic_path` again:

app/views/comments/_form.html.erb

```
<%= form_with(model: comment, url:
polymorphic_path([commentable, comment]), id: 'comment-
form', data: { remote: true}) do |form| %>
  <% if comment.errors.any? %>
    <div id="error_explanation">
      <h2><%= pluralize(comment.errors.count, "error")
%> prohibited this comment from being saved:</h2>
      <ul>
        <% comment.errors.each do |error| %>
          <li><%= error.full_message %></li>
        <% end %>
      </ul>
    </div>
  <% end %>
  <div class="trix-comment-group">
    <%= form.rich_text_area :comment %>
  </div>
  <div class="flex justify-end">
    <%= form.submit 'Add comment', class: 'mt-1 btn-
primary text-sm' %>
  </div>
<% end %>
```

We will also update Trix styles for the comment form to remove the Trix toolbar entirely and to adjust the height of the Trix editor to a more reasonable size for a comment form. In `` `app/assets/stylesheets/actiontext.css` ``:

app/assets/stylesheets/actiontext.css

```css
.trix-comment-group trix-editor {
  min-height: 5em;
  max-height: 10em;
}
.trix-comment-group .trix-button-group {
  display: none;
}
```

Users cannot leave comments on applicants if there is no way to open the comment slideover. Let’s fix that by updating the applicant card partial to add a link to the comments for each applicant.

In the applicants card partial:

app/views/applicants/_card.html.erb

```erb
<div class="flex flex-col pb-2 overflow-auto" data-id="
<%= applicant.id %>">
  <div class="relative flex flex-col items-start p-4
mt-3 bg-gray-100 rounded-lg cursor-move bg-opacity-90
group hover:bg-opacity-100">
    <h4 class="text-gray-900">
      <%= link_to(
        applicant.name,
        applicant,
        data: {
          turbo_frame: "_top"
        }
      ) %>
    </h4>
    <p class="text-sm text-gray-700"><%=
applicant.job.title %> in <%= applicant.job.location %>
</p>
```

```
  <div class="flex items-center w-full mt-3 text-xs font-medium text-gray-400">
   <div class="flex items-center" title="Application Date">
    <%= inline_svg_tag 'calendar.svg', class: 'h-4 w-4 inline-block' %>
    <span class="ml-1 leading-none"><%= l(applicant.created_at.to_date, format: :short) %></span>
   </div>
   <%= link_to(
    applicant_comments_path(
     applicant_id: applicant.id
    ),
    class: "relative flex items-center ml-4 cursor-pointer text-gray-400 hover:text-gray-700",
    title: "Comments",
    data: {
     action: "click->slideover#open",
     remote: true
    }
   ) do %>
    <%= inline_svg_tag 'chat-bubbles.svg', class: 'h-4 w-4 inline-block' %>
    <span class="ml-1 leading-none"><%= applicant.comments.size %></span>
   <% end %>
  </div>
 </div>
</div>
```

The comment link is relying on a new svg icon that we have not created yet. Add that icon next, from your terminal:

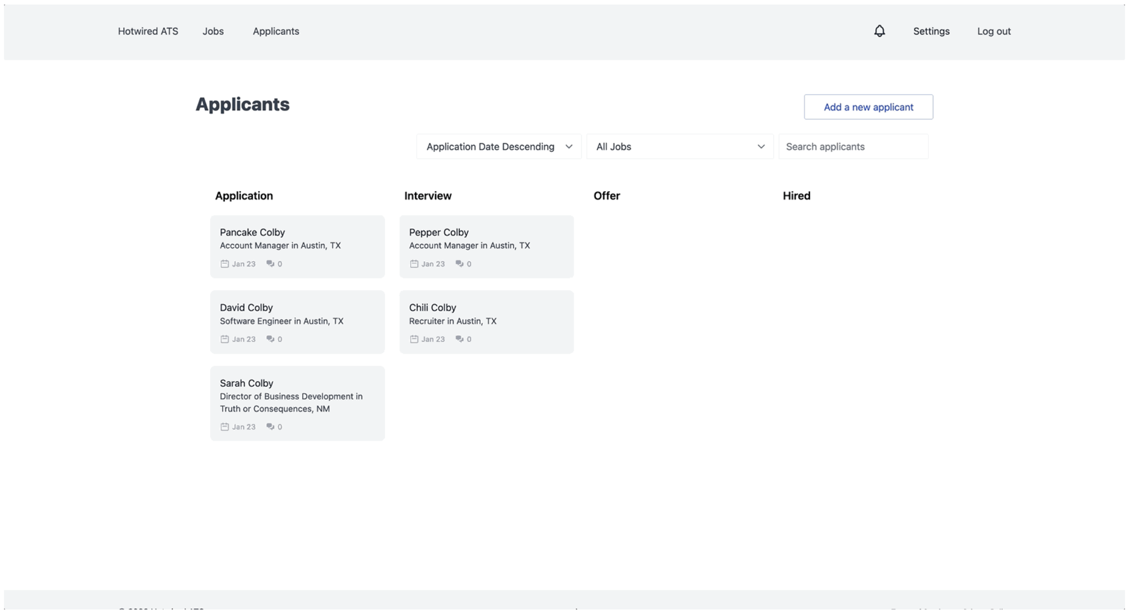
```
touch app/assets/images/chat-bubbles.svg
```

And fill in the new svg with:

app/assets/images/chat-bubbles.svg

```
<svg xmlns="http://www.w3.org/2000/svg" viewBox="0 0 20
20" fill="currentColor">
  <path d="M2 5a2 2 0 012-2h7a2 2 0 012 2v4a2 2 0 01-2
2H9l-3 3v-3H4a2 2 0 01-2-2V5z" />
  <path d="M15 7v2a4 4 0 01-4 4H9.828l-1.766
1.767c.28.149.599.233.938.233h2l3 3v-3h2a2 2 0 002-
2V9a2 2 0 00-2-2h-1z" />
</svg>
```

With that change in place, head to the applicants index page and click on the comment icon for any applicant. If all has gone well so far, a slideover should open with the comment form populated.



Applicants

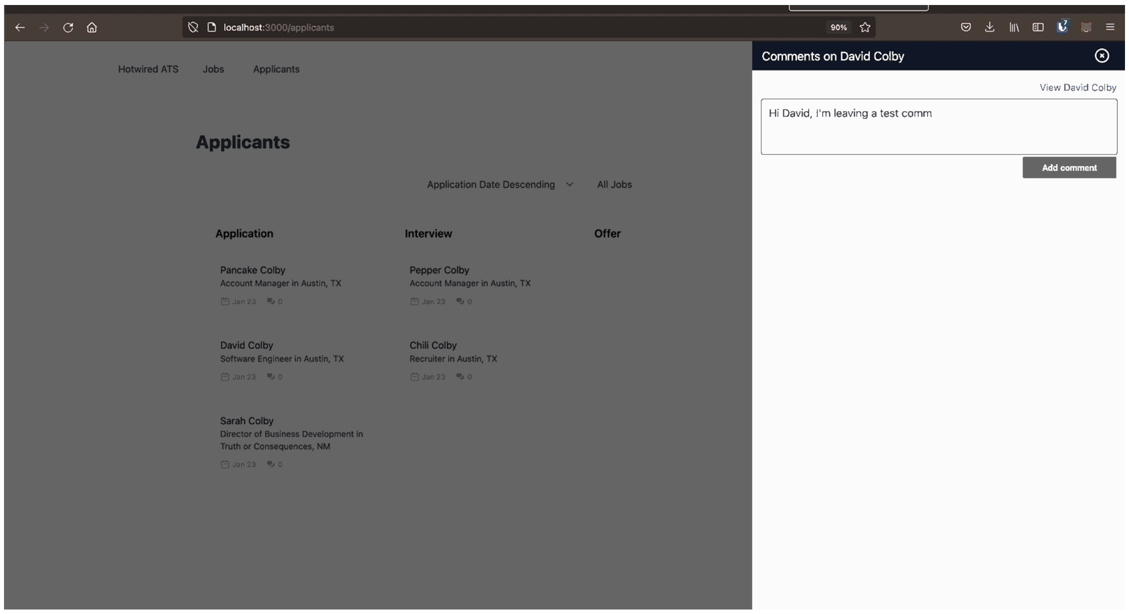
| Application | Interview | Offer | Hired |
|---|---|---|---|
| Pancake Colby, Account Manager in Austin, TX, Jan 23, 0 | Pepper Colby, Account Manager in Austin, TX, Jan 23, 0 | | |
| David Colby, Software Engineer in Austin, TX, Jan 23, 0 | Chili Colby, Recruiter in Austin, TX, Jan 23, 0 | | |
| Sarah Colby, Director of Business Development in Truth or Consequences, NM, Jan 23, 0 | | | |

Submitting the comment form will not work yet because the `create` action in the `CommentsController` has not been filled in yet. Head to the `CommentsController` and update the `create` action like this:

app/controllers/comments_controller.rb

```ruby
def create
  @comment = Comment.new(comment_params)
  @comment.commentable = @commentable
  @comment.user = current_user
  if @comment.save
    html = render_to_string(partial: 'comment', locals: { comment: @comment })
    form_html = render_to_string(partial: 'form', locals: { comment: Comment.new, commentable: @commentable })
    render operations: cable_car
      .prepend('#comments', html: html)
      .replace('#comment-form', html: form_html)
  else
    html = render_to_string(partial: 'form', locals: { comment: @comment, commentable: @commentable })
    render operations: cable_car
      .inner_html('#comment-form', html: html), status: :unprocessable_entity
  end
end
```

In this iteration of using the slideover drawer, instead of closing the drawer on a successful form submission, we instead reset the comment form with a new, empty version of the form and add the newly created comment to the list of comments displayed in the drawer.



localhost:3000/applicants

Hotwired ATS Jobs Applicants

Applicants

Application Date Descending All Jobs

| Application | Interview | Offer |
|---|---|---|
| Pancake Colby<br>Account Manager in Austin, TX<br>Jan 23 0 | Pepper Colby<br>Account Manager in Austin, TX<br>Jan 23 0 | |
| David Colby<br>Software Engineer in Austin, TX<br>Jan 23 0 | Chili Colby<br>Recruiter in Austin, TX<br>Jan 23 0 | |
| Sarah Colby<br>Director of Business Development in Truth or Consequences, NM<br>Jan 23 0 | | |

Comments on David Colby

View David Colby

Hi David, I'm leaving a test comm

Add comment

## Update comment count on new comment creation

You might notice that the number of comments listed on the applicant’s card does not update when a new comment is created. Users have to refresh the page to see the correct comment count.

Thanks to CableReady magic, we can implement this new behavior with almost no extra effort.

First, in `` `app/models/account.rb` ``:

app/models/account.rb

```diff
- has_many :applicants, through: :jobs, enable_updates: { on: :create }
+ has_many :applicants, through: :jobs, enable_updates: true
```

Now CableReady's `` `updates_for` `` will broadcast on all applicant changes, instead of only when new applicants are created. Halfway there.

And then, head to the `` `Comment` `` model:

app/models/comment.rb

```diff
- belongs_to :commentable, polymorphic: true, counter_cache: :commentable_count
+ belongs_to :commentable, polymorphic: true, counter_cache: :commentable_count, touch: true
```

That's all of the changes we need to make to get comment counts updated. Really!

Head back to the applicants index page and leave a comment on an applicant. You should see the number of comments update on that applicant’s card immediately after the comment is created.

## Mentioning other users

Comments are much more useful if you can bring that comment to another user's attention by mentioning them in the text of the comment. This pattern of mentioning other users to send them a notification is incredibly common. Without it, comments would be of limited use — why leave a comment if no one will ever know the comment is there without going to look?

We will use `` `tributejs` `` and StimulusReflex to add mentions to our commenting system. Mentioning a user will automatically create a new notification for that user with a link for the mentioned user to view the comment.

The inspiration for this section comes from an excellent GoRails episode demonstrating an integration with `` `tributejs` `` and ActionText. Chris Oliver's work is foundational to this particular section, and GoRails is a wonderful resource for Rails developers.

Let's begin by adding `` `tributejs` `` to the application and creating a new reflex. From your terminal:

```
yarn add tributejs
rails g stimulus_reflex mentions
rails stimulus:manifest:update
```

Recall that generating a new reflex creates both a server-side reflex and a client-side Stimulus controller.

Head to the new Stimulus controller first:

```
app/javascript/controllers/mentions_controller.js
```

```
import ApplicationController from
'./application_controller'
import Tribute from 'tributejs'
import Trix from 'trix'
```

```
export default class extends ApplicationController {
  static values = {
    userList: Array
  }

  connect() {
    super.connect()
    this.editor = this.element.editor
    this.initializeTribute()
    this.stimulate("Mentions#user_list")
  }

  initializeTribute() {
    this.tribute = new Tribute({
      allowSpaces: true,
      lookup: 'name',
      values: [],
      noMatchTemplate: function () { return 'No
matches!'; },
    })
    this.tribute.attach(this.element)
    this.element.addEventListener('tribute-replaced',
this.replaced.bind(this))
    this.tribute.range.pasteHtml =
this._pasteHtml.bind(this)
    this.userListValueChanged.bind(this)
  }

  disconnect() {
    this.tribute.detach(this.element)
  }

  userListValueChanged() {
    if (this.userListValue.length > 0) {
      this.tribute.append(0, this.userListValue)
    }
  }

  replaced(e) {
    let mention = e.detail.item.original
    let attachment = new Trix.Attachment({
      content: this.mentionContent(mention.name),
      sgid: mention.sgid,
    })
    this.editor.insertAttachment(attachment)
    this.editor.insertString(" ")
  }

  mentionContent(name) {
    return "<span class=\"text-blue-500\">@" + name + "
</span>"
  }

  _pasteHtml(html, startPos, endPos) {
    let range = this.editor.getSelectedRange()
    let position = range[0]
    let length = endPos - startPos

    this.editor.setSelectedRange([position - length,
position])
    this.editor.deleteInDirection("backward")
  }
}
```

This is a hefty controller. Let's break it down a bit.

In the `` `connect` `` method we setup the controller, initializing a new `` `Tribute` `` instance and calling a not-yet-defined reflex with `` `this.stimulate` ``:

app/javascript/controllers/mentions_controller.js

```
connect() {
  super.connect()
  this.editor = this.element.editor
  this.initializeTribute()
  this.stimulate("Mentions#user_list")
}
```

In `` `initializeTribute` ``, we initialize a new `` `Tribute` `` instance and attach that `` `instance` `` to the controller's DOM element.

app/javascript/controllers/mentions_controller.js

```
this.tribute = new Tribute({
  allowSpaces: true,
  lookup: 'name',
  values: [],
  noMatchTemplate: function () { return 'No matches!';
},
})
this.tribute.attach(this.element)
```

The most important option passed in to `` `Tribute` `` is the empty `` `values` `` array. We populate that array with `` `this.stimulate("Mentions#user_list")` `` in the `` `connect` `` lifecycle method and with `` `userListValueChanged` ``.

app/javascript/controllers/mentions_controller.js

```
userListValueChanged() {
  if (this.userListValue.length > 0) {
    this.tribute.append(0, this.userListValue)
  }
}
```

`` `userListValueChanged` `` takes advantage of built-in Stimulus value change callbacks. At the top of the controller, we defined a `` `userList` `` value, which expects to be an array. When the `` `userList` `` value changes (which the server-side `` `Mentions#user_list` `` reflex will handle), Stimulus runs the `` `userListValueChanged` `` callback which calls `` `Tribute.append` `` to populate the list users that can be mentioned in a comment.

`` `replaced` `` and `` `_pasteHtml` `` handle inserting mentioned users into the `` `Trix` `` editor cleanly, creating a `` `Trix` `` attachment and embedded that attachment inline with the rest of the text in the comment.

The server-side reflex will be responsible for populating the list of mentionable users that Tribute relies on. Head to `app/reflexes/mentions_reflex.rb` and fill it in like this:

app/reflexes/mentions_reflex.rb

```ruby
class MentionsReflex < ApplicationReflex
  def user_list
    users = current_user
            .account
            .users
            .where.not(id: current_user.id)
            .map { |user| { sgid: user.attachable_sgid, name: user.name } }
            .to_json

    cable_ready.set_dataset_property(
      name: 'mentionsUserListValue',
      selector: '#comment_comment',
      value: users
    )
    morph :nothing
  end
end
```

This reflex queries the database for mentionable users and then builds an array of hashes with `name` and `sgid` keys.

Then we use the `set_dataset_property` CableReady operation that we used in the last chapter to update the `userList` value. When this operation runs, the value of `userList` changes, Stimulus fires the `userListValueChanged` callback, and `Tribute` gets an updated list of mentionable users.

Neat.

Recall that in the last chapter, after the chart reflexes run, we relied on a StimulusReflex `afterReflex` callback to update the charts. Why did we not take the same approach here? So we could demonstrate Stimulus `values` callbacks.

We could accomplish exactly the same behavior with a StimulusReflex callback in the Stimulus controller. Remove the `userListValueChanged` callback and add this instead and everything would work just the same:

app/javascript/controllers/mentions_controller.js

```
afterUserList() {
  this.tribute.append(0, this.userListValue)
}
```

My preference is using `afterUserList` instead of `userListValueChanged` because there is a bit less ceremony involved with `binding` this and checking `userList's` value.

It is also worth noting that we could technically build the list of mentionable users in the initial call to `comments#index` and render the form with the `userList` value already populated.

Retrieving the users after the fact is not strictly necessary but we took this route because it gives us more chances to learn.

Before mentioning will work, we have a few more steps to take.

First, we need to update the `User` model to make it possible to create `Trix` attachments tied to users with the attachable_sgid method that we used in the `MentionsReflex`.

We also need the `User` model to define a `to_attachable_partial_path` so that user mention attachments can be displayed properly when a saved comment is rendered.

Head to the `User` model:

app/models/user.rb

```ruby
include ActionText::Attachable

def to_attachable_partial_path
  'users/mention_attachment'
end
```

`users/mention_attachment` does not exist yet. Create it from your terminal:

```
touch app/views/users/_mention_attachment.html.erb
```

And fill that new partial in:

app/views/users/_mention_attachment.html.erb

```erb
<span class="font-bold">
  @<%= user.name %>
</span>
```

Next, we need to attach the mentions controller to the DOM. In the comments form partial:

app/views/comments/_form.html.erb

```erb
<div class="trix-comment-group" data-turbo-cache="false">
  <%= form.rich_text_area :comment, data: { controller: "mentions" } %>
</div>
```

Here, we attached the `mentions` controller to the Trix editor and added the `data-turbo-false` attribute to prevent Turbo from caching the Trix editor. Preventing Turbo from caching this element prevents JavaScript errors caused by a cached version of the input that can occur when navigating back to the applicants page after leaving a comment. Instead of disabling caching on this element, we could also use Turbo's `before-cache` event to teardown `Tribute` before caching the page. Either option works fine but because there is no value in caching this form element so disabling the cache entirely is reasonable.

One last step before we test out mentioning users in the comment form. We need to add some basic styles to the list of users that `tribute` displays.

Create a new stylesheet where we will add these styles. From your terminal:

```
touch app/assets/stylesheets/mentions.css
```

And then fill that new file in:

app/assets/stylesheets/mentions.css

```
.tribute-container {
  @apply rounded-sm border border-gray-100 overflow-hidden shadow;
  z-index: 60;
}
.tribute-container ul {
  @apply list-none m-0 p-0
}
.tribute-container li {
  @apply bg-white p-1 max-w-full text-gray-700;
  min-width: 15em;
}
.tribute-container .highlight {
  @apply bg-blue-500 text-white cursor-pointer;
}
.tribute-container .highlight span {
  @apply font-bold;
}
```

Most of these changes are cosmetic. The exception is the `z-index` value applied to the `tribute-container` class. Because the comment form is in a drawer (which has a higher z-index than normal page content), we need to bump the `z-index` of the `tribute` content above the `slideover` `z-index` or we will not be able to see the list of mentionable users when we test things out.

Last step — import the new stylesheet into **`app/assets/stylesheets/application.tailwind.css`**:

app/assets/stylesheets/application.tailwind.css

```css
@import "mentions.css";
```

With these changes in place, make sure that you are logged in to an account with at least two users and head to the applicants index page. On the index page, open the comment drawer for any applicant and type an **`@`** into the comment form input.

You should see the list of mentionable users pop-up. Choose a user to mention and see that the mention attachment adds seamlessly into the existing comment text.

## Notify mentioned users

Mentioning a user in a comment is not very useful if the notified user is not notified of the comment. In this section, we will use the reusable **`Notifications`** base that we built earlier to send notifications when a user is mentioned in a comment.

Recall that notifications rely on single table inheritance, with each type of notification being defined in its own class. We will start by creating that new class. From your terminal:

```
touch app/notifications/applicant_comment_notification.rb
```

And fill the new class in like this:

app/notifications/applicant_comment_notification.rb

```ruby
class ApplicantCommentNotification < Notification
  def message
    "#{params[:user].name} mentioned you in a comment
on #{params[:applicant].name}"
  end

  def url
    applicant_comments_path(params[:applicant])
  end
end
```

Nothing fancy here — each notification class defines `` `message` `` and `` `url` `` methods for rendering itself in the notifications list.

Then update the `` `comment` `` model to create a new notification each time a user is mentioned in a comment:

app/models/comment.rb

```ruby
after_create_commit :notify_mentioned_users

def notify_mentioned_users
  mentioned_users.each do |mentioned_user|
    Notification.create(
      user: mentioned_user,
      type: "#{commentable.class}CommentNotification",
      params: {
        user: user,
        applicant: commentable
      }
    )
  end
end

def mentioned_users
  comment.body.attachments.select { |att|
att.attachable.is_a?(User) }.map(&:attachable).uniq
end
```

There is a small wrinkle here. Technically, any number of users can be mentioned in the same comment. When a new comment is created, we run through all of the `` `Trix` `` attachments on the comment and create a notification for each user with an attachment.

With this change in place, login to two users on the same account. In one window, create a new comment that mentions the user logged in to the second window. You should see the new comment notification come through instantly for the mentioned user.

Great work so far in this chapter! To finish this chapter, we are going to move notification creation to a background job, setting up a basic Sidekiq installation in the process.

## Background notifications

When a new comment is created, it is technically possible for dozens of user notifications to be created — imagine a very excited user mentioning every user on their account in the same comment.

Because notifications are created inline right now, the user who created the comment would need to wait for all of those dozens of notifications to be created before the request to create the comment would complete.

A better approach is moving non-essential updates like this to a background worker where they can be processed out-of-band, unblocking the user who created the comment and avoiding tying up resources unnecessarily.

To process background jobs in our application, we will use **Sidekiq** and **ActiveJob**.

Install Sidekiq from your terminal:

```
bundle add sidekiq
touch config/sidekiq.yml
```

And fill in the Sidekiq configuration file with a simple configuration to get us started (and lifted right from the Sidekiq documentation):

config/sidekiq.yml

```yaml
# Sample configuration file for Sidekiq.
# Options here can still be overridden by cmd line args.
# Place this file at config/sidekiq.yml and Sidekiq will
# pick it up automatically.
---
:verbose: false
:concurrency: 10

# Set timeout to 8 on Heroku, longer if you manage your own systems.
:timeout: 8

# Sidekiq will run this file through ERB when reading it so you can
# even put in dynamic logic, like a host-specific queue.
# http://www.mikeperham.com/2013/11/13/advanced-sidekiq-host-specific-queues/
:queues:
  - critical
  - default
  - <%= `hostname`.strip %>
  - mailers
  - low

# you can override concurrency based on environment
production:
  :concurrency: 10
staging:
  :concurrency: 5
```

And then tell Rails that we want to use Sidekiq with ActiveJob. In `` `config/application.rb` ``:

config/application.rb

```
config.active_job.queue_adapter = :sidekiq
```

Now that we have Sidekiq installed and ActiveJob configured to use Sidekiq, we need to create a new job to create user notifications. To do this, use the built-in `` `Job` `` generator. From your terminal:

```
rails g job NotifyUser
```

And then fill the job in at `` `app/jobs/notify_user_job.rb` ``:

app/jobs/notify_user_job.rb

```
class NotifyUserJob < ApplicationJob
  queue_as :default

  def perform(resource_id:, resource_type:, user_id:)
    resource =
resource_type.constantize.find(resource_id)
    user = User.find(user_id)
    resource.create_notification(user)
  end
end
```

The `` `NotifyUserJob` `` will create multiple types of notifications (right now we can notify users of new mentions and new inbound emails), so we pass in the information that it needs to find the record and create the notification.

Now update the `` `Comment` `` model to create notifications in the background:

app/models/comment.rb

```
    def notify_mentioned_users
      mentioned_users.each do |mentioned_user|
```

```ruby
    NotifyUserJob.perform_later(
      resource_id: id,
      resource_type: 'Comment',
      user_id: mentioned_user.id
    )
  end
end

def mentioned_users
  comment.body.attachments.select { |att|
att.attachable.is_a?(User) }.map(&:attachable).uniq
end

def create_notification(mentioned_user)
  Notification.create(
    user: mentioned_user,
    type: "#{commentable.class}CommentNotification",
    params: {
      user: user,
      applicant: commentable
    }
  )
end
```

`` `notify_mentioned_users` `` is still the method the `` `after_create_commit` `` callback runs. This method still loops through each mentioned user, but it sends each notification into the background with `` `NotifyUserJob.perform_later` ``.

After updating the `` `Comment` `` model, stop the Rails server and then update `` `Procfile.dev` `` to start sidekiq along with building assets and starting the Rails server:

Procfile.dev

```
worker: bundle exec sidekiq
```

Start the application back up with `` `bin/dev` ``, mention a user in a comment and see that notifications are still created as expected.

If you like, you can also use the new `` `NotifyUser` `` background job to create inbound email notifications. To do so, update the `` `Email` `` model like this:

app/models/email.rb

```ruby
after_create_commit :notify_recipient, if: :inbound?

def notify_recipient
  NotifyUserJob.perform_later(
    resource_id: id,
    resource_type: 'Email',
    user_id: user.id
  )
end

def create_notification(user)
  InboundEmailNotification.create(
    user: user,
    params: {
      applicant: applicant,
      email: self
    }
  )
end
```

Incredible work — with this last bit of code we have completed our Hotwired ATS application and you have reached the end of this book!

To see the full set of changes in this chapter, review **this pull request** on Github.

I appreciate you joining me on this journey, and I hope you have found this book to be information, valuable, and useful for you as a Ruby on Rails developer.

When you are ready, read on to Wrapping Up to recap what we built together and to find learning resources outside of this book to help you continue on your journey.