How to approach technical problems jneidel.com/tech-problems

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Endava Berlin

November 2023



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Intro



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Definitions



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What do I mean by problem? 1

difference/distance between a current and a desired state



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What do I mean by problem? 2

Examples:

- ► Your computer is not starting.
- ► When I press this button in the UI nothing happens.



What do I mean by **technical** problem?

solvable by technical means



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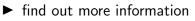
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Stages of a problem

- 1. Problem definition
- 2. Analysis \leftarrow (interactive)
- 3. Solution



Analysis



- What are we working with?
- What is the cause of this problem?
- What can be done about this?
- etc.

In the context of this talk:

► What would **you** do in this scenario?



Solution

- collected all necessary info
- design & implement a solution

In the context of this talk:

► I'll quickly describe my solution



Problems



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Simple: Problem

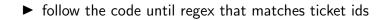
- Current: Your app is wrongly matching ticket ids
- ► Desired: To only match ticket id

note "Continue PROD-123, Review PRs" \rightarrow Matched a new ticket PROD-123,





Simple: Analysis





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Simple: Solution

88	88	
89		<pre>function matchByProjectCode(note, project): string[] {</pre>
90		<pre>- return Array.from(note.matchAll(`\${project}[^]+`))</pre>
	90	<pre>+ return Array.from(note.matchAll(`\${project}[^ ,;.]+`))</pre>
91		.map(([id]: any) => id);
92		}





Preowned: Problem

- Current: Websites selling used clothes do not have a way to notify you of updates for a query.
- Desired: You'd like to see new matches.





Preowned: Analysis - Scraping

- ▶ RSS feed or get notified by email? \rightarrow No
- ► Scraping works? → Yes



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Preowned: Solution

scrape websites
curl 'https://www.momoxfashion.com/query |
grep -Po 'href="\K/[^"]+(?=".+item-link)'

- compare to local list of items I already looked at
- only show new ones





Automatic Login: Problem

- Current: A website you use regularly is configured to log you out after 6h
- Desired: Automatic login





Automatic Login: Analysis

search for tools \rightarrow browser extensions can do this

- Password manager
- Standalone



Automatic Login: Solution

Autofill extension:

Text	username // superuser	
Password	password	•••••
JavaScript		<pre>document.querySelector("button[type=submit]").click();</pre>

Find HTML elements with Inspector (Ctrl+Shift+c)







Payments: Problem

- Current: On your webapp stripe payments have started failing (only on prod)
- Desired: You would like to process payments





Payments: Analysis - Logs

• What are the app's logs saying? \rightarrow No errors

• What are stripe's logs saying? \rightarrow This error:

8 resource_missing - payment_method

No such paymentmethod: 'pm_1O6ZBWDG8DVnA6cVvhxMeVMW'; a similar object exists in test mode, but a live mode key was used to make this request.





Payments: Analysis - Heroku

- \blacktriangleright Search for the error \rightarrow You're not using live keys
- Check env vars on Heroku \rightarrow prod env vars look good

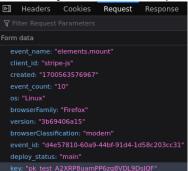
STRIPE_PUBLIC_KEY	pk_live_
STRIPE_SECRET_KEY	sk_live_



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Payments: Analysis - Double check





Payments: Solution

Don't promote in Heroku pipeline.

STAGING + Add app	\rightarrow	PRODUCTION + Add app
jobdirecto-staging		jobdirecto
O Wilfredoo/Jobdirecto		O Wilfredoo/Jobdirecto
Auto deploys develop		Auto deploys master
e2c95f19 🐧 Deployed Nov 19 at 5:56 PM		e2c95f19 Deployed Nov 19 at 5:55 PM
No changes to promote Open app 🗗	٥	Open app [2] ≎



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Changelog: Problem

- Current: Changelog for one year worth of commits is needed
- Desired: Changelog in the specified format exists

[Player] Subtitles stick to bottom of Player #JIRA-813





Changelog: Analysis - git log

- \blacktriangleright Are there Jira ticket lds in the commits? \rightarrow Yes, mostly
- \blacktriangleright Are there change descriptions in the commits? \rightarrow No





Changelog: Analysis - Jira

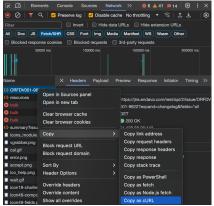
- \blacktriangleright Does Jira have a list of changes? \rightarrow Maybe, not really
- Does Jira have a change description? \rightarrow Yes





Changelog: Analysis - Getting data from Jira

- ▶ Official API? \rightarrow Yes
- Imitate browser requests? \rightarrow Yes





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Changelog: Solution



fetch title and tags from Jira

Alternative to avoid this in the future: Conventional commits



Mail signups: Problem

- Current: You have a CRM and are receiving signups for courses via structured email, manually entered into CRM
- Desired: Getting contact info into the CRM should be less tedious





Mail signups: Analysis - What are we working with?

- ► Mail client? → Outlook (non cloud version), normal SMTP/IMAP
- CRM? \rightarrow Obscure paid closed-source





Mail signups: Analysis - Connectivity

- Does either have an API? \rightarrow No
- $\blacktriangleright\,$ Do the CRM has a way to import data? \rightarrow Yes, CSV
- \blacktriangleright Is there a mail client that I can hook into \rightarrow Thunderbird with chrome extensions



Mail signups: Solution

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DEVWEEK

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Subtitles: Problem

- Current: In your symfony app you have this error when writing a subtitle file.
- ► Desired: Should work.

Could not import files: RuntimeException: Could not write the "subtitles/1234.ttml" key content in vendor/../Gaufrette/Filesystem.php:106



Subtitles: Analysis - Masked error

go into the given file and trace back the error

```
try {
    $this→service→putObject($options);
    if (is_resource($content)) {
        return Util\size::fromResource($content);
    }
    return Util\Size::fromContent($content);
} catch (\Exception $e) {
    return false;
}
```

InvalidArgumentException: While validating the input provided for the PutObject operation: ContentType must be string. Found bool(false)





Subtitles: Analysis - Setting the ContentType

trace back to where the ContentType is set

11	<pre>protected function getContentType(\$filename)</pre>
12	{
13	<pre>\$ext = pathinfo(\$filename, \PATHINFO_EXTENSION);</pre>
14	\$mimeTypes = \$this->mimeTypes->getMimeTypes(\$ext);
15	
16	return ['contentType' \Rightarrow current($$mimeTypes$)];
17	}
18 }	
NORMAL	vendor/sonata-project/media-bundle/src/Metadata/AmazonMetadataBuilder.php

\$this->mimeTypes is Symfony\MimeTypes,
which does not support ttml

```
Why did this work before?
```





Subtitles: Analysis - Bundle update

```
find out if media-bundle was recently updated
Look at commits touching media-bundle:
git log -L65,65:composer.json
    ORFDV001-9033 Sonata Media Bundle Updated
diff --git a/composer.json b/composer.json
   a/composer.json
+++ b/composer.json
@@ -65,4 +65,4 @@
         "sonata-project/media-bundle": "^3.38.1",
                                                   DFWWFFK
```



Subtitles: Analysis - Check prev implementation

check the implementation in the previous version

```
SonataMediaBundle/src/Metadata/AmazonMetadataBuilder.php []
protected function getContentType($filename)
{
    $extension = pathinfo($filename, PATHINFO_EXTENSION);
    $contentType = Psr7\mimetype_from_extension($extension);
    return ['contentType' => $contentType];
}
```

Implementation has changed!

DEVWEEK



Subtitles: Solution



Add ttml support into Symfony\MimeTypes





Slowdown: Problem

- Current: Your computer slows down to the point of being unsuable
- ► Desired: Operates normally

 $\mathsf{reboot} \to \mathsf{slows}$ down again after a few hours to a few days





Slowdown: Analysis - Eliminating possibilities

- ► check CPU/Memory usage \rightarrow All normal
- ► Is CPU overheating? \rightarrow No
- ▶ Power management? \rightarrow No
- $\blacktriangleright \ \text{read out sensors} \rightarrow \text{Look normal}$
- Any patterns? \rightarrow Not that I see
- AC? \rightarrow Tested different power supplies

For ideas:

- Search for the problem
- Ask ChatGPT





Slowdown: Analysis - CPU frequency

- What's the CPU frequency? \rightarrow Hardware minimum
- Is it adjustable \rightarrow Yes, but will be overwritten





Slowdown: Analysis - Search again

 \blacktriangleright Search again with a better understanding of the problem \rightarrow SO post specifically about this



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Slowdown: Solution

Replace the battery, which was dropping voltage, which freaked out the $\ensuremath{\mathsf{CPU}}$



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Conclusions



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Foundation

Deep understanding of these will aid your problems solving ability

- ► Your programming language & framework
- ► Your OS
- ▶ Internet stack: HTTP, TCP, IP, DNS & friends
- Shell scripting



General approaches

- Check the logs
- Searching for the problem
- Searching through Github issues
- Check the official docs
- Reading the source code
- Ask somebody knowledgable for help :)
- ► Ask ChatGPT as a sanity check



Environment specific tools

Some examples:

- Browser DevTools
- ► git
- ► shell utils: curl, grep, awk, etc.
- ► packagist
- Arch Wiki
- ▶ & much more



Q & A



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