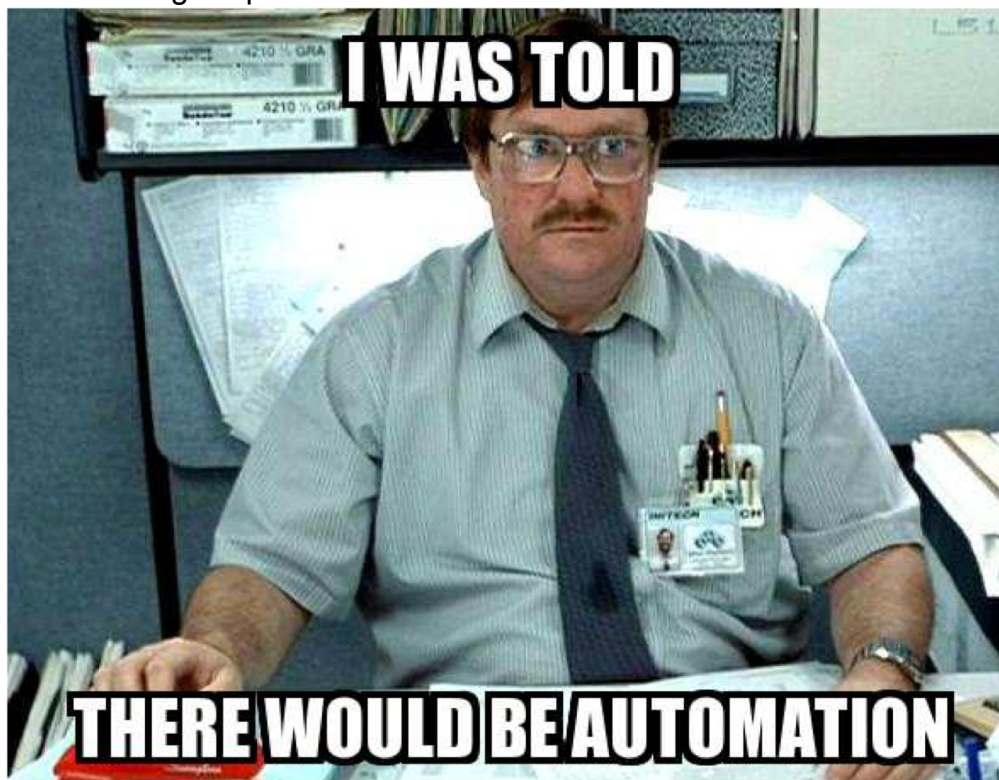


DevOps Case Problems

Congratulations on getting this far!

In this document, we've outlined some real-world problems that our engineers have solved with the magical power of automation.



Please go through all the below use cases and pick one use case for your technical evaluation.

In this evaluation, you will be required to produce code (where applicable) and a basic workflow diagram with specific tools & libraries. We encourage you to ask yourself what the limitations of your solution are. It's acceptable to propose a prototype workflow as long as you are aware of the limitations and the steps you would take to overcome the limitations in the real world.

Please use your own github, cloud infrastructure (AWS preferred) and other accounts for this task. We encourage you to think open-source - but if there are huge benefits of using a paid solution, please evidence it in your work.

Case Problem 1

Christopher writes bids every day. He's created a folder on his machine which houses all the bids he's written, and he uses Github to store all of the files. Although he uses Github for storage and version control, he would sleep better at night if his files from Github were stored on AWS S3 as a backup - this way, he can always download his files from s3 should anything undesirable happens to his Github. Can you suggest/chalk out an **incremental backup** system that works in a way where when Chris pushes a file to his branch, only the files that are updated or new are uploaded to s3? Your solution should **not** upload all files on every push.

Case Problem 2

Lily loves operations. She's at the center of it all - she speaks with customers and works with developers. She's also the only QA person in the company, so every release must be OK'd by her. All developers in the company use two branches on Github for the product they work on with Lily. The development branch, which Lily and the developers use to test all features internally and only after Lily's OK, are the developers allowed to merge their code to the master branch. To err on the side of caution, the developers need a pipeline that notifies Lily whenever code is pushed to the development branch (Think - an email sent when the features are ready to review). After she's checked it in her own time, she approves the request for review, and voila! The code is merged to dev. Can you suggest a pipeline for this? Since this tool is for internal usage, we recommend you [K.I.S.S](#)

Case Problem 3

Jon is the ultimate watchdog of the company. Bad security policies irk him, so he hates it when people have access to things they shouldn't. But, on the other hand, he's aware that developers manage all environments (production, development), and he knows it's a disaster waiting to happen.

Lucky for him, he's hired you - his enforcer to chalk out a plan which will help the company move from one AWS account managed and accessed by all to a system that gives access to people based on their role. Of course, Jon being top-dog should be able to add and remove users as he pleases, and when people are removed from the AWS infrastructure, they should not be able to access anything.

What steps would you take to help migrate the team to a role-based identification system? The team is using RDS, Lambda, API gateway, and S3. All of the services have both development and production on the same account.

Case Problem 4

Kalpitha builds energy models for the company. Not many people understand what she does, but all we know is she takes a lot of data from different sources, and with the magic of ML, she outputs a model. This model is at the heart of the business since it uses data classification or forecasting and integrates it to the front end. Whenever customers give her feedback, she quickly incorporates it into her model, but the thought of uploading the model and backend tires her out. She needs a system that stores the versions of the same models and allows her to roll back to any version through a command or a click of a button. When she does so, a pipeline will swap out the existing model to the model that she wants. How would this pipeline work? What would it look like?

Case Problem 5

Sam works with the frontend team. He maintains and writes the code to a dashboard that all customers use. He noticed that most of the time, he's asked to deploy the same dashboard on multiple servers. What solutions would you recommend to Sam to save effort deploying the same dashboard on different servers? The database and backend would be separate for each server, but the frontend would be the same. Your solution should be a 'one-click-deploy.'