

Coding the Law Final Project Biography

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1 Quick Links

| |
|---|
| Github https://github.com/blieu645/ctlfinalproject/ |
| Alien Change of Address v1 https://forms.office.com/r/f8gQngTSyJ |
| Alien Change of Address v2 https://forms.office.com/r/V84GWAhqPr |
| Alien Change of Address Final https://forms.office.com/r/d1Qd019NKm |
| Partner Letter https://github.com/blieu645/ctlfinalproject/blob/17670c79ad3cf0de571e5540ba0b118c851ba293/CTL%20Partner%20Letter.pdf |
| Example filled PDF https://github.com/blieu645/ctlfinalproject/blob/17670c79ad3cf0de571e5540ba0b118c851ba293/ar-11%20test%20unlocked%20filled.pdf |
| Pitch Slide Deck https://github.com/blieu645/ctlfinalproject/blob/15aa8c27b18e4b6b2aaf858d581cc8d57a666da2/Coding%20the%20Law%20-%20Ben%20L.pptx |

2 Introduction:

This is a documentation for the development of the Coding the Law final project produced by Ben Lieu.

3 Scope:

Problem

- This project aims to solve the **documentation overload** for attorneys for the organization I volunteer for. The Asian Task Force Against Domestic Violence (ATASK) is a non-profit. And with small non-profits, we are a small legal team with no paralegals. Most times, attorneys manually fill out immigration forms that do not require an attorney's time. If some of the more tedious forms are automatically completed with attorney review, valuable attorney time could be spent on more substantive matters.

Users

- The user profile would be ATASK clients. A client who requires immigration assistance could be sent the link to a survey corresponding to the legal matter. The client would then complete the survey and automatically receive a filled immigration form via email after attorney review.
-
- Note: Most ATASK clients and thus our userbase are limited English proficient and quite sensitive to their domestic violence issues that require human interaction. Filling out a survey alone about these issues is not viable for these clients. As a result, this limits the scope of the project to generic basic forms that do not involve their case facts.

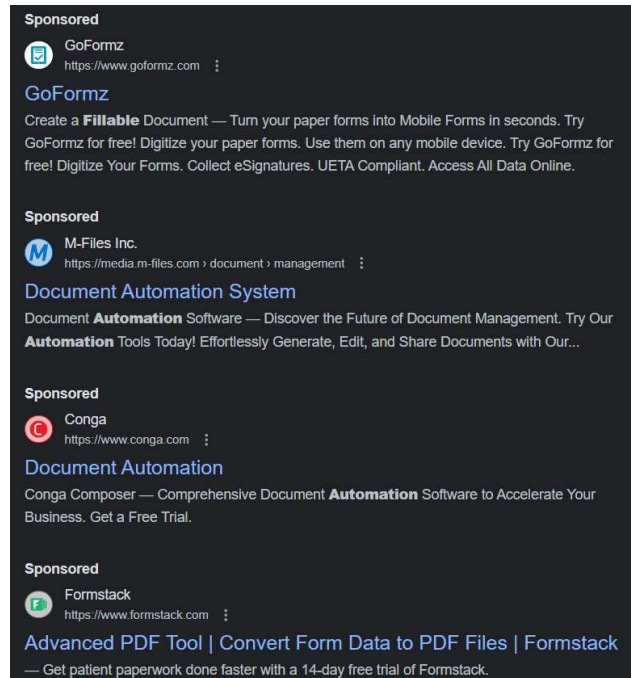
Stakeholders

- The stakeholders of this project are the attorneys and legal interns of ATASK. The legal program has a vested interest in delivering to clients correctly completed immigration forms.

4 Research:

Alternative solutions

- There are many solutions on many platforms. For example, a simple google search will result in many **commercial** solutions. But as you can predict, there are no **free** alternatives. The only infinitely free service would be Suffolk Lit Lab's very own Docassemble program.



5 Prototype:

Ideation

- There were three main options to pursue:
 - Microsoft Forms
 - Advantages: Most aesthetic, Power automate support, branching and logic, can output to pdf, excel, or word, easy to modify form, connection to outlook.
 - Disadvantages: most services are paid.
 - Docassemble
 - Advantages: Free, tailor-made to the problem, encapsulated program.

- Disadvantages: limited output to PDF, limited notification settings for, to modify interview requires coding, number format has thousands marker.
- Google Forms
 - Advantages: Highly like MS Forms, lots of logic and branching options, can output to pdf, Google Sheets, or Docs.
 - Disadvantages: less aesthetic, most services are paid.

Decision

- The decision would be to create 2 prototypes, one in Docassemble and one in MS Forms. This is due to my familiarity with Microsoft Suite and a personal interest in learning Power Automate, I chose MS Forms over Google Forms. Docassemble is a viable alternative, so I decided to test it out regardless.

6 User Testing:

A-B testing

- MS Forms takes 3 minutes to complete.
- Docassemble takes 5 to read and complete.

The main issue with docassemble in my opinion was there were a lot of UI elements that I had to read as a first-time form taker. This slowed down my completion of the form.

My personal user feedback

- On Docassemble, there was an issue with the format of "number format only". For some reason, the numbers had 1,000 separators instead of 1000. This caused issues for the Alien registration number.

Alien Registration Number (A-Number) (if any)
▶ A- 1 , 2 2 0 , 2 2 3

- On MS Forms

There were branching options and logic "move to end" options that assisted in guiding the user through each screen.

The branching logic each section is displayed one-by-one, applicants cannot skip sections without programmed to.

Questions that had branching logic would appear and disappear according to whether or not they were required.

Potential User Feedback

- There were comments about the professionalism of the language in the form.
- The tediousness of the line of questioning for apt/suite/flr annoyed users.
 - There were a series of 4 yes-no questions that would
- The color of the disclaimer could be a better color.

View results

Respondent

< 1 Anonymous >

04:06
Time to complete

...

1. What would you change to improve our the form?

The warning message font color should be changed to something that would catch the user's attention. Also, having to click next to enter information like "apartment number" is annoying. Everything related to address should be on the same tab/page and as a non required text box field instead of a check box.

2. What do you like most about our product?

I like the color of the background!

3. Overall, how would you rate our product?

Low rating ★ ★ ★ ☆ ☆ ☆ ☆ ☆ ☆ ☆ High rating

4. Email *

[Redacted]

7 Iterations:

AR-11: Alien change of Address v1

https://forms.office.com/Pages/ResponsePage.aspx?id=qT9zeA5UuE6_KXPE7rY0Evj2GWWSiqtKtSqKNrRuRY5UNTZSQkdSN0M4VENKTUZaVzBESUVYVTdXSS4u

Notes: Initial form with all fields listed in form.

AR-11: Alien change of Address v2

https://forms.office.com/Pages/ResponsePage.aspx?id=qT9zeA5UuE6_KXPE7rY0Evj2GWWSiqtKtSqKNrRuRY5UMUdZUUE0S0xaTVFYTFNXQjRGQU9URUtRVy4u

Notes:

- Per user feedback, streamlined "checkbox section".
- Removed double disclaimer in title section
- Changed font color of disclaimer to red

AR-11: Alien change of Address (Final)

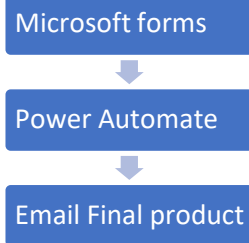
https://forms.office.com/Pages/ResponsePage.aspx?id=qT9zeA5UuE6_KXPE7rY0Evj2GWWSiqtKtSqKNrRuRY5UN0gxMjZOVE9IT0tZQTROMFBZWEdJNDVPQy4u

Notes:

- Outright removed checkbox section questions for each section and replaced with "What is your art/suite/flr number?"
- Removed disclaimer for email section because that email actually has to be real
- Revised disclaimer language to be more professional
- Included introduction for form with instructions
- Made first and last name required

8 Final Design:

Final project workflow



Power automate workflow

- | | |
|---------------------------|---|
| 1. User completes MS Form | • This is the trigger for the whole workflow. When a new response is submitted, the flow activates. |
| 2. Get Response Details | • Grabs response data |
| 3. Get File content Copy | • Grabs the unlocked template PDF from my oneDrive folder |
| 4. Compose in input box | • converts the pdf template data into text (one long string) • mapped new response data with PDF form fields |
| 5. Import PDF Forms data | • uses new response data and replaces PDF empty fields with new responses in .XML • imports data into PDF fields |
| 6. Delay of 7 seconds | • allow files to refresh in oneDrive |
| 7. Move file | • moves old filled pdf and saves it into a different folder in my oneDrive |
| 8. Create File copy | • using the filled pdf data content, create a new pdf using that .XML data. |
| 9. Delay of 7 seconds | • Allow for file to refresh in oneDrive |
| 10. Create Share link | • Create share link for new file |
| 11. Send Email | • Send an email with the link to view in the body of the email |

9 Impact

Impact

- I think the impact for attorneys is great. Before, attorneys had to manually fill out the form. Now they just have to review the form that clients received in the email. The manual step is 100% removed from the new process.

The main time sink is asking the client their personal information or finding the information. This costs time that the client can just answer using their own time, instead of wasting the attorney's time.

- Old process
 - Schedule Client interview or email.
 - Ask questions about or find address and personal information.
 - Attorney or legal intern manually type in responses.
 - Attorney reviews form.
 - Send file to Client.
- New process
 - Send email to Client with MS Form link.
 - Client completes form on their own time.
 - Client emails attorney with completed form.
 - Attorney reviews form.
 - Send file to Client.

10 Viability, Sustainability, & Beyond

Viability

- This is in the skateboard stage. This form is deceptively simple and actually more complicated than it looks.
- I think using Power Automate as a template for future forms is very viable. The process to switch to a new form is as simple as selecting a new Form and remaking all the inputs (PDFs and variables). The structure remains the same.
-

Required work:

- Extra research and testing needs to be completed on checkboxes, the logic and .XML language for them needs to be looked into. ("yes" and "Off")
 - Ideally the MS Form would output responses that are exactly in the required syntax needed to convert to .XML, otherwise I would have to find a way in Power Automate to convert MS Form answers into variables that fit the syntax of .XML buttons.

- There is an edge case error where two users input a response at within the delay time (within 14 seconds)
 - The solution is unknown but the Ideal solution would be to restructure the file shuffling in oneDrive.

Sustainability

- I will continue troubleshooting the simultaneous submission logic.
- Power automate is a very malleable program with lots of back-ups available on its platform. I can easily work on new updates.
- I had a lot of fun troubleshoot the workflow. I will continue to troubleshoot and add to my list of errors I conquered!
- My notes for all the errors I had to resolve were numerous.
 - Experimentation in excel outputs
 - Metadata that was messing with triggers
 - How to send emails
 - Attachments sending garbled PDF data
 - File update issues with oneDrive
 - Bad requests due to incorrect dependencies
 - Lots of trial and error for PDF template (must unlock first!)
 - .XML syntax errors when I tried to code
 - Ex. <time></time> and <time />
 - Workflow only taking the first response over and over again instead of new response

11 Documentation/Instructions for use

Function:

This Project uses the Microsoft suite to automate filling out a PDF for notifying the US immigration office about a change in address.

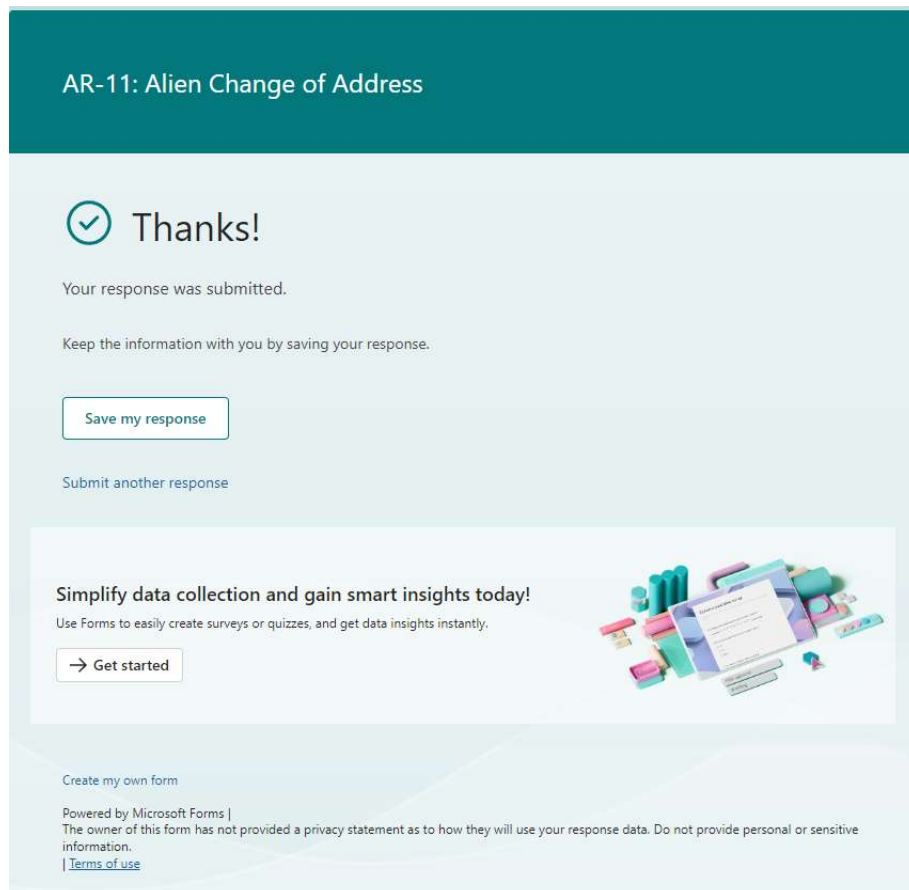
This documentation describes how to use the current set-up workflow for AR-11 Alien change of Address PDF and how to set-up your own custom workflow for your own PDF.

How to use:

- 1 Open the MS Form "AR-11 Alien Change of Address" using the link found below or in the project biography.

https://forms.office.com/Pages/ResponsePage.aspx?id=qT9zeA5UuE6_KXPE7rY0Evj2GWWSiqtKtSqKNrRuRY5UN0gxMjZOVE9IT0tZQTROMFBZWEdJNDVPQy4u

- 2 Complete the Form.



AR-11: Alien Change of Address

✓ Thanks!

Your response was submitted.

Keep the information with you by saving your response.

Save my response

Submit another response

Simplify data collection and gain smart insights today!

Use Forms to easily create surveys or quizzes, and get data insights instantly.

→ Get started


Create my own form

Powered by Microsoft Forms |
The owner of this form has not provided a privacy statement as to how they will use your response data. Do not provide personal or sensitive information.
| [Terms of use](#)

3 Wait a minute or two and receive a link to your completed PDF through email!

Completed AR-11 Form



 This message was sent with Low importance.

WARNING: This is a class project. You should not rely on it as a source of legal information. It is likely incomplete. All information entered should be fake and made up.

Hi Ben,

Please see below the link to your filled out AR-11 Change of Address Form.

Please make sure to download the form as the link will expire.

<https://1drv.ms/b/s!ArAZjxdFjgDguAHXUEBQ0ZNkgImGw>

Thanks,

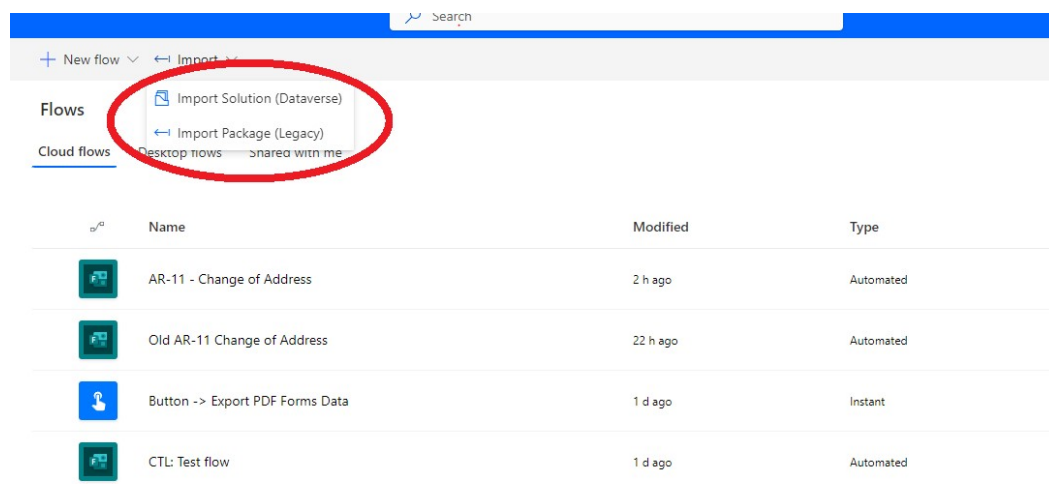
Ben

How to set-up your own Power Automated Form

1 Download the following from github <https://github.com/blieu645/ctlfinalproject>

1. "InitializingPDF_20231215030817.zip"
2. "AR-11AlienChangeofAddressWorkFlow_20231215030619.zip"

Import both workflow packages into your Power Automate account.



- 2 Manage all required connections and logon to all connections. You will need access to the Microsoft Forms, Microsoft oneDrive, Microsoft Outlook, and a user account in Muhimbi PDF.

The screenshot displays the Microsoft Power Automate interface for a flow named "Muhimbi PDF". The top navigation bar shows the user is logged in as Benjamin Lieu (BL) at Suffolk University. The flow is in a "Preview" state, and the "Flow checker" is active. The flow's status is "On", created on Dec 13, 07:41 PM, and modified on Dec 13, 09:27 PM. The type is "Instant", and the plan is "The user who runs the flow".

The "Connections" section, highlighted with a red box, lists three connections:

| Icon | Connection Name | Account | Status |
|-----------------------|-----------------------------------|----------------------|--------|
| Muhimbi PDF | Muhimbi PDF | Muhimbi PDF | ✓ |
| Muhimbi PDF | Muhimbi PDF | Muhimbi PDF | ✓ |
| OneDrive for Business | OneDrive for Business Permissions | blieu@su.suffolk.edu | ✓ |

The "Owners" section shows Benjamin Lieu (BL) as the owner. The "Process mining (preview)" section shows the average run duration as 00:00:06. The "Run only users" section indicates the flow hasn't been shared with anyone. The "Associated Apps" section shows no apps are associated with this flow.

The "All runs" section shows a list of runs, all of which are "Test succeeded".

3 Download the PDF form you wish to automate.

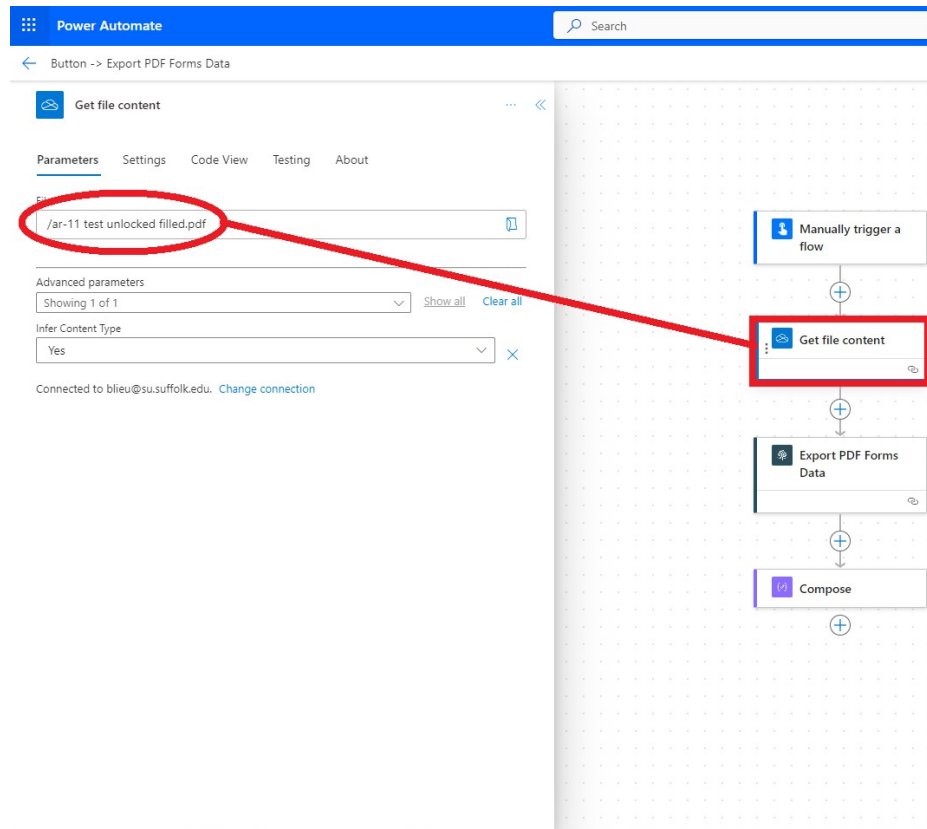
4 Go to <https://start.gavel.io/pdf> and upload to unlock your PDF.

Download and Save the PDF in your oneDrive.

5 Fill in dummy data into the relevant fields in your unlocked PDF.

6 Open the "button Export PDF Forms Data" workflow and edit.

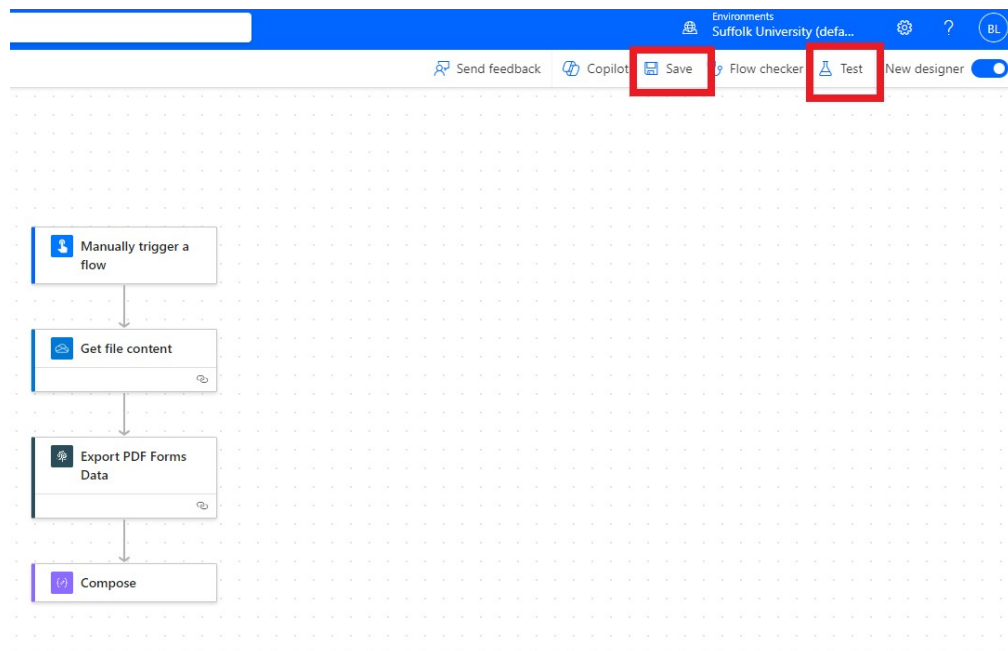
In the "Get File content" box, change the parameter "File" to navigate to the file path of your unlocked PDF.



- 7 In the "Export PDF Forms Data" box, change the parameter "Source File Name" to the exact name your unlocked PDF.

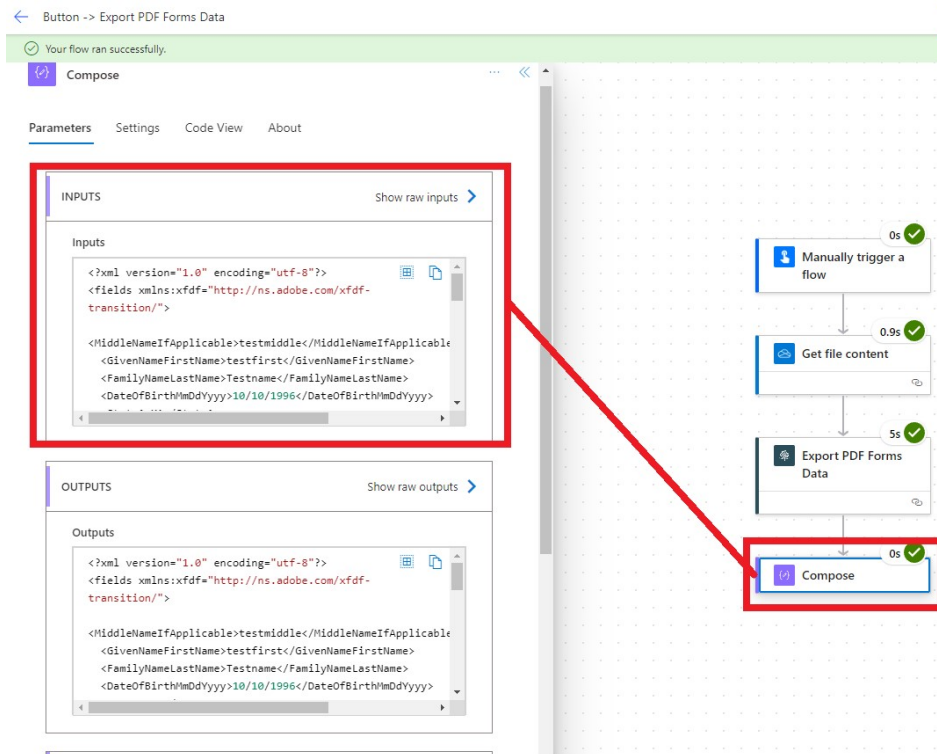
The screenshot displays the Power Automate interface for the 'Export PDF Forms Data' action. On the left, the configuration pane shows the 'Source File Name' parameter set to 'ar-11 test unlocked filled.pdf', which is highlighted with a red box. Below it, 'Source File Content' is set to 'File content...', 'Output Data Format' is 'XML', and 'Fail On Error' is 'Yes'. On the right, the workflow canvas shows a sequence of steps: 'Manually trigger a flow', 'Get file content', 'Export PDF Forms Data' (highlighted with a red box), and 'Compose'. A red arrow points from the 'Source File Name' field in the configuration pane to the 'Export PDF Forms Data' step in the workflow.

8 Save and Test the workflow.



9 After the Test is completed, select the "Compose" box.

Copy and Paste the text in the "Inputs" text into a Notepad file. (.txt)

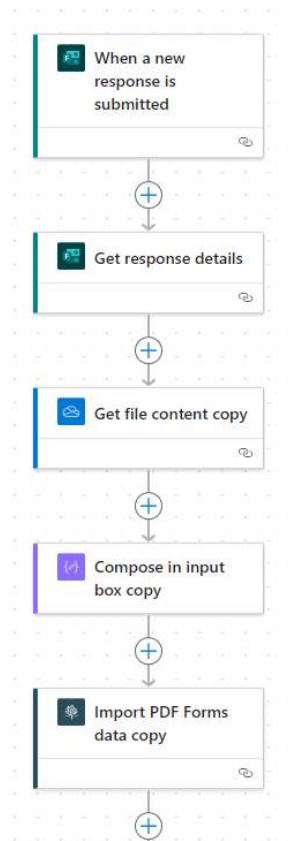


10 Create your own MS Form with questions that answer each field in the PDF.

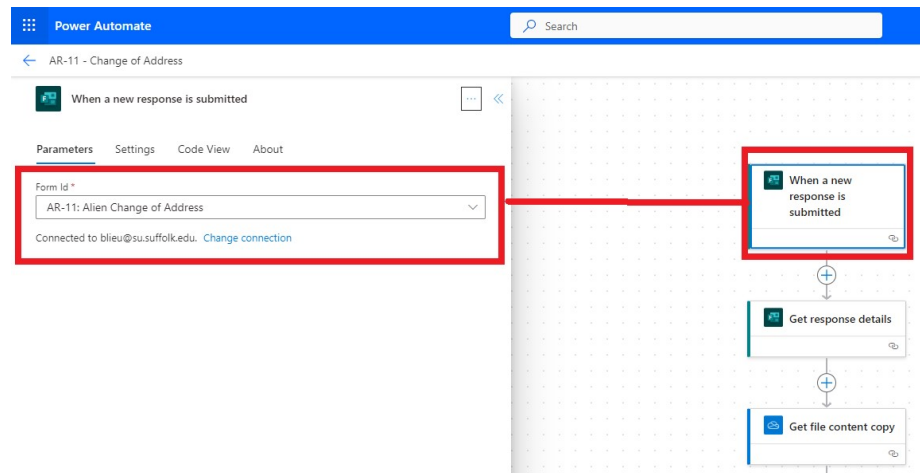
The screenshot shows a Microsoft Forms interface for a form titled 'AR-11: Alien Change of Address'. The form is titled 'SECTION 2' and 'Personal Information'. It includes a warning: 'WARNING: This is a class project. You should not rely on it as a source of legal information. It is likely incomplete. It is recommended that you enter in fake information for testing purposes.' The form contains five questions:

1. Family Name (Last Name) *
Enter your answer
2. Given Name (First Name) *
Enter your answer
3. Middle Name (if applicable)
Enter your answer
4. Date of Birth *
Please input date (M/D/yyyy)
5. Alien Registration Number (A-number) (if any)
Number must be between 100000000 - 999999999

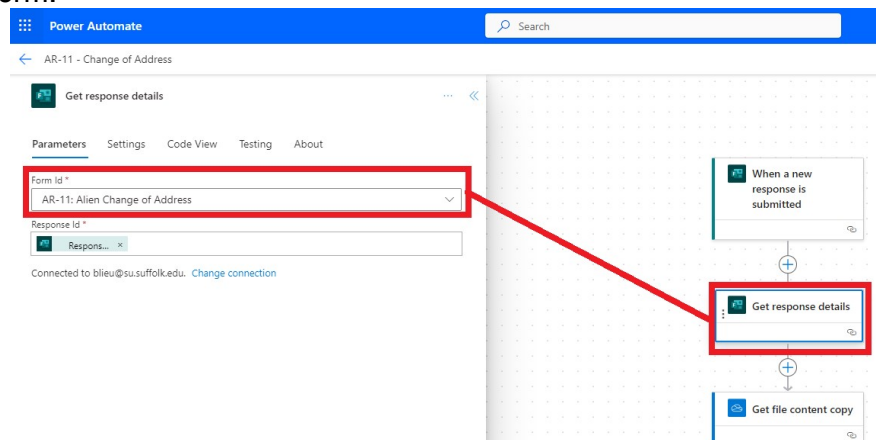
11 Open the main AR-11 Change of Address Workflow



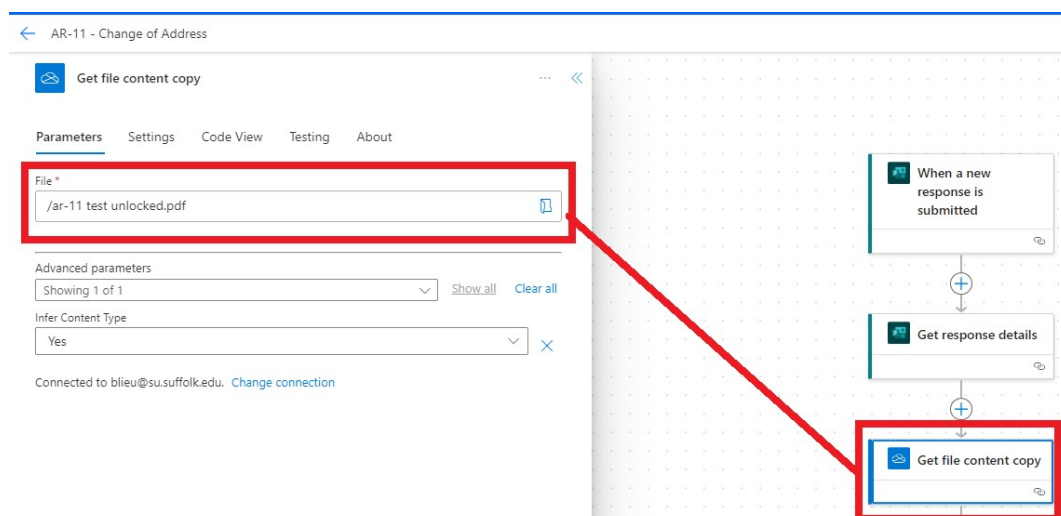
- 12 In the "When the New response is submitted" box, change the parameter "Form Id" to the name of your new MS Form.



- 13 In the "Get Response Details" box, change the "Form Id" parameter to the name of your new MS Form.



- 14 In the "Get File Content" box, change the "File" parameter to your unlocked PDF.



- 15 In the "Compose in input box copy" box, copy and paste the Inputs text from the Notepad file into the "Inputs" parameter field.

The screenshot displays the Power Automate interface for a workflow titled "AR-11 - Change of Address". The workflow is composed of several steps: "Get file content copy", "Compose in input box copy", "Import PDF Forms data copy", "Delay 1", "Move or rename a file using path", "Create file copy", and "Delay". The "Compose in input box copy" step is selected, and its "Inputs" parameter field is visible. The input text is an XML document with various fields and values, including names, dates, and addresses.

Power Automate

AR-11 - Change of Address

Compose in input box copy

Parameters Settings Code View About

Inputs *

```
<?xml version="1.0" encoding="utf-8"?>
<fields xmlns:xfdf="http://ns.adobe.com/xfdf-transition/">
  <MiddleNameIfApplicable> r017b2d... </MiddleNameIfApplicable>
  <GivenNameFirstName> r844bc5c... </GivenNameFirstName>
  <FamilyNameLastName> r881a9... </FamilyNameLastName>
  <DateOfBirthMmDdYyyy> r382f611... </DateOfBirthMmDdYyyy>
  <State1> r039e8b... </State1>
  <ZipCode2> r343c6d... </ZipCode2>
  <AptSteFirNumber1> </AptSteFirNumber1>
  <ZipCode1> re923a47... </ZipCode1>
  <AptSteFirNumber3> </AptSteFirNumber3>
  <AptSteFirNumber2> </AptSteFirNumber2>
  <StreetNumberAndName1> r9a8624... </StreetNumberAndName1>
  <CityOrTown1> r476caa2... </CityOrTown1>
  <State3> r21b9ea... </State3>
  <ZipCode6> ra12407... </ZipCode6>
  <AptSteFirNumber6> </AptSteFirNumber6>
  <ZipCode5> r31a48e5... </ZipCode5>
  <AptSteFirNumber8> </AptSteFirNumber8>
  <AptSteFirNumber7> </AptSteFirNumber7>
  <StreetNumberAndName3> ra6fe6de... </StreetNumberAndName3>
  <CityOrTown3> rda8682... </CityOrTown3>
  <AlienRegistrationNumberANumberIfAny> r607102... </AlienRegistrationNumberANumberIfAny>
  <YourSignature> </YourSignature>
  <DateOfSignatureMmDdYyyy> </DateOfSignatureMmDdYyyy>
</fields>
```

- 16 Replace the text in each line with the answers from the MS Form. Each line in the Inputs box represents a specific field in your PDF.

In the example below, the "GivenNameFirstName" Field corresponds to the First name field in the example PDF and is mapped to the MS Form's answer "Given Name (First Name)"

Repeat this for every field you wish to fill out.

The screenshot displays the Power Automate interface for a flow named "AR-11 - Change of Address". The "Compose in input box copy" action is selected, showing a list of XML inputs. A red box highlights the "GivenNameFirstName" field in the XML, which is mapped to the "Given Name (First Name)" field in the form. The form is titled "What is your current address/suite/floor number?" and includes fields for "Mailing City or Town", "Given Name (First Name)", "Info About Current Address", "Please enter an email with which to receive your completed form.", "Previous Street Number and Name", "Mailing Address", "Previous Zip Code", "Family Name (Last Name)", and "Current City or Town". The flow continues with actions like "Get file content copy", "Create file copy", and "Delay".

Power Automate

AR-11 - Change of Address

Compose in input box copy

Parameters Settings Code View About

Inputs *

```
<?xml version="1.0" encoding="utf-8"?>
<fields xmlns:xfdf="http://ns.adobe.com/xfdf-transition/">
  <MiddleNameIfApplicable> r017b2d... </MiddleNameIfApplicable>
  <GivenNameFirstName> r844bc5c... </GivenNameFirstName>
  <FamilyNameLastName> rb881a9... </FamilyNameLastName>
  <DateOfBirthMmDdYyyy> r382f611... </DateOfBirthMmDdYyyy>
  <State1> r039b8b... </State1>
  <ZipCode2> r343c6d... </ZipCode2>
  <AptSteFlrNumber1> </AptSteFlrNumber1>
  <ZipCode1> re923a47... </ZipCode1>
  <AptSteFlrNumber3> </AptSteFlrNumber3>
  <AptSteFlrNumber2> </AptSteFlrNumber2>
  <StreetNumberAndName1> r9a8624... </StreetNumberAndName1>
  <CityOrTown1> r476caa2... </CityOrTown1>
  <State3> r21b9ea... </State3>
  <ZipCode6> ra12407... </ZipCode6>
  <AptSteFlrNumber6> </AptSteFlrNumber6>
  <ZipCode5> r31a48e5... </ZipCode5>
  <AptSteFlrNumber8> </AptSteFlrNumber8>
  <AptSteFlrNumber7> </AptSteFlrNumber7>
  <StreetNumberAndName3> ra6fe6de... </StreetNumberAndName3>
  <CityOrTown3> rda8682... </CityOrTown3>
  <AlienRegistrationNumberANumberIfAny> r607102... </AlienRegistrationNumberANumberIfAny>
  <YourSignature> </YourSignature>
  <DateOfSignatureMmDdYyyy> </DateOfSignatureMmDdYyyy>
</fields>
```

Search

Current State
Answer to the question above

What is your current address/suite/floor number?
Answer to the question above

Mailing City or Town
Answer to the question above

Given Name (First Name)
Answer to the question above

Info About Current Address
Answer to the question above

Please enter an email with which to receive your completed form.

Previous Street Number and Name
Answer to the question above

Mailing Address
Answer to the question above

Previous Zip Code
Answer to the question above

Family Name (Last Name)
Answer to the question above

Current City or Town

Get file content copy

pose in input box copy

ort PDF Forms copy

y 1

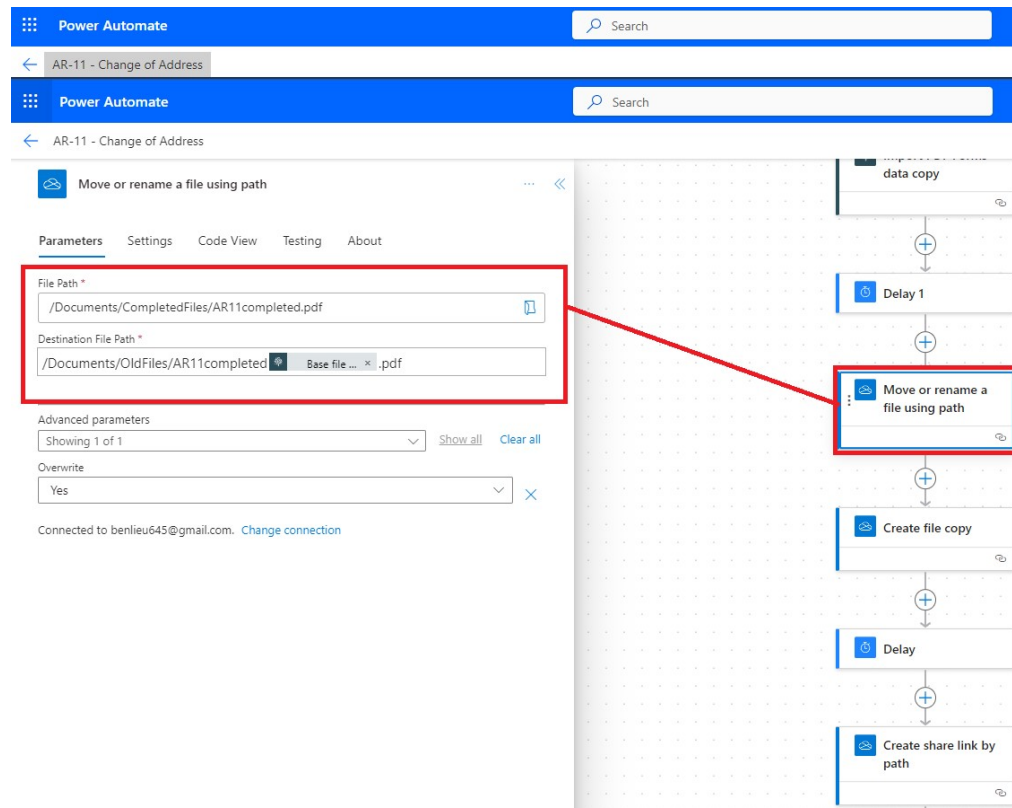
e or rename a using path

Create file copy

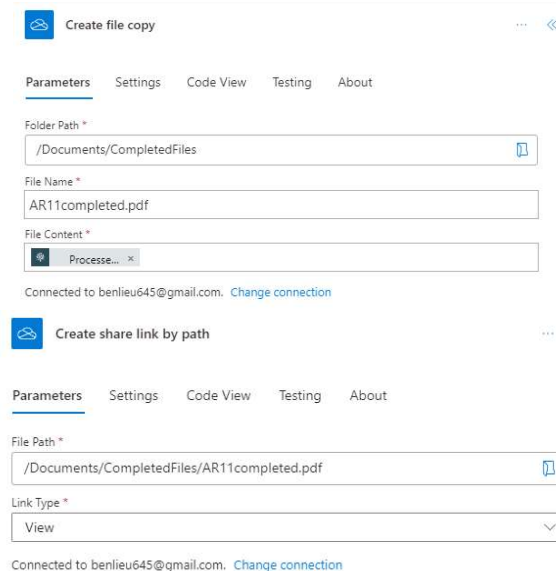
Delay

- 17 In the "move or rename file using path" box, change the "File Path" parameter to the file path you wish to save your new filled PDF.

Change the Destination File Path parameter to the folder where you wish to move old PDFs.




- 18 Do the same for "Create File Copy" and "Create Share Link by Path" boxes by changing the File and Folder path to where you want to store the new filled PDFs.




19 Customize your email in the Send an email (V2) box.





← AR-11 - Change of Address

 Send an email (V2) ... <<


Parameters Settings Code View Testing About

To *
 r95ca70e... ×

Subject *
Completed AR-11 Form


Body *
  Normal ▾ Arial ▾ 15px ▾ **B** *I* U  **A** ▾  ▾

WARNING: This is a class project. You should not rely on it as a source of legal information. It is likely incomplete. All information entered should be fake and made up.

Hi  r844bc5c... × ,

Please see below the link to your filled out AR-11 Change of Address Form.

Please make sure to download the form as the link will expire.

 Web URL ×

Thanks,
Ben

Advanced parameters
Showing 0 of 7 ▾ [Show all](#) [Clear all](#)

Connected to blieu@su.suffolk.edu. [Change connection](#)

20 Users will receive an email with a link to their completed PDFs.

