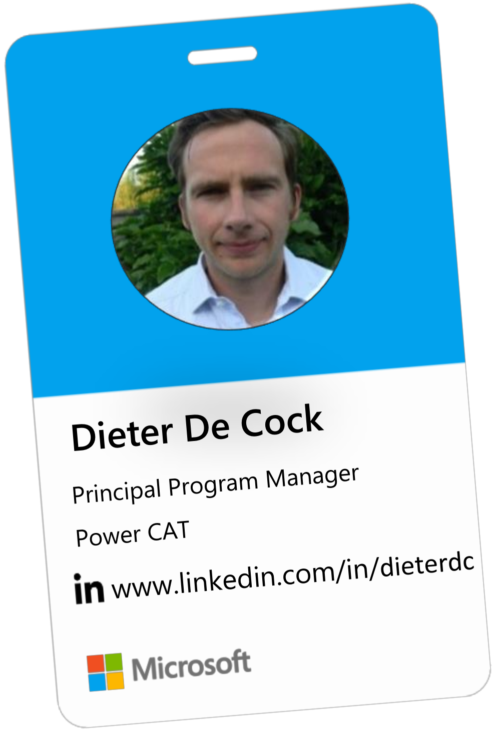
Microsoft Power Platform

Power Automate Desktop Development Best Practices

Dieter De Cock

Microsoft – Power CAT

Power CAT



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Microsoft

What is the Power CAT team?

The Power Platform Customer Advisory Team are a small team of solution architects, program managers and engineers within Power Platform engineering.

Our charter includes engaging with marquee customers and guiding their platform implementation to success.

LinkedIn

https://aka.ms/whoispowercat

Why best practices?

Development best practices are crucial for ensuring that automated processes are not only **efficient** and **effective** but also **robust** and **reliable**. These practices are fundamental to the success of RPA initiatives, providing a framework for creating solutions that deliver consistent value to your organization.

- ✓ **Performance**: Optimizes RPA bots to execute tasks swiftly and accurately, reducing processing time.
- ✓ **Maintainability**: Facilitates easy updates to RPA workflows, accommodating changes in processes.
- ✓ **Security**: Safeguards sensitive data handled by RPA bots against breaches.
- ✓ **Data**: Manages data flow within RPA processes, ensuring accuracy and integrity.
- ✓ **Coding Standards**: Adheres to best coding practices for readability and consistency in RPA scripts.
- ✓ **Supportability**: Ensures RPA solutions are easy to support and troubleshoot, with clear documentation.
- ✓ **Usage**: Monitors how RPA bots are utilized to ensure they meet the organization's needs.
- ✓ **Design**: Involves careful planning of RPA workflows for optimal performance and user experience.

TOP
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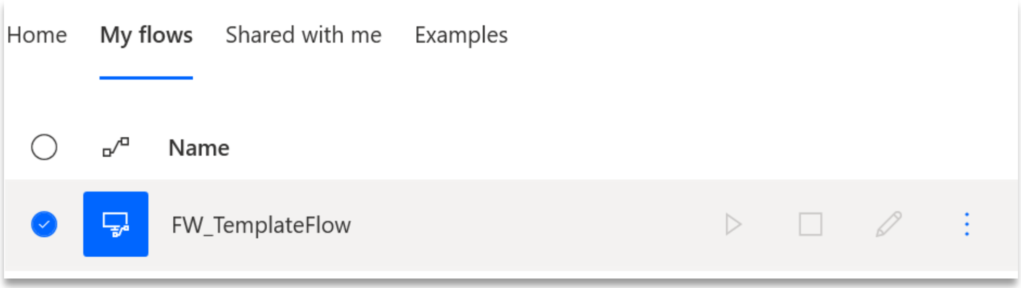
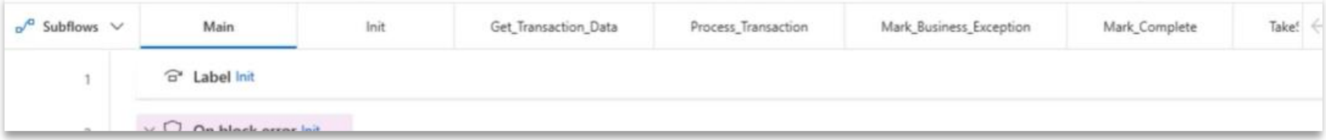
Templates - Framework

- **Standardize** development
- Prefix and make read-only
- Should contain:
  - Initialization
  - Processing
  - Mark complete
  - Handle Business Exception
  - Handle System Exception
  - Logging & Error handling
  - Take Screenshot



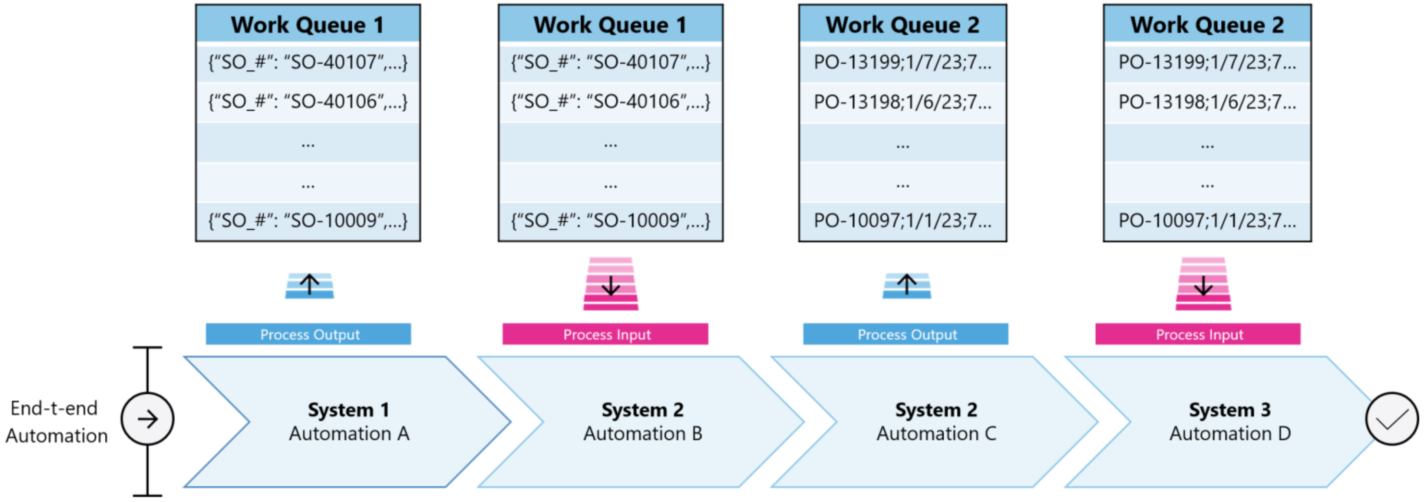


1 Label Init

On block error Init

Modularize your processes

- Do not create complex desktop flow scripts
- **Breakdown processes** in smaller blocks
- Easier to manage, test, maintain, etc.
- To keep track of context use:
  - Work Queues
  - Dataverse table



Work Queue 1	Work Queue 1	Work Queue 2	Work Queue 2
{“SO_#”: “SO-40107”,…}	{“SO_#”: “SO-40107”,…}	PO-13199;1/7/23;7…	PO-13199;1/7/23;7…
{“SO_#”: “SO-40106”,…}	{“SO_#”: “SO-40106”,…}	PO-13198;1/6/23;7…	PO-13198;1/6/23;7…
…	…	…	…
…	…	…	…
{“SO_#”: “SO-10009”,…}	{“SO_#”: “SO-10009”,…}	PO-10097;1/1/23;7…	PO-10097;1/1/23;7…

Naming Conventions

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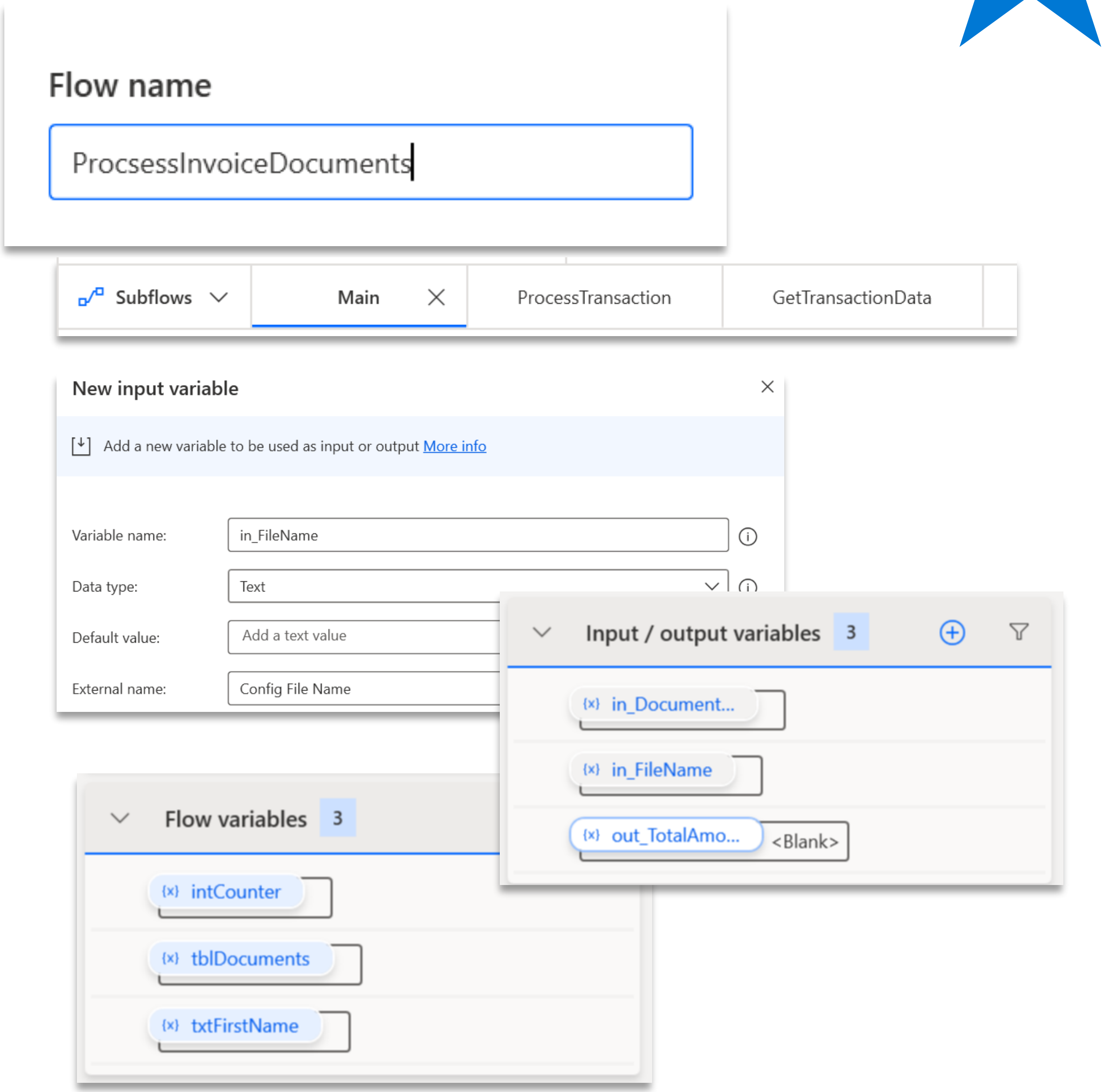
- To develop **clear and well-defined flows**.
- Camel Case and/or Pascal Case.
- Use naming conventions for:
  - Flows
  - Sub flows
  - Variables (Input, output and flow variables)
  - Ui Elements
  - Connection Reference Names
- Use clear and understandable names



Flow name

ProcsessInvoiceDocuments

New input variable

Add a new variable to be used as input or output More info

Variable name: in_FileName

Data type: Text

Default value: Add a text value

External name: Config File Name

Input / output variables 3

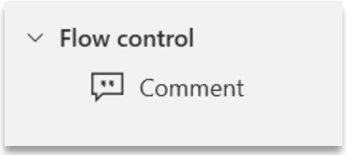
- in_Document...
- in_FileName
- out_TotalAmo... <Blank>

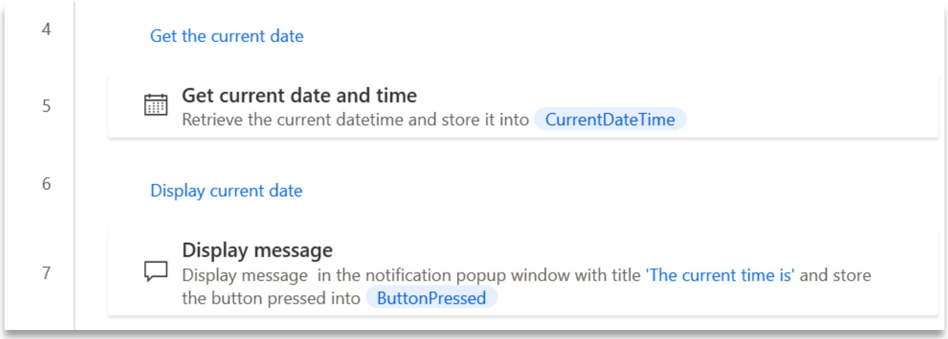
Flow variables 3

- intCounter
- tblDocuments
- txtFirstName

Comments & Regions

- To increase code **readability and maintainability**
- Add a comment at the start of each sub flow to explain the purpose of the flow.
- Add comments when fixing bugs.
- Use Regions to organize your actions into logical groups



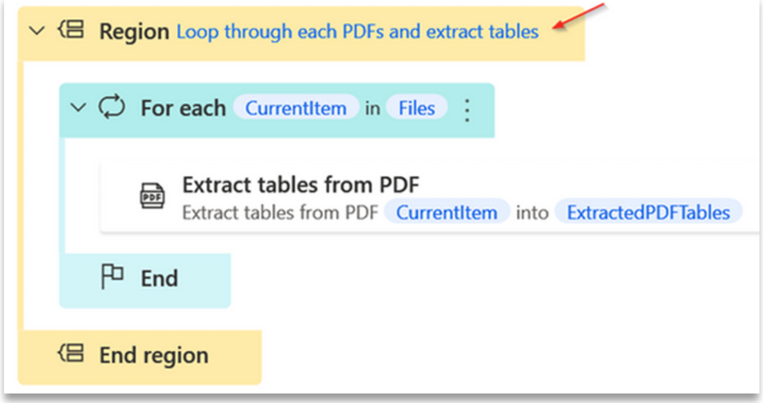


Get the current date

Get current date and time
Retrieve the current datetime and store it into CurrentDateTime

Display current date

Display message
Display message in the notification popup window with title 'The current time is' and store the button pressed into ButtonPressed



Region Loop through each PDFs and extract tables

For each CurrentItem in Files

Extract tables from PDF
Extract tables from PDF CurrentItem into ExtractedPDFTables

End

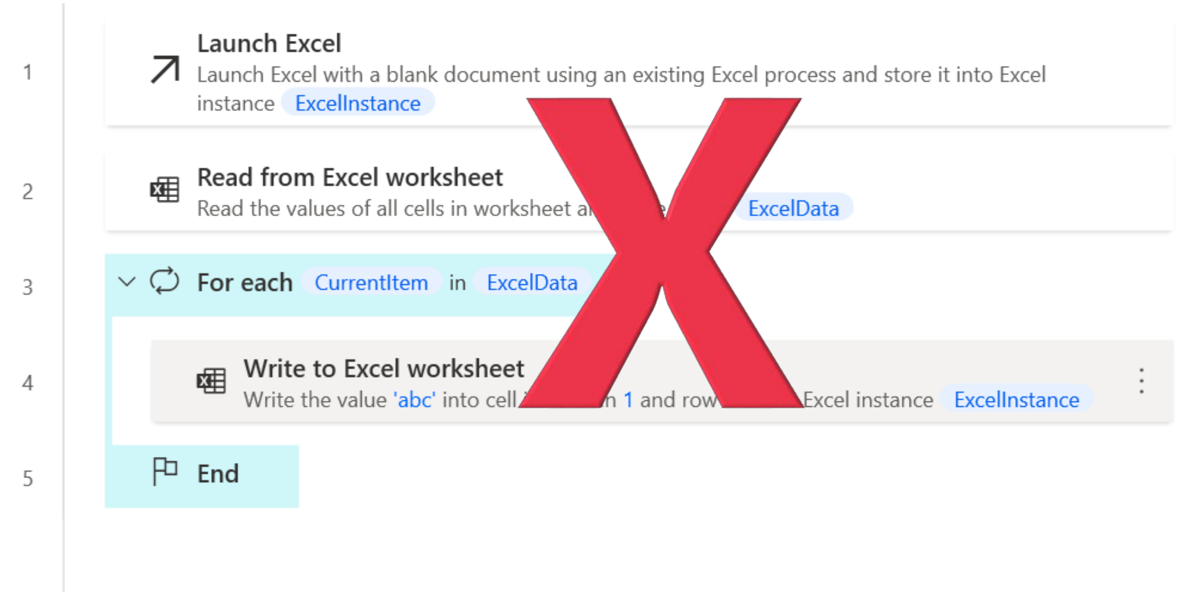
End region

Flow control actions reference - Power Automate | Microsoft Learn

Avoid loops across many records

- Avoid loops on large datasets, for example excel files with 1000’s of records.
- Or loops with a high loop index.

- Convert into:
  - Data table actions
  - A script, for example a python or .Net script.



Launch Excel
Launch Excel with a blank document using an existing Excel process and store it into Excel instance ExcelInstance

Read from Excel worksheet
Read the values of all cells in worksheet a[illegible] ExcelData

For each CurrentItem in ExcelData

Write to Excel worksheet
Write the value 'abc' into cell [illegible]n 1 and row [illegible] Excel instance ExcelInstance

End

Wait actions

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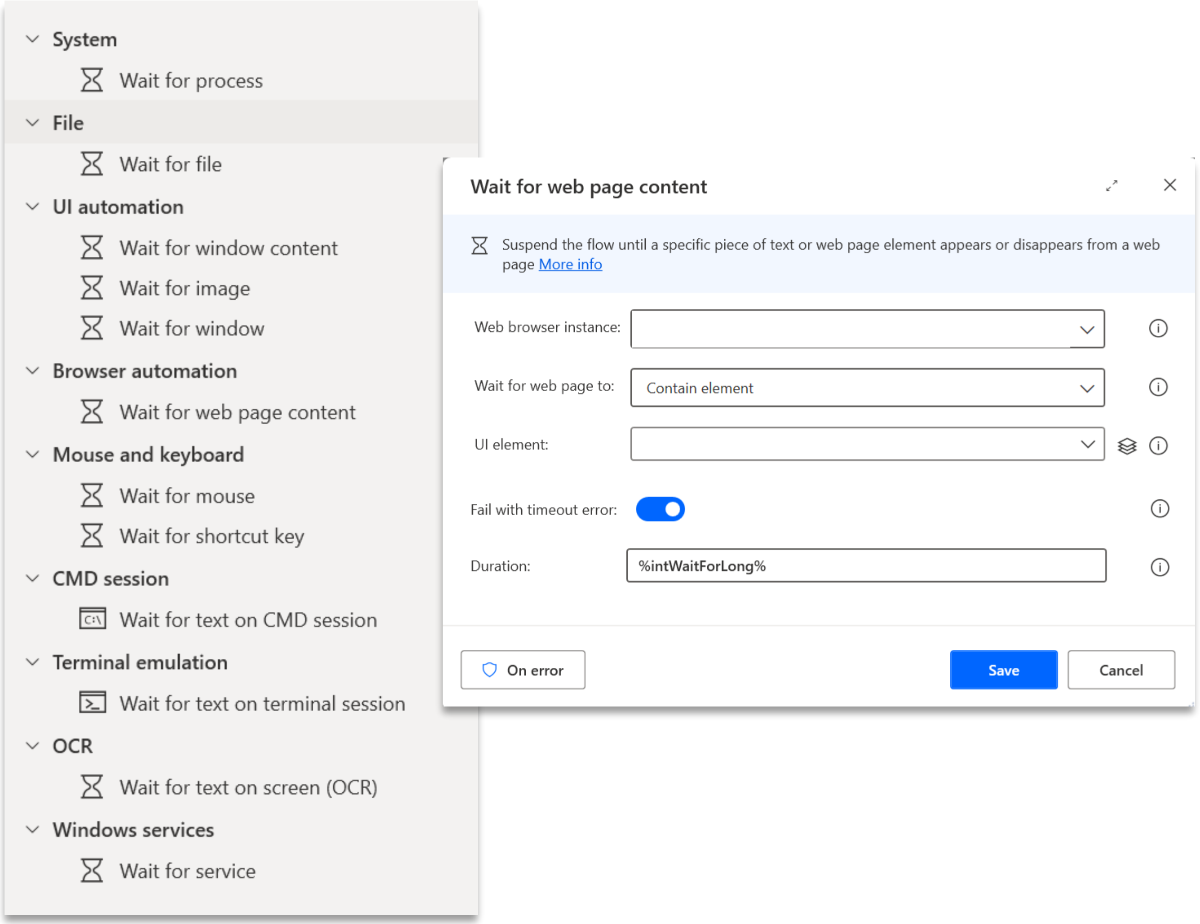
- Use “Wait for …” actions instead of delays
- Add a timeout
- And handle the timeout error
- Use global Wait variables to configure the time to wait (might be different per application)



Wait for web page content

Suspend the flow until a specific piece of text or web page element appears or disappears from a web page More info

Web browser instance:

Wait for web page to: Contain element

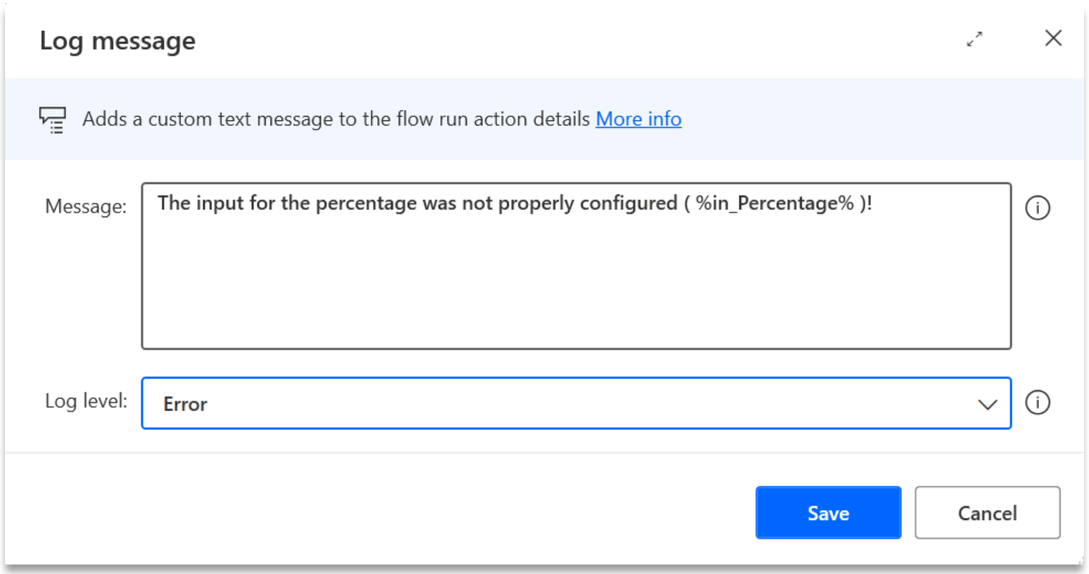
UI element:

Fail with timeout error: ●

Duration: %intWaitForLong%

Logging

- Use **Log Message** action to send custom log messages to desktop flow action logs.
- Log message is a premium action.
- Log level can be Info, Warning, Error.
- Message has a limit of 128 chars.
- Alternative: use your own custom logging mechanism.
  - Write to text file (with append content setting)
  - Write to application insights
  - Custom Action for logging
- Use Get Last Error action to get line number and error description.



Log message

Adds a custom text message to the flow run action details More info

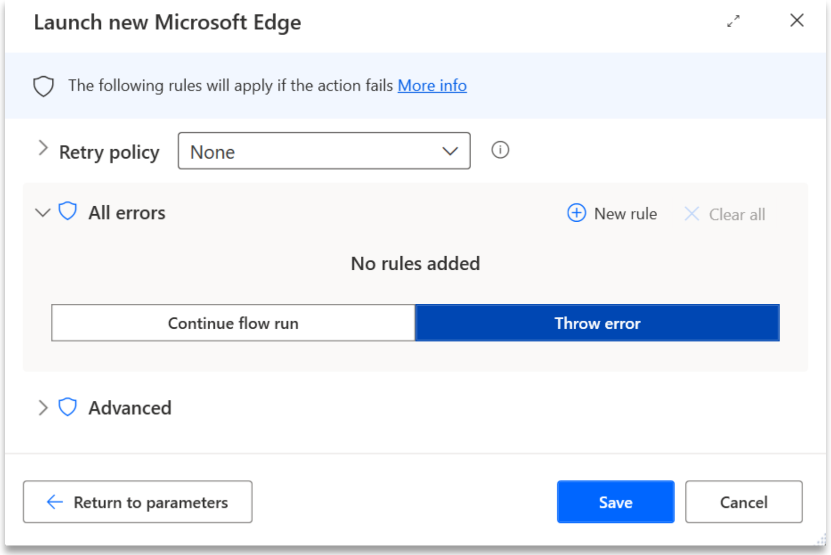
Message: The input for the percentage was not properly configured (%in_Percentage%)!

Log level: Error

Error Handling

- Identify potential points of failure within your flows.
- Error handling will make your flows more resilient and reliable.
- 2 types of error handling:
    - **Single action**
    - **Multiple actions**
- To retrieve the latest occurred error in a desktop flow and use it in later actions, use the **Get last error** action

[Handle errors in desktop flows - Power Automate | Microsoft Learn]()



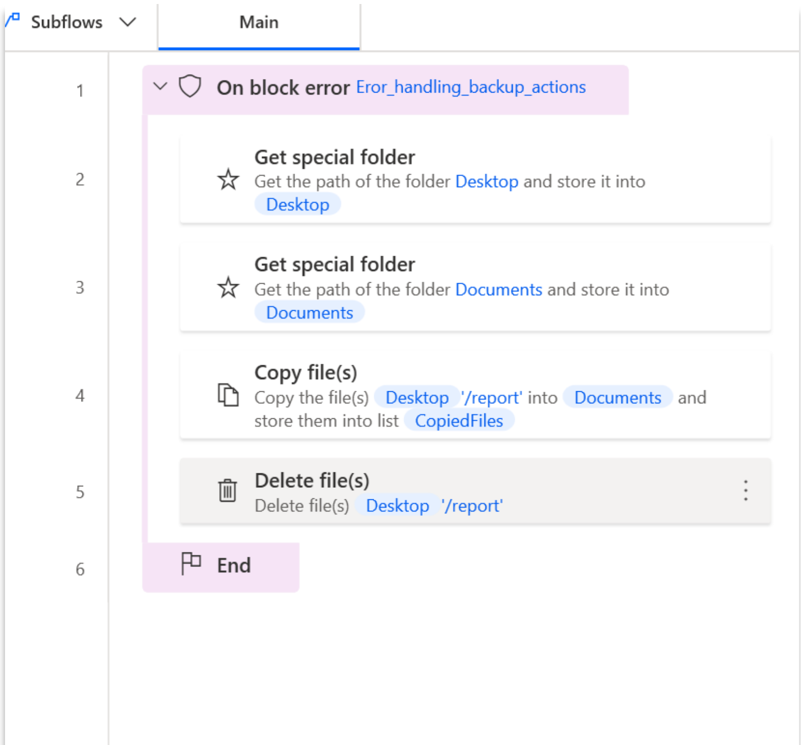
Launch new Microsoft Edge

The following rules will apply if the action fails More info

Retry policy: None

All errors

No rules added



On block error Eror_handling_backup_actions

Get special folder
Get the path of the folder Desktop and store it into Desktop

Get special folder
Get the path of the folder Documents and store it into Documents

Copy file(s)
Copy the file(s) Desktop '/report' into Documents and store them into list CopiedFiles

Delete file(s)
Delete file(s) Desktop '/report'

End

Retries

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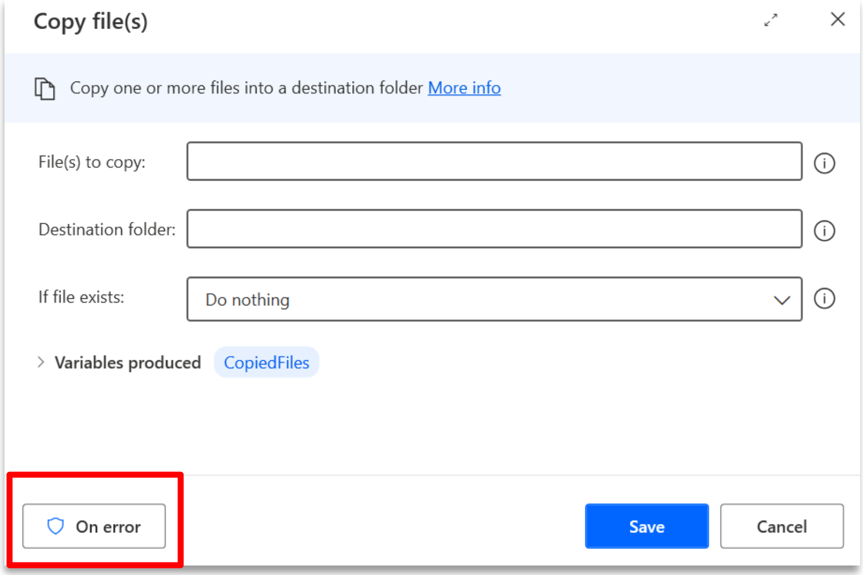
- Retry the action when it fails.
- Retry policy can be **fixed or exponential**.
- Retry **System errors**, for example: cannot launch Edge browser.
- Do not retry **Business errors**, for example: File path was not found.
- When retry limit is reached, navigate the flow to properly **handle the error**, for example “Go to label”



Copy file(s)

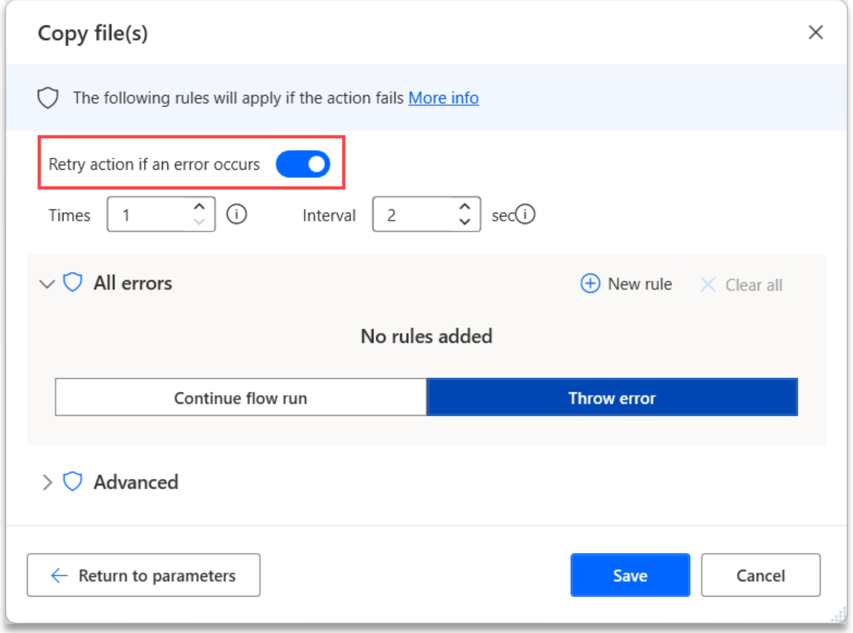
Copy one or more files into a destination folder More info

File(s) to copy:

Destination folder:

If file exists: Do nothing

Variables produced CopiedFiles



Copy file(s)

The following rules will apply if the action fails More info

Retry action if an error occurs: on

Times 1

Interval 2 sec

All errors

No rules added

Solutions

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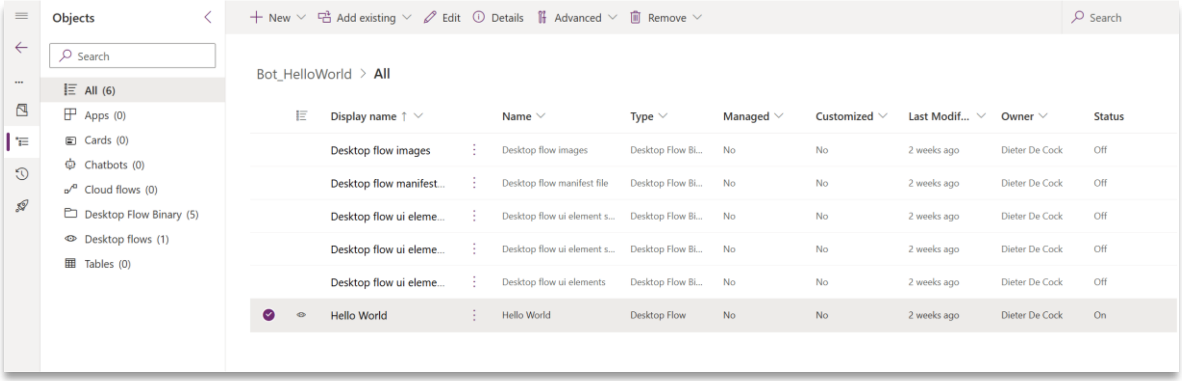
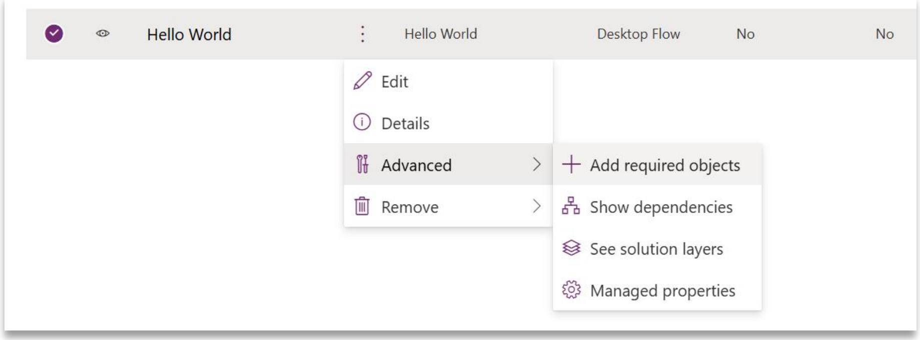
- Add Power Automate Desktop flows in a solution.
- For ALM
- Use one solution for one automation process / bot.
- Use preferred solution feature



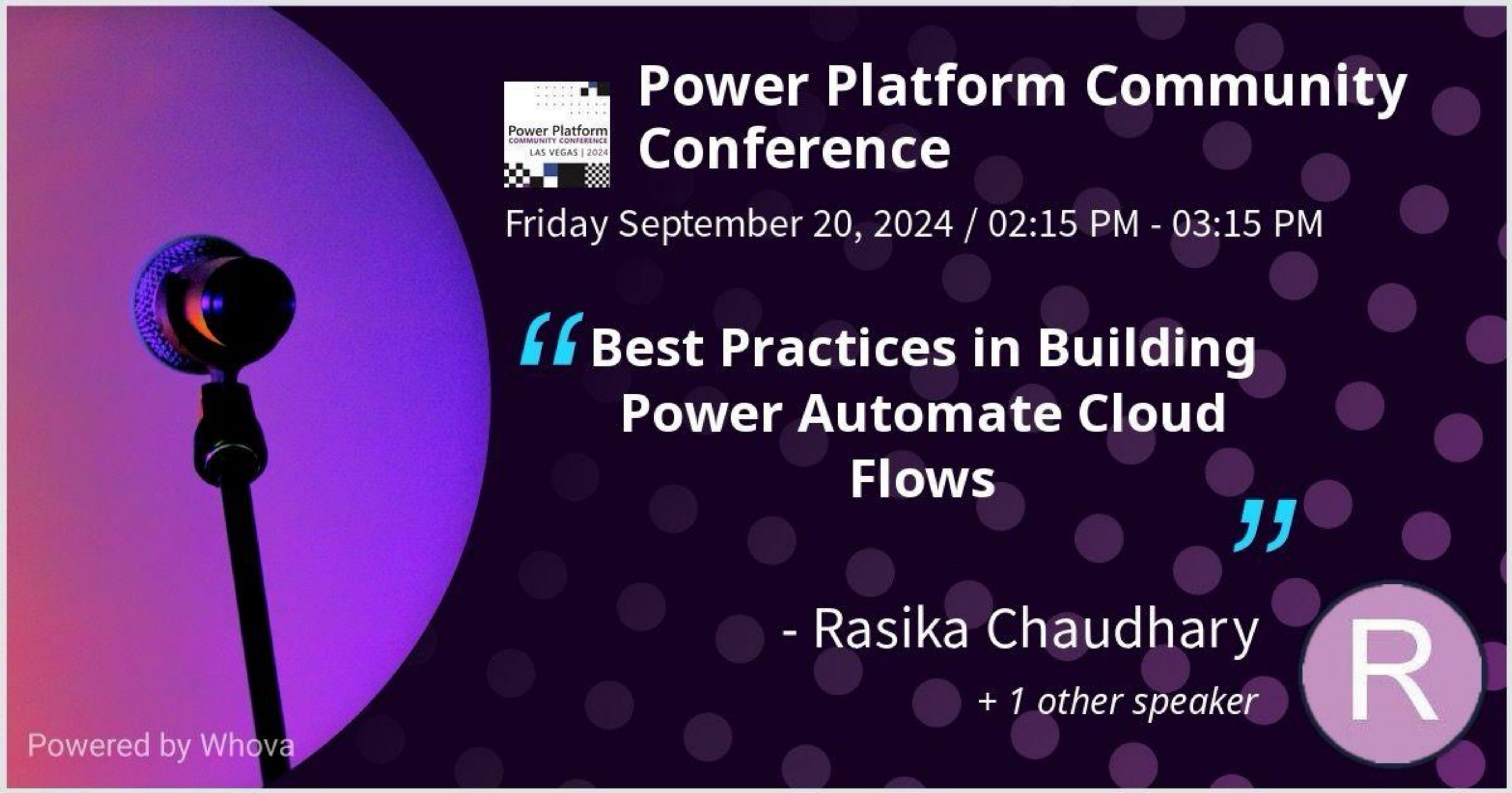
Display name ↑	Name	Type	Managed	Customized	Last Modif...	Owner	Status
Desktop flow images	Desktop flow images	Desktop Flow Bi...	No	No	2 weeks ago	Dieter De Cock	Off
Desktop flow manifest...	Desktop flow manifest file	Desktop Flow Bi...	No	No	2 weeks ago	Dieter De Cock	Off
Desktop flow ui eleme...	Desktop flow ui element s...	Desktop Flow Bi...	No	No	2 weeks ago	Dieter De Cock	Off
Desktop flow ui eleme...	Desktop flow ui element s...	Desktop Flow Bi...	No	No	2 weeks ago	Dieter De Cock	Off
Desktop flow ui eleme...	Desktop flow ui elements	Desktop Flow Bi...	No	No	2 weeks ago	Dieter De Cock	Off
Hello World	Hello World	Desktop Flow	No	No	2 weeks ago	Dieter De Cock	On



There is more …

CAT-PADBestPractices/DevelopmentBestPractices/Power Automate CAT - Development best practices.pdf at main · dieterd-msft/CAT-PADBestPractices (github.com)

And what about Cloud Flows …



Power Platform Community Conference

Friday September 20, 2024 / 02:15 PM - 03:15 PM

“Best Practices in Building Power Automate Cloud Flows”

- Rasika Chaudhary

+ 1 other speaker

Questions?

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Thank you!