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Elevate Your Power Automate Game by Using Expressions

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Agenda

- Expressions Overview
- Types of Expressions
- Anatomy of an Expression
- Data Types and Content Conversion
- Expressions to Replace Actions
- Limitations
- Tips and Best Practices
- Demos

Expressions Overview

Expressions Overview

Set of functions that can be used to accomplish many different things in Power Automate

Expressions Overview

- Convert data types
- Manipulate strings
- Retrieve and manipulate date and time
- Generate data such as current time, GUIDs, or random numbers
- Handle optional values
- Apply conditional statements
- Perform arithmetic functions
- Flow leverages the Azure Logic Apps Workflow Definition Language

Types of Expressions

Basic

Contain a function with no parameters, or one or more parameters

```
utcNow()
workflow()
concat('Today is ', utcNow())
```

Advanced

Contain more than one function with one or more parameters

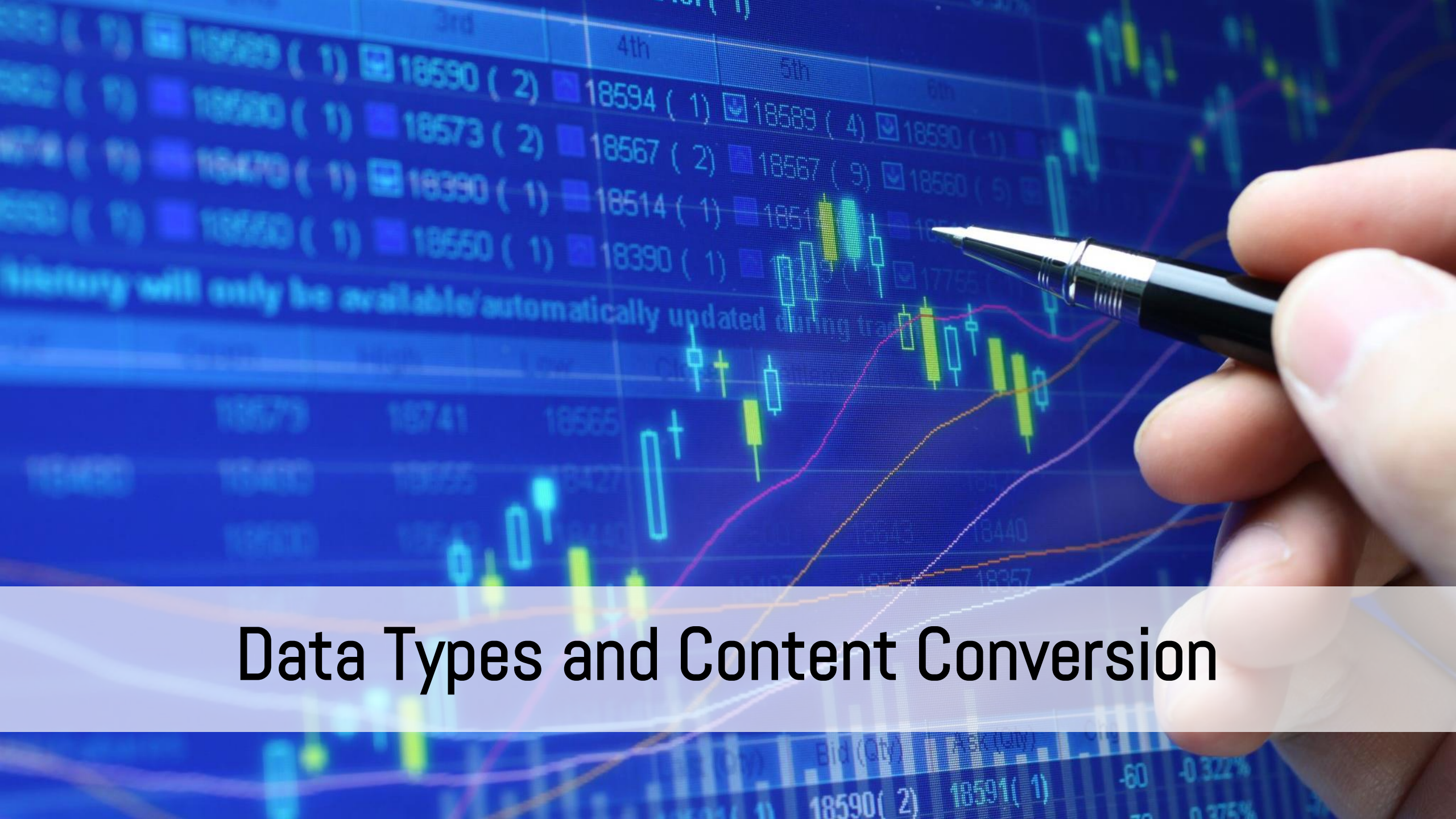
```
concat('Today is ', formatDateTime(utcNow(), 'MM-dd-yyyy'))
```

Anatomy of an Expression

Expressions are executed the same way as math operations: from inside out

```
addDays(startOfMonth(utcNow()),-1,'MM-dd-yyyy')
```

1. Expression function: addDays()
2. No. of parameters: three separated by commas
3. Wrap static text in single quotes



Data Types and Content Conversion

Data Types

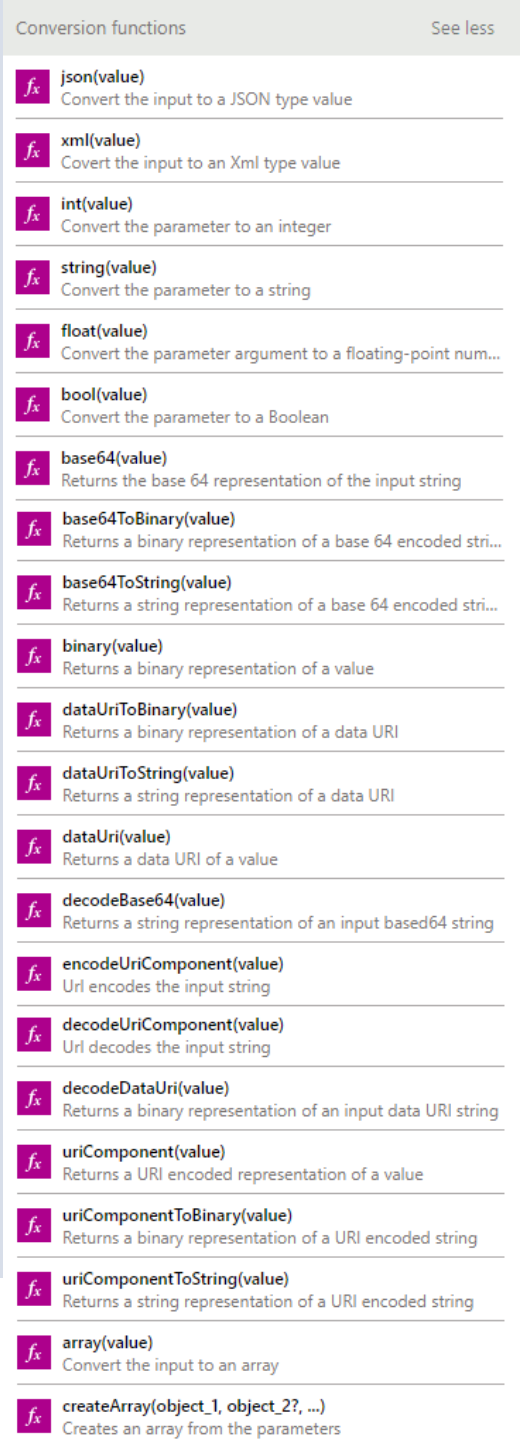
- **String**
  Represent alphanumeric data such as letters, numbers, spaces, symbols, punctuation marks.
- **Integer**
  Whole numbers without decimals (can be either positive, negative, or zero).
- **Float**
  Decimal number.
- **Boolean**
  Represent two values: true or false.

Data Types (Continued…)

- **Arrays**
  Represent a collection of elements, each selected by one or more indices (identifying keys) that can be computed at runtime during the execution of a program.
- **Dictionaries**
  Represent a collection of key and value, and provides a mapping of the set keys with their values. Every key in the Dictionary must be unique and cannot be null.
- **Forms**
  Contain elements called controls – textbox, dropdown, radio button - and each control manages a specific data type. These controls are used to display information to the user or receive information from the user.

Content Conversion

- Power Automate convert certain data types automatically
- Use expressions to manually convert data
- Conversion expressions are named according the data type to be converted



Content Conversion

UI adds automatically

To → / From ↓	String	Base 64	Binary content	Data URI	URI comp.	Floating-point	Integer	Bool.	Array	JSON Object	XML content
String	Yes	base64()	binary()	dataUri()	uriComponent()	float()	int()	bool()	split() json()	json()	xml()
Base 64	base64ToString()	Yes	base64ToBinary()	*	*	*	*	*	*	*	*
Binary content	string()	base64()	Yes	dataUri()	uriComponent()	*	*	*	*	*	*
Data URI	dataUriToString()	*	dataUriToBinary()	Yes	*	*	*	*	*	*	*
URI comp.	uriComponentToString()	*	uriComponentToBinary()	*	Yes	*	*	*	*	*	*
Floating-point	Yes	base64()	binary()	dataUri()	uriComponent()	Yes	No	No	No	No	No
Integer	Yes	base64()	binary()	dataUri()	uriComponent()	Yes	Yes	No	No	No	No
Bool.	Yes	base64()	binary()	dataUri()	uriComponent()	No	No	Yes	No	No	No
Array	join() string()	*	*	*	*	No	No	No	Select Action	Select or Compose	xml()
JSON object	string()	*	*	*	*	No	No	No	Select or Compose	Compose Action	xml()
XML content	string()	*	*	*	*	No	No	No	xpath()	xpath()	Logic apps only

* First convert to/from a string and then use the expression required for normal strings

Expressions to Replace Actions

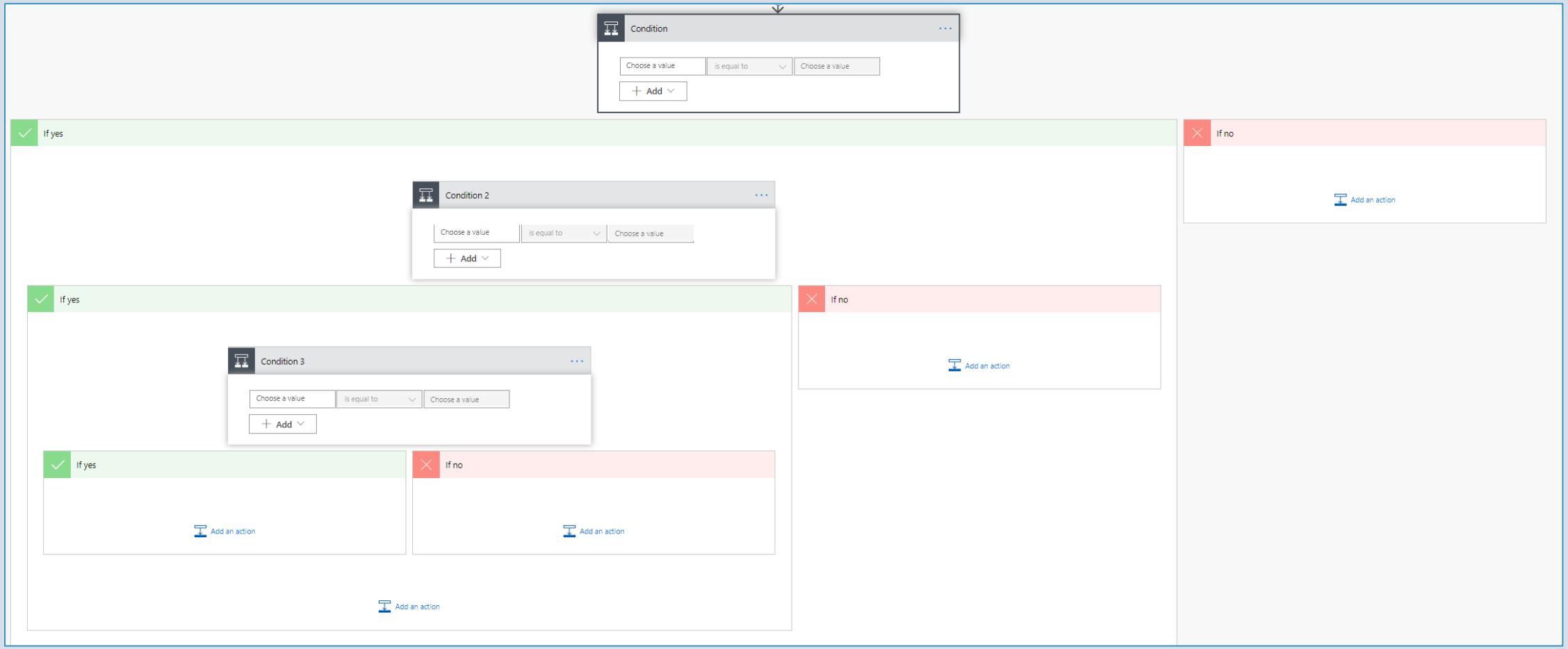
Expressions to Replace Actions

The if() expression

Why would you use the if() expression if you can use a condition?

- Avoid multiple nested conditions
- Avoiding multiple nested conditions prevents repeating the same set of actions
- There's a limit of 8 nested conditions

Expressions to Replace Actions



Expressions to Replace Actions

The first() expression

- Get the first letter from a string
- Get the first record from an array
- Avoid an Apply to each action when selecting a property from the first record
- Combined with the **split()** expression, get the left side of the string where the **split()** is executed
  - Note: This combination is the equivalent of the LEFT function in Excel

Expressions to Replace Actions

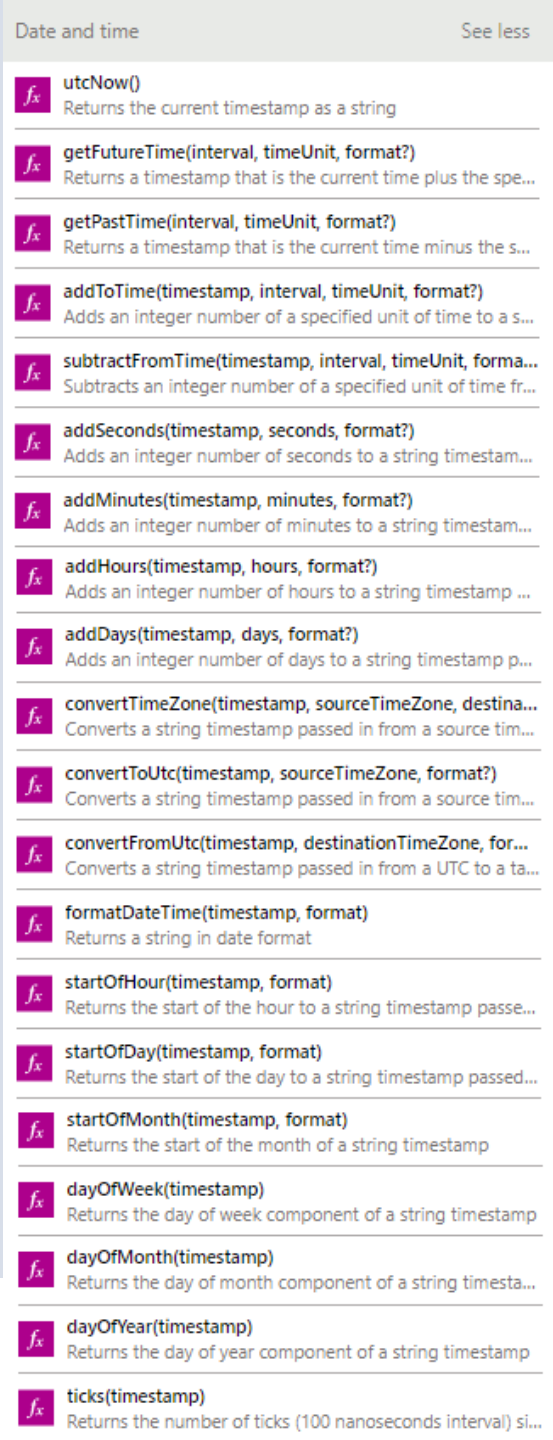
The last() expression

- Similar to the first() expression, except it starts from the right
- Get the last letter from a string
- Get the last record from an array
- Avoid an Apply to each action when selecting a property from the last record
- Combined with the split() expression, get the right side of the string where the split() is executed
  - Note: This combination is the equivalent of the RIGHT function in Excel

Expressions to Replace Actions

Date and Time expressions

- These functions are used to generate data such as current date and time
  - utcNow()
- Also used to manipulate date and time
  - convertFromUtc()
  - convertTimeZone()
  - formatDateTime()
  - addDays()



Limitation

- Expression Evaluation Limit
  - A Flow expression can evaluate up to 131,072 characters
- Max Number of Characters per Expression
  - Flows allow a maximum of 8,192 characters per expression
- The expression editor is too small *

Tips and Best Practices

- Power Automate reads and processes date and time in Coordinated Universal Time (UTC)
- Rename actions with meaningful names
- Add comments to actions, especially if they contain expressions
- Filter data inside **Get** actions
- Use **Configure run after** to test or for error handling
- Use **Compose** actions instead of **Variables** for static values
- Replace spaces in action names with underscore when building expressions around said action

Demos

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