NATURAL-GEMSTONE

Contributors

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Taxonomy Formula: tN{s,t}

Token Specification Summary

Token Classification

Template Type:	SingleToken	**This token has no sub or child tokens.**
Token Type:	NonFungible	This token is not interchangeable with other tokens of the same type as they have different values.
Token Unit:	Singleton	There is only one instance of this token and it cannot be subdivided.
Value Type:	Reference	This token is a receipt or title to a material item, property or right. The token represents a reference to the value, can be owned or used digitally via its token. Sometimes referred to as a digital twin.
Representation Type:	Common	This token is simply represented as a balance or quantity attributed to an owner address where all the balances are recorded on the same balance sheet, like a bank account. All instances can easily share common properties and locating them is simple.

Natural Gemstones are physically mined from the Earth and are not lab grown (manufactured). Each Natural Gemstone is whole and one of a kind and therefore considered to be a singleton as well as a non-sub-dividable whole token with a quantity of 1. A Natural Gemstone can now be represented digitally in this capacity allowing for only one single owner to possess this token at a time. A singleton implies non-sub-dividable, so the decimal value for the base token

Example

Natural Gemstones are a good use of this type of token. This tokens value type is a direct reference to a Natural Gemstone. Natural Gemstones are whole and one of a kind making each a singleton and transferable. There are several different types of Natural Gemstones such as Natural Diamonds, Natural Rubies, Natural Sapphires, and Natural Emeralds. Natural Gemstones are physically mined from the Earth and are not lab grown (manufactured). There are various traits gemologists use in order to differentiate and value every Natural Gemstone individually. Some example traits include: Composition (ex. Diamonds are to carbon vs. Rubies are to corundum), Carat Weight, Cut (shape of the stone and dimensions which impact a stones brilliance), Color (color intensity), and Clarity. These varying traits define the differences between each type of Natural Gemstone making each of them unique (Singleton). Natural Gemstones, such as Diamonds, can be recut and re-polished changing its physical characteristics. Although the corresponding token definition and formula remain the same.

Analogies

Name	Description
Diamond	A token representing ownership of a Natural Gemstone, like a Natural Diamond.

Natural-Gemstone is:

- Singleton
- Non-Subdividable
- Transferable

Natural-Gemstone Details

Singleton

Type:	Base
Name:	Singleton
Id:	53101d87-3c93-4d8b-ab39-1e629406d062
Visual:	$\tau_N\{s\}$
Tooling:	tN{s}

Natural-Gemstone - c356feeaaa0d1c87970cbfcb09bfc5cf5467e36d3175679b28101aefd4b1584d2

Definition

A restriction on the token in that there can only be 1 whole token in the class and is not subdividable. This behavior is only available to non-fungible base types. By definition, a Singleton cannot be mintable.

Example

CryptoKitties, Art, Reserved Seat for an event.

Analogies

Name	Description
Property Title	The physical property title, land for example, have the identical look and feel from the paper, colors and seal. The difference between them are the values like property address, plot numbers, etc. These values make the title unique. There are some properties on a class of titles that are the same, like the county or jurisdiction the property is in. For titles that have some shared values and unique values, it may make more sense to define them in the same class.
Art	The valuable painting or other unique piece of art may not share any property values with other paintings, unless the artist is extremely prolific in generating tens of thousands of pieces of art, it would make sense to define each piece of art as its own class. Meaning there would be only a single piece of art represented by the token class. If the art cannot be sub-divided, meaning there can be no fractional owners, this token class can be a singleton if the quantity in the class is set to 1. A singleton has only one instance in the class, essentially meaning the class is the instance, and not be sub-dividable and no new tokens can be minted in the class.

Comments

Non-fungible tokens require additional thought about how these tokens may or may not be grouped together in the same class.

Dependencies

Artifact Type	Symbol	Description
Base	t	Base Token Definition

Natural-Gemstone - c356feeaaa0d1c87970cbfcb09bfc5cf5467e36d3175679b28101aefd4b1584d3

Behavior	~d	non-subdividable

Incompatible With

Artifact Type	Symbol	Id
Behavior	d	6e3501dc-5800-4c71-b59e-ad11418a998c
Behavior	m	f9224e90-3cab-45bf-b5dc-0175121e2ead

Influenced By

Description	Symbol	Applies To

Artifact Files

Content Type	File Name	File Content
Control	singleton.proto	
Uml	singleton.md	

Code Map

Map Type	Name	Platform	Location

Implementation Map

Map Type	Name	Platform	Location

Resource Map

Map Type	Name	Location	Description

Base Details

Token Name:	
Token Type:	NonFungible
Representation Type:	Common
Value Type:	Reference
Token Unit:	Singleton
Symbol:	
Owner:	
Quantity:	0
Decimals:	0
Constructor Name:	Constructor

Behaviors

Singleton

Type:	Behavior
Name:	Singleton
Id:	c1189d7a-e142-4504-bf26-44c35b76c9d6
Visual:	<i>s</i>
Tooling:	s
Version:	1.0

Definition

A restriction on the token in that there can only be 1 whole token in the class and is not subdividable. This behavior is only available to non-fungible base types. By definition, a Singleton cannot be mintable.

Example

Analogies

Name	Description
Analogy 1	singleton analogy 1 description

Dependencies

Artifact Type	Symbol	Description
Base	tN	Singleton must be have a non-fungible base.
Behavior	~d	Singleton requires non-sub-dividable.

Incompatible With

Artifact Type	Symbol	Id
Behavior	d	6e3501dc-5800-4c71-b59e-ad11418a998c
Behavior	m	f9224e90-3cab-45bf-b5dc-0175121e2ead

Influenced By

Description	Symbol	Applies To

Artifact Files

Content Type	File Name	File Content
Control	singleton.proto	
Uml	singleton.md	

Code Map

Map Type	Name	Platform	Location
SourceCode	Code 1	Daml	

Implementation Map

Map Type	Name	Platform	Location
Implementation	Implementation 1	ChaincodeGo	

Resource Map

Map Type	Name	Location	Description
Resource	Regulation Reference 1		

Specification Behavior

Singleton

Taxonomy Symbol: s

A restriction on the token in that there can only be 1 whole token in the class and is not subdividable. This behavior is only available to non-fungible base types. By definition, a Singleton cannot be mintable.

Example

Analogies

Name	Description
Analogy 1	singleton analogy 1 description

Is External:	True
Constructor:	

Singleton responds to these Invocations

Properties

Non-Subdividable

Type:	Behavior
Name:	Non-Subdividable
Id:	d5807a8e-879b-4885-95fa-f09ba2a22172
Visual:	<i>~d</i>
Tooling:	~d
Version:	1.0

Definition

An ability or restriction on the token where it cannot be subdivided from a single whole token into fractions. Sets the base token Decimals property to 0 which will make the token non-sub-dividable and a whole token is the smallest ownable unit of the token.

Example

Non-subdividable is common for items where subdivision does not make sense, like a property title, inventory item or invoice.

Analogies

Name	Description
Non-Fractional	It is not possible to own a fraction of this token.
Barrel of Oil	Barrels of Oil don't make sense to subdivide.

Dependencies

Artifact Type	Symbol	Description

Natural-Gemstone - c356feeaaa0d1c87970cbfcb09bfc5cf5467e36d3175679b28101aefd4b1584d8

Incompatible With

Artifact Type	Symbol	Id
Behavior	d	6e3501dc-5800-4c71-b59e-ad11418a998c

Influenced By

Description	Symbol	Applies To

Artifact Files

Content Type	File Name	File Content
Control	non-subdividable.proto	
Uml	non-subdividable.md	

Code Map

Map Type	Name	Platform	Location
SourceCode	Code 1	Daml	

Implementation Map

Map Type	Name	Platform	Location
Implementation	Implementation 1	ChaincodeGo	

Resource Map

Map Type	Name	Location	Description
Resource	Regulation Reference 1		

Specification Behavior

Non-Subdividable

Taxonomy Symbol: ~d

An ability or restriction on the token where it cannot be subdivided from a single whole token into fractions. Sets the base token Decimals property to 0 which will make the token non-sub-dividable and a whole token is the smallest ownable unit of the token.

Example

Non-subdividable is common for items where subdivision does not make sense, like a property title, inventory item or invoice.

Analogies

Name	Description
Non-Fractional	It is not possible to own a fraction of this token.
Barrel of Oil	Barrels of Oil don't make sense to subdivide.

Is External:	True
Constructor:	

Non-Subdividable responds to these Invocations

Properties

Name: Decimals

Value Description: Set to Zero, not allowing any subdivision, usually this is applied to the base token.

Template Value: 0

Invocations

GetDecimals

Id: 2ca7fbb2-ce98-4dda-a6ae-e4ac2527bb33

Description: Should return 0

Natural-Gemstone - c356feeaaa0d1c87970cbfcb09bfc5cf5467e36d3175679b28101aefd4b1584d10

Request

Control Message: GetDecimalsRequest

Description:

Parameters

Name	Value

Response

Control Message: GetDecimalsResponse

Description: Return 0

Parameters

Name	Value
Decimals	0

GetDecimals

Id: 2ca7fbb2-ce98-4dda-a6ae-e4ac2527bb33

Description: Should return 0

Request

Control Message: GetDecimalsRequest

Description:

Parameters

Name	Value

Response

Control Message: GetDecimalsResponse

Description: Return 0

Parameters

Name	Value

Decimals	0

Properties

<u>Transferable</u>

Type:	Behavior
Name:	Transferable
Id:	af119e58-6d84-4ca6-9656-75e8d312f038
Visual:	<i>t</i>
Tooling:	t
Version:	1.0

<u>Definition</u>

Every token instance has an owner. The Transferable behavior provides the owner the ability to transfer the ownership to another party or account. This behavior is often inferred by other behaviors that might exist like Redeem, Sell, etc. This behavior is Delegable. If the token definition is Delegable, TransferFrom will be available.

<u>Example</u>

<u>Analogies</u>

Name	Description
Analogy 1	transferable analogy 1 description

<u>Dependencies</u>

Artifact Type	Symbol	Description

Incompatible With

Artifact Type	Symbol	Id
Behavior	~t	a4fa4ca8-6afd-452b-91f5-7103b6fee5e5

Influenced By

Description	Symbol	Applies To
If the token is Delegable, TransferFrom should be enabled.	g	[ ]
If Compliance is present, a CheckTransferAllowed request has to be made and verified before a Transfer request or a TransferFrom request.	c	[ ]
If issuable is present, an AcceptTokenRequest from the token issuer, in response to a RequestTokens, has to be made and verified before a Transfer request.	i	[ ]

Artifact Files

Content Type	File Name	File Content
Control	transferable.proto	
Uml	transferable.md	

Code Map

Map Type	Name	Platform	Location
SourceCode	Code 1	Daml	

Implementation Map

Map Type	Name	Platform	Location
Implementation	Implementation 1	ChaincodeGo	

Resource Map

Map Type	Name	Location	Description
Resource	Regulation Reference 1		

Specification Behavior

Transferable

Taxonomy Symbol: t

Every token instance has an owner. The Transferable behavior provides the owner the ability to <u>transfer the ownership</u> to another party or account. This behavior is often inferred by other behaviors that might exist like Redeem, Sell, etc. This behavior is Delegable. If the token definition is Delegable, TransferFrom will be available.

Example

Analogies

Name	Description
Analogy 1	transferable analogy 1 description

Is External:	True
Constructor:	

Transferable responds to these Invocations

Transfer

Id: 5d4b8f10-7857-4a2f-9b8c-d61e367a6bcc

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or subdividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

Natural-Gemstone - c356feeaaa0d1c87970cbfcb09bfc5cf5467e36d3175679b28101aefd4b1584d14

Request Message:

TransferRequest

Description: The request

Request Parameters

Name	Value
To	AccountId to transfer ownership to.
Quantity	Number of tokens to transfer.

Response Message

TransferResponse

Description: The response

Response Parameters

Name	Value
Confirmation	A confirmation receipt or error may be returned to the owner based on the outcome of the transfer request.

TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or subdividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

Request Message:

TransferFromRequest

Description: The request

Request Parameters

Name	Value

From	AccountId to transfer ownership from.
To	AccountId to transfer ownership to.
Quantity	Number of tokens to transfer.

Response Message

TransferFromResponse

Description: The response

Response Parameters

Name	Value
Confirmation	A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request.

Properties