{-}ackolade

MongoDB Physical Model

Schema for:

Model name: StockMarketGame
Author: Christopher Demeke
Version: 1
File name: StockMarketMongo.json
File path: /Users/christopherdemeke/Documents/Documents - DMK/Project
Three/StockMarketMongo.json
Printed On: Thu Jun 21 2018 20:28:02 GMT-0500 (CDT)
Created with: Hackolade - Visual data modeling for NoSQL and multimodel databases

1. MODEL

1.1 Model StockMarketGame

1.1.1 StockMarketGame Entity Relationship Diagram
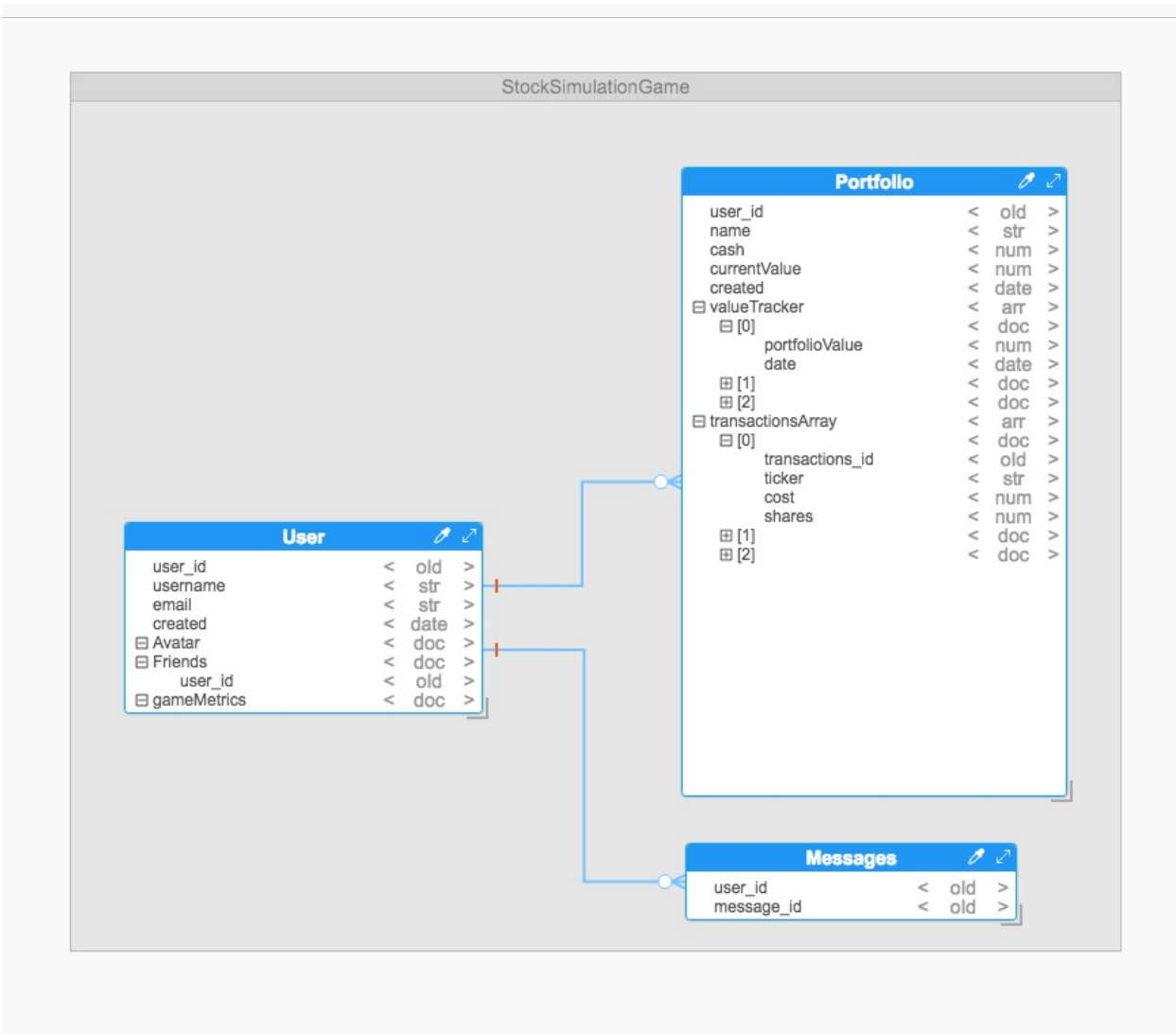
1.1.2 StockMarketGame Properties

PROPERTY	VALUE
Model name	StockMarketGame
Description	This model shows how a Stock Market Game database will store information using a NoSQL structure.
Author	Christopher Demeke
Version	1
DB vendor	MongoDB
DB version	v3.6
Enable sharding	
Comments	

1.1.3 StockMarketGame DB Definitions

2. DATABASES

2.1 Database StockSimulationGame
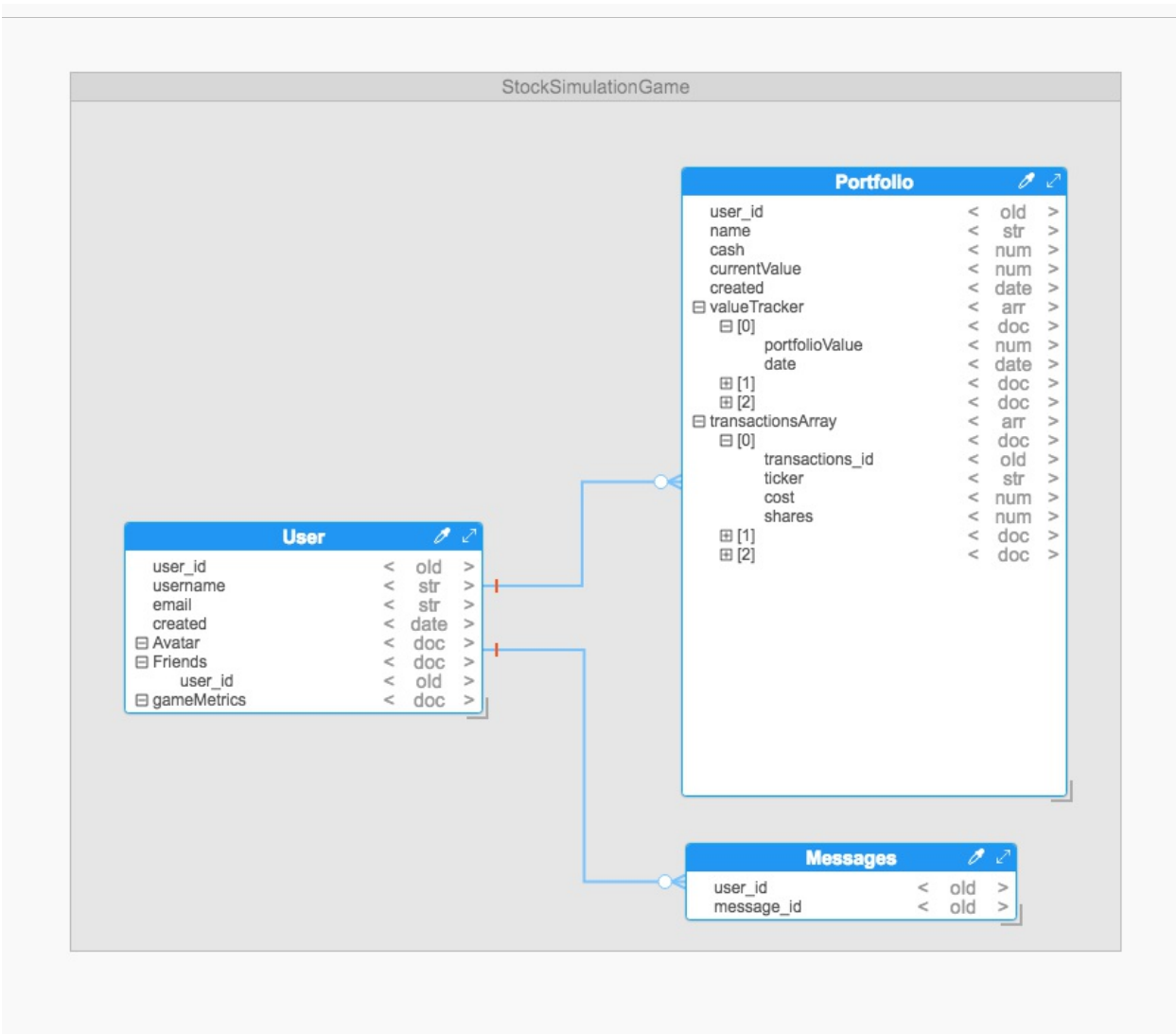
2.1.1 StockSimulationGame Properties

PROPERTY	VALUE
Database name	StockSimulationGame
Description	
Comments	

2.1.2 StockSimulationGame Collections

2.1.2.1 Collection Messages

2.1.2.1.1 Messages Tree Diagram
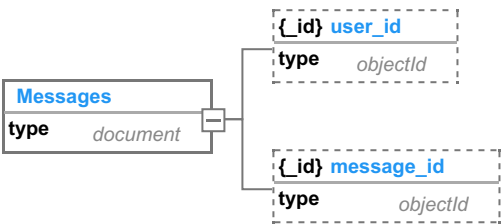
2.1.2.1.2 Messages Properties

PROPERTY	VALUE
Collection name	Messages
Id	
Description	
Database	StockSimulationGame
Capped	false
Size	
Max	
Storage engine	WiredTiger
Config String	
Validation level	Off
Validation action	Warn
Additional properties	false
Comments	

2.1.2.1.3 Messages Fields

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
user_id	objectId	false			
message_id	objectId	false			

2.1.2.1.3.1 Field user_id

2.1.2.1.3.1.1 user_id Tree Diagram

{_id} user_id	
type	objectId

user_id properties

PROPERTY	VALUE
Name	user_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	User
Foreign field	user_id
Relationship type	
Default	
Sample	
Comments	

2.1.2.1.3.2 Field message_id

2.1.2.1.3.2.1 message_id Tree Diagram

{_id} message_id	
type	*objectId*

message_id properties

PROPERTY	VALUE
Name	message_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.1.4 Messages Indexes

2.1.2.1.5 Messages Sharding

2.1.2.1.6 Messages Definitions

2.1.2.1.7 Messages JSON Schema

```
{
   "$schema": "http://json-schema.org/draft-04/schema#",
   "type": "object",
   "additionalProperties": false,
   "capped": false,
   "properties": {
     "user_id": {
        "type": "string",
        "pattern": "^[a-fA-F0-9]{24}$"
     },
     "message_id": {
        "type": "string",
        "pattern": "^[a-fA-F0-9]{24}$"
     }
   },
   "validationAction": "Warn",
   "validationLevel": "Off"
}
```

2.1.2.1.8 Messages JSON data

```
{
    "user_id": ObjectId("507f1f77bcf86cd799439011"),
    "message_id": ObjectId("507f1f77bcf86cd799439011")
}
```

2.1.2.2 Collection Portfolio

2.1.2.2.1 Portfolio Tree Diagram
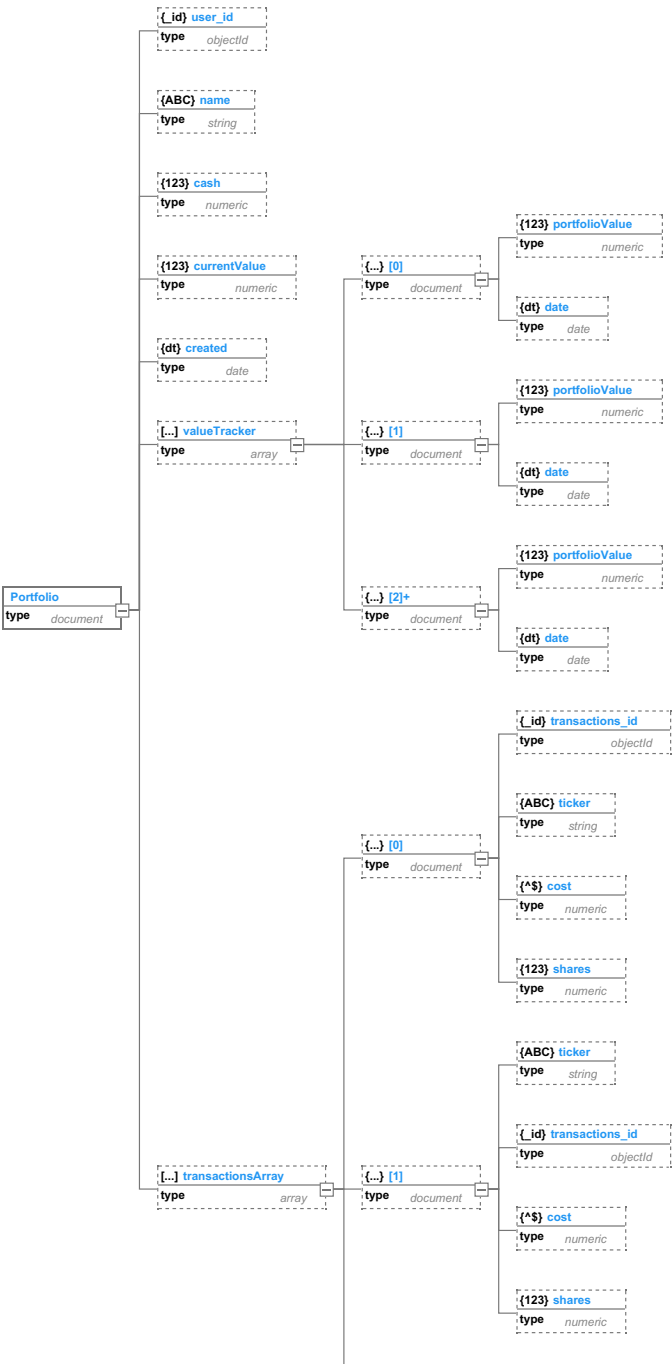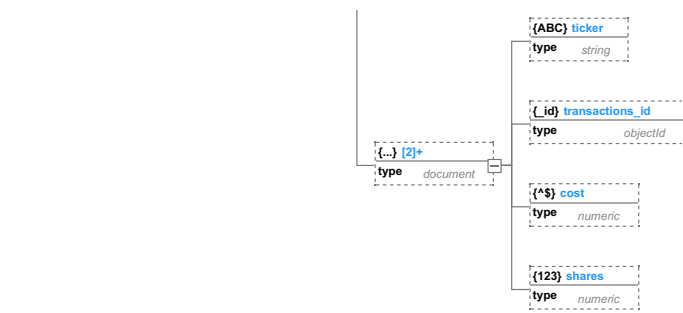
2.1.2.2.2 Portfolio Properties

PROPERTY	VALUE
Collection name	Portfolio
Id	
Description	
Database	StockSimulationGame
Capped	false
Size	
Max	
Storage engine	WiredTiger
Config String	
Validation level	Off
Validation action	Warn
Additional properties	false
Comments	

2.1.2.2.3 Portfolio Fields

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
user_id	objectId	false			
name	string	false		Portfolio name	
cash	numeric	false			
currentValue	numeric	false		Current value of portfolio	
created	date	false			
valueTracker	array	false			
[0]	document	false			
portfolioValue	numeric	false			
date	date	false			
[1]	document	false			
portfolioValue	numeric	false			
date	date	false			
[2]	document	false			
portfolioValue	numeric	false			
date	date	false			
transactionsArray	array	false			
[0]	document	false			
transactions_id	objectId	false			
ticker	string	false		ticker symbol to identify stock	
cost	numeric	false		Amount spent to purchase shares	
shares	numeric	false			
[1]	document	false			
ticker	string	false		ticker symbol to identify stock	
transactions_id	objectId	false			
cost	numeric	false		Amount spent to purchase shares	
shares	numeric	false			
[2]	document	false			
ticker	string	false		ticker symbol to identify stock	
transactions_id	objectId	false			
cost	numeric	false		Amount spent to purchase shares	
shares	numeric	false			

2.1.2.2.3.1 Field user_id

2.1.2.2.3.1.1 user_id Tree Diagram

{_id} user_id	
type	*objectId*

user_id properties

PROPERTY	VALUE
Name	user_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	User
Foreign field	user_id
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.2 Field name

2.1.2.2.3.2.1 name Tree Diagram

```
{ABC} name
type    string
```

name properties

PROPERTY	VALUE
Name	name
Id	
Type	string
Description	Portfolio name
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Min length	
Max length	
Pattern	
Format	
Enum	
Sample	
Comments	

2.1.2.2.3.3 Field cash

2.1.2.2.3.3.1 cash Tree Diagram

```
{123} cash
type      numeric
```

cash properties

PROPERTY	VALUE
Name	cash
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.4 Field currentValue

2.1.2.2.3.4.1 currentValue Tree Diagram

```
{123} currentValue
type      numeric
```

currentValue properties

PROPERTY	VALUE
Name	currentValue
Id	
Type	numeric
Description	Current value of portfolio
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.5 Field created

2.1.2.2.3.5.1 created Tree Diagram

{dt} created	
type	*date*

created properties

PROPERTY	VALUE
Name	created
Id	
Type	date
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.6 Field valueTracker

2.1.2.2.3.6.1 valueTracker Tree Diagram
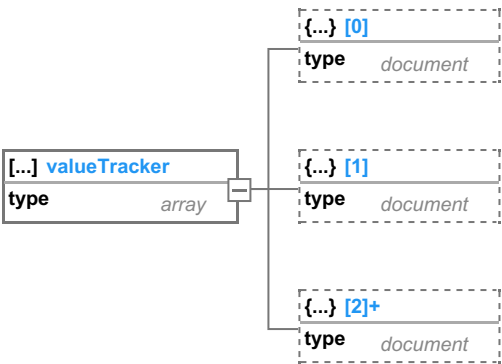
2.1.2.2.3.6.2 valueTracker Hierarchy

Parent field: **Portfolio**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
[0]	document	false			
[1]	document	false			
[2]	document	false			

valueTracker properties

PROPERTY	VALUE
Name	valueTracker
Id	
Type	array
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Min items	
Max items	
Unique items	false
Additional items	true
Comments	

2.1.2.2.3.7 Field [0]

2.1.2.2.3.7.1 [0] Tree Diagram
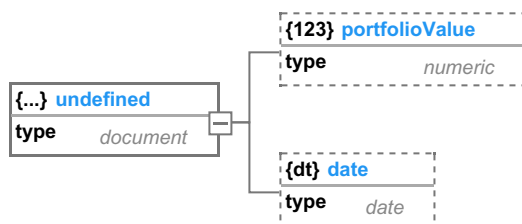
2.1.2.2.3.7.2 [0] Hierarchy

Parent field: **valueTracker**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
portfolioValue	numeric	false			
date	date	false			

[0] properties

PROPERTY	VALUE
Name	
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.2.3.8 Field portfolioValue

2.1.2.2.3.8.1 portfolioValue Tree Diagram

{123} portfolioValue	
type	numeric

portfolioValue properties

PROPERTY	VALUE
Name	portfolioValue
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.9 Field date

2.1.2.2.3.9.1 date Tree Diagram

{dt} date	
type	date

date properties

PROPERTY	VALUE
Name	date
Id	
Type	date
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.10 Field New Field

2.1.2.2.3.10.1 New Field Tree Diagram
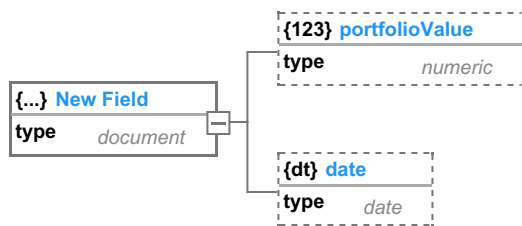
2.1.2.2.3.10.2 New Field Hierarchy

Parent field: **valueTracker**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
portfolioValue	numeric	false			
date	date	false			

New Field properties

PROPERTY	VALUE
Name	New Field
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.2.3.11 Field portfolioValue

2.1.2.2.3.11.1 portfolioValue Tree Diagram

{123} **portfolioValue**	
type	*numeric*

portfolioValue properties

PROPERTY	VALUE
Name	portfolioValue
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.12 Field date

2.1.2.2.3.12.1 date Tree Diagram

{dt} date	
type	*date*

date properties

PROPERTY	VALUE
Name	date
Id	
Type	date
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.13 Field New Field(1)

2.1.2.2.3.13.1 New Field(1) Tree Diagram
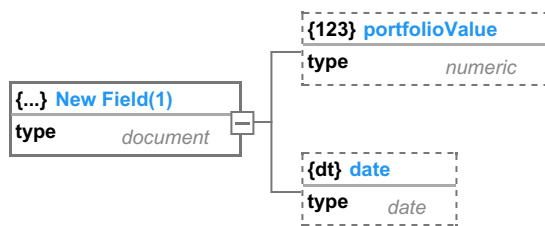
2.1.2.2.3.13.2 New Field(1) Hierarchy

Parent field: **valueTracker**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
portfolioValue	numeric	false			
date	date	false			

New Field(1) properties

PROPERTY	VALUE
Name	New Field(1)
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.2.3.14 Field portfolioValue

2.1.2.2.3.14.1 portfolioValue Tree Diagram

```
{123} portfolioValue
type              numeric
```

portfolioValue properties

PROPERTY	VALUE
Name	portfolioValue
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.15 Field date

2.1.2.2.3.15.1 date Tree Diagram

{dt} date	
type	date

date properties

PROPERTY	VALUE
Name	date
Id	
Type	date
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.16 Field transactionsArray

2.1.2.2.3.16.1 transactionsArray Tree Diagram
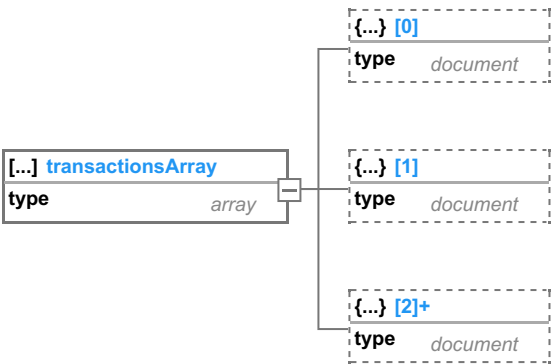
2.1.2.2.3.16.2 transactionsArray Hierarchy

Parent field: **Portfolio**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
[0]	document	false			
[1]	document	false			
[2]	document	false			

transactionsArray properties

PROPERTY	VALUE
Name	transactionsArray
Id	
Type	array
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Min items	
Max items	
Unique items	false
Additional items	true
Comments	

2.1.2.2.3.17 Field [0]

2.1.2.2.3.17.1 [0] Tree Diagram
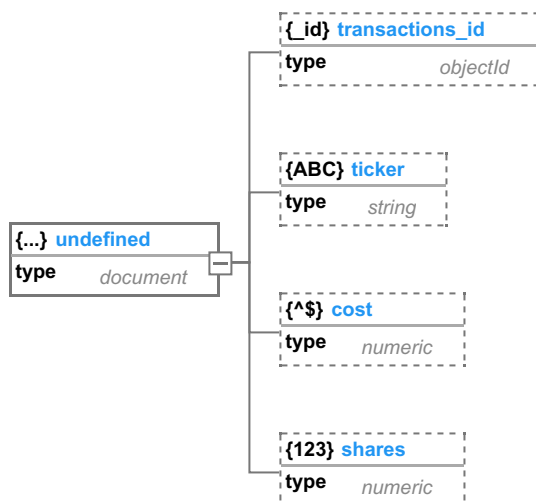
2.1.2.2.3.17.2 [0] Hierarchy

Parent field: **transactionsArray**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
transactions_id	objectId	false			
ticker	string	false		ticker symbol to identify stock	
cost	numeric	false		Amount spent to purchase shares	
shares	numeric	false			

[0] properties

PROPERTY	VALUE
Name	
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.2.3.18 Field transactions_id

2.1.2.2.3.18.1 transactions_id Tree Diagram

{_id} transactions_id	
type	*objectId*

transactions_id properties

PROPERTY	VALUE
Name	transactions_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.19 Field ticker

2.1.2.2.3.19.1 ticker Tree Diagram

{ABC} ticker	
type	*string*

ticker properties

PROPERTY	VALUE
Name	ticker
Id	
Type	string
Description	ticker symbol to identify stock
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Min length	
Max length	
Pattern	
Format	
Enum	
Sample	
Comments	

2.1.2.2.3.20 Field cost

2.1.2.2.3.20.1 cost Tree Diagram

{123} cost	
type	*numeric*

cost properties

PROPERTY	VALUE
Name	cost
Sample Name	
Id	
Type	numeric
Description	Amount spent to purchase shares
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.21 Field shares

2.1.2.2.3.21.1 shares Tree Diagram

{123} shares	
type	*numeric*

shares properties

PROPERTY	VALUE
Name	shares
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.22 Field New Field

2.1.2.2.3.22.1 New Field Tree Diagram
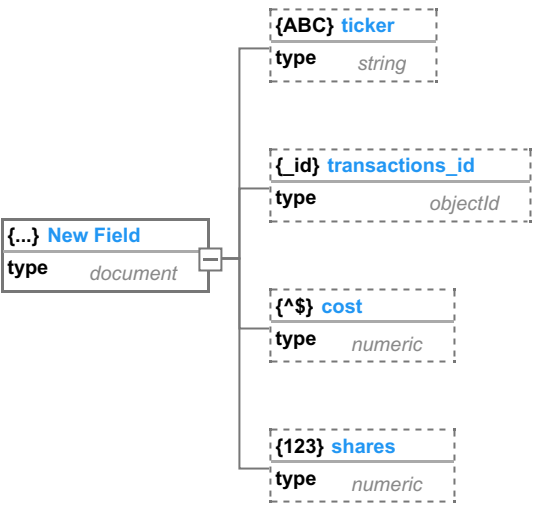
2.1.2.2.3.22.2 New Field Hierarchy

Parent field: **transactionsArray**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
ticker	string	false		ticker symbol to identify stock	
transactions_id	objectId	false			
cost	numeric	false		Amount spent to purchase shares	
shares	numeric	false			

New Field properties

PROPERTY	VALUE
Name	New Field
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.2.3.23 Field ticker

2.1.2.2.3.23.1 ticker Tree Diagram

```
{ABC} ticker
type          string
```

ticker properties

PROPERTY	VALUE
Name	ticker
Id	
Type	string
Description	ticker symbol to identify stock
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Min length	
Max length	
Pattern	
Format	
Enum	
Sample	
Comments	

2.1.2.2.3.24 Field transactions_id

2.1.2.2.3.24.1 transactions_id Tree Diagram

```
{_id} transactions_id
type          objectId
```

transactions_id properties

PROPERTY	VALUE
Name	transactions_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.25 Field cost

2.1.2.2.3.25.1 cost Tree Diagram

{123} **cost**	
type	*numeric*

cost properties

PROPERTY	VALUE
Name	cost
Sample Name	
Id	
Type	numeric
Description	Amount spent to purchase shares
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.26 Field shares

2.1.2.2.3.26.1 shares Tree Diagram

```
{123} shares
type    numeric
```

shares properties

PROPERTY	VALUE
Name	shares
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.27 Field undefined(1)

2.1.2.2.3.27.1 undefined(1) Tree Diagram
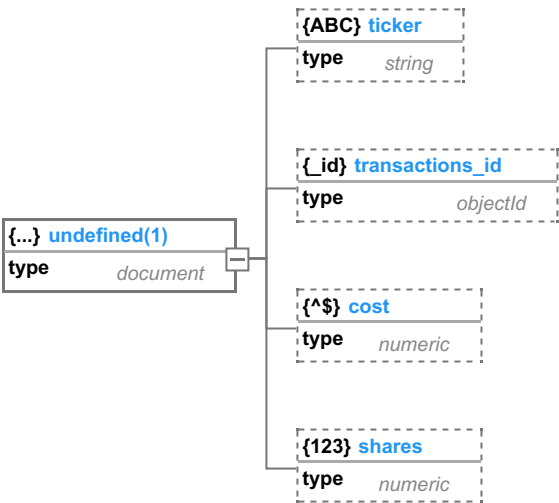
2.1.2.2.3.27.2 undefined(1) Hierarchy

Parent field: **transactionsArray**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
ticker	string	false		ticker symbol to identify stock	
transactions_id	objectId	false			
cost	numeric	false		Amount spent to purchase shares	
shares	numeric	false			

undefined(1) properties

PROPERTY	VALUE
Name	undefined(1)
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.2.3.28 Field ticker

2.1.2.2.3.28.1 ticker Tree Diagram

{ABC} ticker	
type	*string*

ticker properties

PROPERTY	VALUE
Name	ticker
Id	
Type	string
Description	ticker symbol to identify stock
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Min length	
Max length	
Pattern	
Format	
Enum	
Sample	
Comments	

2.1.2.2.3.29 Field transactions_id

2.1.2.2.3.29.1 transactions_id Tree Diagram

{_id} transactions_id	
type	*objectId*

transactions_id properties

PROPERTY	VALUE
Name	transactions_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.2.3.30 Field cost

2.1.2.2.3.30.1 cost Tree Diagram

{123} cost	
type	*numeric*

cost properties

PROPERTY	VALUE
Name	cost
Sample Name	
Id	
Type	numeric
Description	Amount spent to purchase shares
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.3.31 Field shares

2.1.2.2.3.31.1 shares Tree Diagram

{123} shares
type   *numeric*

shares properties

PROPERTY	VALUE
Name	shares
Id	
Type	numeric
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Mode	
Unit	
Min value	
Excl min	false
Max value	
Excl max	false
Multiple of	
Divisible by	
Enum	
Sample	
Comments	

2.1.2.2.4 Portfolio Indexes

2.1.2.2.5 Portfolio Sharding

2.1.2.2.6 Portfolio Definitions

2.1.2.2.7 Portfolio JSON Schema

```
{
    "$schema": "http://json-schema.org/draft-04/schema#",
    "type": "object",
    "additionalProperties": false,
    "capped": false,
    "properties": {
        "user_id": {
            "type": "string",
            "pattern": "^[a-fA-F0-9]{24}$"
        },
        "name": {
            "type": "string",
            "description": "Portfolio name"
        },
        "cash": {
```

```
          "type": "number"
        },
        "currentValue": {
          "type": "number",
          "description": "Current value of portfolio"
        },
        "created": {
          "type": "string",
          "format": "date-time"
        },
        "valueTracker": {
          "type": "array",
          "additionalItems": true,
          "uniqueItems": false,
          "items": [
            {
              "type": "object",
              "additionalProperties": false,
              "arrayItem": true,
              "properties": {
                "portfolioValue": {
                  "type": "number"
                },
                "date": {
                  "type": "string",
                  "format": "date-time"
                }
              }
            },
            {
              "type": "object",
              "additionalProperties": false,
              "arrayItem": true,
              "properties": {
                "portfolioValue": {
                  "type": "number"
                },
                "date": {
                  "type": "string",
                  "format": "date-time"
                }
              }
            },
            {
              "type": "object",
              "additionalProperties": false,
              "arrayItem": true,
              "properties": {
                "portfolioValue": {
                  "type": "number"
                },
                "date": {
                  "type": "string",
                  "format": "date-time"
                }
              }
            }
          ]
        },
```

```
"transactionsArray": {
  "type": "array",
  "additionalItems": true,
  "uniqueItems": false,
  "items": [
    {
      "type": "object",
      "additionalProperties": false,
      "arrayItem": true,
      "properties": {
        "transactions_id": {
          "type": "string",
          "pattern": "^[a-fA-F0-9]{24}$"
        },
        "ticker": {
          "type": "string",
          "description": "ticker symbol to identify stock"
        },
        "shares": {
          "type": "number"
        }
      },
      "patternProperties": {
        "cost": {
          "type": "number",
          "description": "Amount spent to purchase shares"
        }
      }
    },
    {
      "type": "object",
      "additionalProperties": false,
      "arrayItem": true,
      "properties": {
        "ticker": {
          "type": "string",
          "description": "ticker symbol to identify stock"
        },
        "transactions_id": {
          "type": "string",
          "pattern": "^[a-fA-F0-9]{24}$"
        },
        "shares": {
          "type": "number"
        }
      },
      "patternProperties": {
        "cost": {
          "type": "number",
          "description": "Amount spent to purchase shares"
        }
      }
    },
    {
      "type": "object",
      "additionalProperties": false,
      "arrayItem": true,
      "properties": {
        "ticker": {
```

```
                    "type": "string",
                    "description": "ticker symbol to identify stock"
                },
                "transactions_id": {
                    "type": "string",
                    "pattern": "^[a-fA-F0-9]{24}$"
                },
                "shares": {
                    "type": "number"
                }
            },
            "patternProperties": {
                "cost": {
                    "type": "number",
                    "description": "Amount spent to purchase shares"
                }
            }
        }
    ]
  }
},
"validationAction": "Warn",
"validationLevel": "Off"
}
```
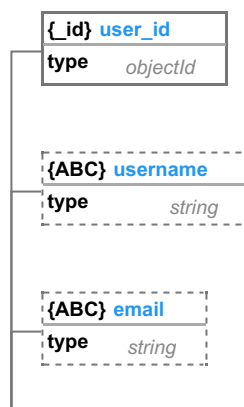
2.1.2.2.8 Portfolio JSON data
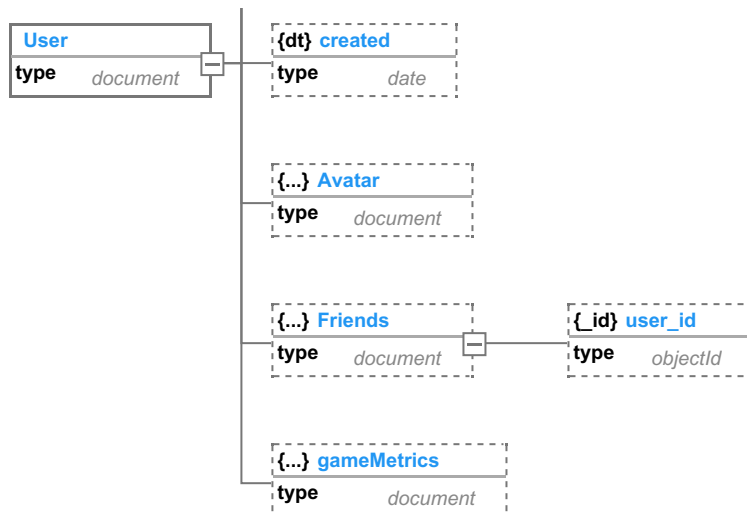
```
{
    "user_id": ObjectId("507f1f77bcf86cd799439011"),
    "name": "Lorem",
    "cash": -69,
    "currentValue": 46,
    "created": ISODate("2016-04-08T15:06:21.595Z"),
    "valueTracker": [
        {
            "portfolioValue": 63,
            "date": ISODate("2016-04-08T15:06:21.595Z")
        },
        {
            "portfolioValue": 36,
            "date": ISODate("2016-04-08T15:06:21.595Z")
        },
        {
            "portfolioValue": 35,
            "date": ISODate("2016-04-08T15:06:21.595Z")
        }
    ],
    "transactionsArray": [
        {
            "transactions_id": ObjectId("507f1f77bcf86cd799439011"),
            "ticker": "Lorem",
            "shares": -97
        },
        {
            "ticker": "Lorem",
            "transactions_id": ObjectId("507f1f77bcf86cd799439011"),
            "shares": 56
        },
        {
            "ticker": "Lorem",
            "transactions_id": ObjectId("507f1f77bcf86cd799439011"),
            "shares": 67
        }
    ]
}
```

2.1.2.3 Collection User

2.1.2.3.1 User Tree Diagram

{_id} user_id
| **type** | *objectId* |

{ABC} username
| **type** | *string* |

{ABC} email
| **type** | *string* |

2.1.2.3.2 User Properties

PROPERTY	VALUE
Collection name	User
Id	
Description	
Database	StockSimulationGame
Capped	false
Size	
Max	
Storage engine	WiredTiger
Config String	
Validation level	Off
Validation action	Warn
Additional properties	false
Comments	

2.1.2.3.3 User Fields

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
user_id	objectId	true			
username	string	false			
email	string	false			
created	date	false			
Avatar	document	false			
Friends	document	false			
user_id	objectId	false			
gameMetrics	document	false			

2.1.2.3.3.1 Field user_id

2.1.2.3.3.1.1 user_id Tree Diagram

```
{_id} user_id
type        objectId
```

user_id properties

PROPERTY	VALUE
Name	user_id
Id	
Type	objectId
Description	
Dependencies	
Required	true
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.3.3.2 Field username

2.1.2.3.3.2.1 username Tree Diagram

```
{ABC} username
type        string
```

username properties

PROPERTY	VALUE
Name	username
Id	
Type	string
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Min length	
Max length	
Pattern	
Format	
Enum	
Sample	
Comments	

2.1.2.3.3.3 Field email

2.1.2.3.3.3.1 email Tree Diagram

{ABC} email	
type	*string*

email properties

PROPERTY	VALUE
Name	email
Id	
Type	string
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Min length	
Max length	
Pattern	
Format	
Enum	
Sample	
Comments	

2.1.2.3.3.4 Field created

2.1.2.3.3.4.1 created Tree Diagram

{dt} created	
type	*date*

created properties

PROPERTY	VALUE
Name	created
Id	
Type	date
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.3.3.5 Field Avatar

2.1.2.3.3.5.1 Avatar Tree Diagram

```
{...} Avatar
type      document
```

Avatar properties

PROPERTY	VALUE
Name	Avatar
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.3.3.6 Field Friends

2.1.2.3.3.6.1 Friends Tree Diagram

```
{...} Friends            {_id} user_id
type      document        type      objectId
```
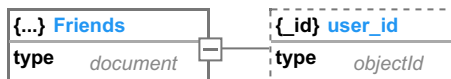
2.1.2.3.3.6.2 Friends Hierarchy

Parent field: **User**
Child field(s):

FIELD	TYPE	REQ	KEY	DESCRIPTION	COMMENTS
user_id	objectId	false			

Friends properties

PROPERTY	VALUE
Name	Friends
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.3.3.7 Field user_id

2.1.2.3.3.7.1 user_id Tree Diagram

{_id} user_id
type *objectId*

user_id properties

PROPERTY	VALUE
Name	user_id
Id	
Type	objectId
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
Default	
Sample	
Comments	

2.1.2.3.3.8 Field gameMetrics

2.1.2.3.3.8.1 gameMetrics Tree Diagram

{...} **gameMetrics**	
type	*document*

gameMetrics properties

PROPERTY	VALUE
Name	gameMetrics
Id	
Type	document
Description	
Dependencies	
Required	false
Primary key	false
Foreign collection	
Foreign field	
Relationship type	
DBRef	
Min Properties	
Max Properties	
Additional properties	false
Comments	

2.1.2.3.4 User Indexes

2.1.2.3.5 User Sharding

2.1.2.3.6 User Definitions

2.1.2.3.7 User JSON Schema

```
{
    "$schema": "http://json-schema.org/draft-04/schema#",
    "type": "object",
    "additionalProperties": false,
    "capped": false,
    "properties": {
        "user_id": {
            "type": "string",
            "pattern": "^[a-fA-F0-9]{24}$"
        },
        "username": {
            "type": "string"
        },
        "email": {
            "type": "string"
        },
        "created": {
            "type": "string",
            "format": "date-time"
        },
        "Avatar": {
            "type": "object",
            "additionalProperties": false
        },
        "Friends": {
            "type": "object",
            "additionalProperties": false,
            "properties": {
                "user_id": {
                    "type": "string",
                    "pattern": "^[a-fA-F0-9]{24}$"
                }
            }
        },
        "gameMetrics": {
            "type": "object",
            "additionalProperties": false
        }
    },
    "validationAction": "Warn",
    "validationLevel": "Off",
    "required": [
        "user_id"
    ]
}
```

2.1.2.3.8 User JSON data

```
{
   "user_id": ObjectId("507f1f77bcf86cd799439011"),
   "username": "Lorem",
   "email": "Lorem",
   "created": ISODate("2016-04-08T15:06:21.595Z"),
   "Avatar": {},
   "Friends": {
      "user_id": ObjectId("507f1f77bcf86cd799439011")
   },
   "gameMetrics": {}
}
```

3. RELATIONSHIPS

3.1 Relationship messagesUser

3.1.1 messagesUser Diagram

PARENT TABLE	PARENT FIELD
User	user_id

CHILD TABLE	CHILD FIELD
Messages	user_id
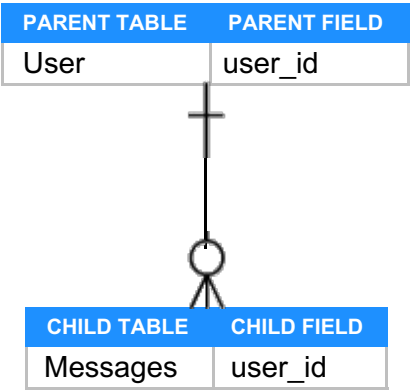
3.1.2 messagesUser Properties

PROPERTY	VALUE
Name	messagesUser
Description	
Parent Collection	User
Parent field	user_id
Parent Cardinality	1
Child Collection	Messages
Child field	user_id
Child Cardinality	0..n
Comments	

3.2 Relationship portfolioUser

3.2.1 portfolioUser Diagram

PARENT TABLE	PARENT FIELD
User	user_id

CHILD TABLE	CHILD FIELD
Portfolio	user_id
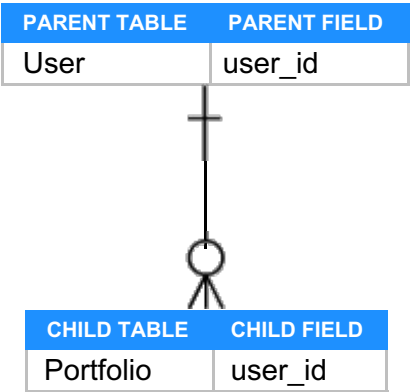
3.2.2 portfolioUser Properties

PROPERTY	VALUE
Name	portfolioUser
Description	
Parent Collection	User
Parent field	user_id
Parent Cardinality	1
Child Collection	Portfolio
Child field	user_id
Child Cardinality	0..n
Comments	