

smrl.mr.language

Class Operations

java.lang.Object

smrl.mr.language.Operations

```
public class Operations
extends java.lang.Object
```

Constructor Summary

Constructors

Constructor and Description

Operations()

Method Summary

All Methods

Static Methods

Concrete Methods

Modifier and Type

static Action

static Action

static Input

static Input

static boolean

static boolean

static boolean

static boolean

Method and Description

ActionAvailableWithoutLogin()

Data Representation Function.

ActionAvailableWithoutLogin(int i)

Data Representation Function.

addAction(Input input, Action action)

Web-specific function.

addAction(Input input, int pos, Action action)

Web-specific function.

afterLogin(Action action)

Web-specific function.

AND(boolean a, boolean b)

SMRL boolean operator.

availableWithoutLoggingIn(Action action)

Web-specific function.

cannotReachThroughGUI(java.lang.Object user, Input lastURL)

	Web-specific function.
static Input	changeCredentials (Input input, java.lang.Object user) Data Representation Function.
static boolean	changeProtocol (java.lang.String protocol, Action a) Web-specific function.
static java.util.Collection	Collection (java.lang.Object... objs) Web-specific function.
static Input	copyActionTo (Input input, int from, int to) Web-specific function.
static Action	DeleteCookies () Web-specific function.
static java.lang.Object	deriveRandomData (java.lang.String value) Web-specific function.
static boolean	different (java.lang.Object a, java.lang.Object b) SMRL boolean operator.
static boolean	equal (java.lang.Object a, java.lang.Object b)
static boolean	EQUAL (java.lang.Object a, java.lang.Object b) SMRL boolean operator.
static int[]	extractUserGroupParameters (Action action1) Web-specific function.
static boolean	FALSE (boolean a) SMRL boolean operator.
static java.lang.Object	File () Data Representation Function.
static java.lang.String	HttpMethod () Data Representation Function.
static boolean	IMPLIES (boolean a, boolean b) SMRL boolean operator.
static Input	Input (Action... as) Data Representation Function.
static Input	Input (int x) Data Representation Function.
static Input	Input (java.util.List<Action>... actions) Data Representation Function.
static boolean	isAdmin (java.lang.Object user) Web-specific function.
static boolean	isEncrypted (Action action)

	Web-specific function.
static boolean	isError (java.lang.Object output) Web-specific function.
static boolean	isFormInputForFilePath (java.lang.Object formInput) Web-specific function.
static boolean	isLogin (Action action) Web-specific function.
static boolean	isLogout (Action action) Web-specific function.
static boolean	isReadEMailAction (Action action) Web-specific function.
static boolean	isSignup (Action action) Web-specific function.
static boolean	isSupervisorOf (java.lang.Object user1, java.lang.Object user2) Web-specific function.
static boolean	isUserIdParameter (Action a, int parpos, java.lang.Object user) Web-specific function.
static Action	LoginAction (java.lang.Object user) Web-specific function.
static Action	LogoutInAnotherTab () Web-specific function.
static int	myint (int x)
static boolean	NOT (boolean a) SMRL boolean operator.
static boolean	notAnonymous (java.lang.Object user) Web-specific function.
static boolean	notAvailableWithoutLoggingIn (Action action) Web-specific function.
static boolean	notTried (java.lang.Object user, java.lang.String url) Web-specific function.
static boolean	notVisibleWithoutLoggingIn (java.lang.String url) Web-specific function.
static boolean	NULL (java.lang.Object a)
static boolean	OR (boolean a, boolean b) SMRL boolean operator.

<code>static Output</code>	Output (Input input) Data Representation Function.
<code>static Output</code>	Output (Input input, int pos) Data Representation Function.
<code>static java.lang.Object</code>	RandomAdminFilePath () Data Representation Function.
<code>static java.lang.Object</code>	RandomAdminFilePath (int x) Data Representation Function.
<code>static java.lang.Object</code>	RandomFilePath () Data Representation Function.
<code>static java.lang.Object</code>	RandomFilePath (int x) Data Representation Function.
<code>static java.lang.String</code>	RandomHttpMethod () Data Representation Function.
<code>static java.lang.String</code>	RandomHttpMethod (int x) Data Representation Function.
<code>static java.lang.Object</code>	RandomValue (java.lang.Class type) Data Representation Function.
<code>static java.lang.Object</code>	RandomValue (java.lang.String value) Data Representation Function.
<code>static java.lang.String</code>	resolveUrl (java.lang.String url, java.lang.String addedPath) Web-specific function.
<code>static java.lang.Object</code>	Session (Input input, int x) Web-specific function.
<code>static boolean</code>	TRUE (boolean a) SMRL boolean operator.
<code>static java.lang.Class</code>	typeof (java.lang.String value) Web-specific function.
<code>static boolean</code>	updateStringFormInput (JsonObject formInput, java.lang.Object value) Web-specific function.
<code>static boolean</code>	urlOfActionChangesOverMultipleExecutions (Action a) Web-specific function.
<code>static boolean</code>	urlOfActionChangesOverMultipleExecutions (Input input, int x) Web-specific function.
<code>static java.lang.Object</code>	User ()

Data Representation Function.

```
static java.lang.Object
```

```
User(int i)
```

Data Representation Function.

```
static boolean
```

```
userCanRetrieveContent(java.lang.Object user,  
java.lang.Object output)
```

Web-specific function.

```
static Action
```

```
Wait(long millis)
```

Web-specific function.

```
static java.lang.Object
```

```
WeakEncryption()
```

Data Representation Function.

Methods inherited from class java.lang.Object

clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

Constructor Detail

Operations

```
public Operations()
```

Method Detail

IMPLIES

```
public static boolean IMPLIES(boolean a,  
                               boolean b)
```

SMRL boolean operator.

Parameters:

a -

b -

Returns:

!a || b

AND

```
public static boolean AND(boolean a,  
                           boolean b)
```

SMRL boolean operator.

Parameters:

a -

b -

Returns:

a && b

OR

```
public static boolean OR(boolean a,  
                          boolean b)
```

SMRL boolean operator.

Parameters:

a -

b -

Returns:

a || b

NOT

```
public static boolean NOT(boolean a)
```

SMRL boolean operator.

Parameters:

a -

Returns:

!a

FALSE

```
public static boolean FALSE(boolean a)
```

SMRL boolean operator.

Parameters:

a -

Returns:

a==false

TRUE

```
public static boolean TRUE(boolean a)
```

SMRL boolean operator.

Parameters:

a -

Returns:

a==true

NULL

```
public static boolean NULL(java.lang.Object a)
```

Parameters:

a -

Returns:

a==null

equal

```
public static boolean equal(java.lang.Object a,  
                           java.lang.Object b)
```

Parameters:

a -

b -

Returns:

true if a equals b or when a can be assigned using the value of b; false if a does not equal b, or cannot assign b to a.

EQUAL

```
public static boolean EQUAL(java.lang.Object a,  
                           java.lang.Object b)
```

SMRL boolean operator.

Parameters:

a -

b -

Returns:

true if a equals b or when a can be assigned using the value of b; false if a does not equal b, or cannot assign b to a.

different

```
public static boolean different(java.lang.Object a,  
                               java.lang.Object b)
```

SMRL boolean operator.

Parameters:

a -

b -

Returns:

true if a is different b; false in opposite.

myint

```
public static int myint(int x)
```

Parameters:

x -

Returns:

x

Input

```
public static Input Input(int x)
```

Data Representation Function. Returns the i-th input sequence.

Parameters:

i - The index of the input sequence to be returned, with respect to the current data view.

Returns:

Input

```
public static Input Input(Action... as)
```

Data Representation Function. Return a new input sequence built from an array of actions.

Parameters:

as - Array of actions.

Returns:

New built input sequence.

Input

```
public static Input Input(java.util.List<Action>... actions)
```

Data Representation Function. Return a new input sequence built from a list of actions.

Parameters:

actions - List of actions.

Returns:

New built input sequence.

changeCredentials

```
public static Input changeCredentials(Input input,  
                                     java.lang.Object user)
```

Data Representation Function. Change credentials (if exist) in a input sequence.

Parameters:

input - The source input to change credentials.

user - The credential will be used in the new input sequence.

Returns:

The new input sequence after changing credentials.

addAction

```
public static Input addAction(Input input,  
                              int pos,  
                              Action action)
```

Web-specific function. Add an action at the position pos in a input sequence.

Parameters:

input - The source input.

pos - The position in the sequence of input to add new action.

action - The action will be added.

Returns:

The new input sequence after adding a new action.

copyActionTo

```
public static Input copyActionTo(Input input,  
                                 int from,  
                                 int to)
```

Web-specific function. Copy the action at the position "from" to the position "to" in the input sequence.

Parameters:

input - The source input sequence.

from - The position of the action will be copied.

to - The position to paste the copied action.

Returns:

The new input sequence after copying the action from "from" to "to".

addAction

```
public static Input addAction(Input input,  
                             Action action)
```

Web-specific function. Add an action at the end of the input sequence.

Parameters:

input - The source input sequence.

action - The action will be added.

Returns:

The new input sequence after adding the "action" at the end.

User

```
public static java.lang.Object User()
```

Data Representation Function. Return the 1st user, with respect to the current data view.

Returns:**User**

```
public static java.lang.Object User(int i)
```

Data Representation Function. Returns the i-th user.

Parameters:

i - The index of the user to be returned, with respect to the current data view.

Returns:**WeakEncryption**

```
public static java.lang.Object WeakEncryption()
```

Data Representation Function. Return the 1st weak encryption algorithm, with respect to the current data view.

Returns:**ActionAvailableWithoutLogin**

```
public static Action ActionAvailableWithoutLogin()
```

Data Representation Function. Return the 1st action available without login, with respect to the current data view.

Returns:

ActionAvailableWithoutLogin

```
public static Action ActionAvailableWithoutLogin(int i)
```

Data Representation Function. Return the i-th action available without login.

Parameters:

i - The index of the action to be returned, with respect the current data view.

Returns:

RandomValue

```
public static java.lang.Object RandomValue(java.lang.String value)
```

Data Representation Function. Return a random value based on a pattern value.

Parameters:

value - The pattern value (e.g., "123", "123.45", "word").

Returns:

RandomValue

```
public static java.lang.Object RandomValue(java.lang.Class type)
```

Data Representation Function. Return a random value of a specific class.

Parameters:

type - The class type to be returned.

Returns:

typeof

```
public static java.lang.Class typeof(java.lang.String value)
```

Web-specific function. Return the corresponding class of a value pattern.

Parameters:

value - The value pattern (e.g., "123", "123.45", "./file.txt", "word").

Returns:

deriveRandomData

```
public static java.lang.Object deriveRandomData(java.lang.String value)
```

Web-specific function. Derive a random data based on a value pattern.

Parameters:

value - The value pattern.

Returns:

userCanRetrieveContent

```
public static boolean userCanRetrieveContent(java.lang.Object user,  
                                             java.lang.Object output)
```

Web-specific function. Returns true if an output can be reached by the given user. The result depends on the output store which contains all outputs of all input sequences.

Parameters:

user - The user to check.

output - The output to check.

Returns:

notAnonymous

```
public static boolean notAnonymous(java.lang.Object user)
```

Web-specific function. Return true if the "user" is not anonymous.

Parameters:

user - The given user to check.

Returns:

isEncrypted

```
public static boolean isEncrypted(Action action)
```

Web-specific function. Check if the "action" is requested under an encrypted channel. The result depends on the protocol in the URL.

Parameters:

action - The action to check.

Returns:

true if the action is executed under an encrypted channel (e.g., https, ftps).

isLogin

```
public static boolean isLogin(Action action)
```

Web-specific function. Check whether the "action" is a successful login action. The result depends on the URL of the action, the form inputs and the following action (e.g., not "try again").

Parameters:

action - The action to check.

Returns:

true if the "action" is a successful login action.

isLogout

```
public static boolean isLogout(Action action)
```

Web-specific function. Check whether the "action" is a logout action. The result depends on the URL of the action (by comparing with the logout URL specified in the test configuration)

Parameters:

action - The action to check.

Returns:

true if the "action" is a logout action

afterLogin

```
public static boolean afterLogin(Action action)
```

Web-specific function. Check whether the "action" will be executed after logging in.

Parameters:

action - The action to check

Returns:

true if the "action" follows a login action

Session

```
public static java.lang.Object Session(Input input,  
                                       int x)
```

Web-specific function. Return the session at the x-th position in the input. Result depends on the outputs sequence (having by executing input).

Parameters:

input - The input to check

x - The index of the action to check its session

Returns:

DeleteCookies

```
public static Action DeleteCookies()
```

Web-specific function. This method returns a DeleteCookies action.

Returns:

An DeleteCookies action

notAvailableWithoutLoggingIn

```
public static boolean notAvailableWithoutLoggingIn(Action action)
```

Web-specific function. Check whether an action can be executed before logging in. The result depends on the inputs sequences under test.

Parameters:

action - The action to be checked.

Returns:

true if the action is not available without logging in.

availableWithoutLoggingIn

```
public static boolean availableWithoutLoggingIn(Action action)
```

Web-specific function. Check whether an action is available before logging in. The result depends on the inputs sequences under test.

Parameters:

action - The action to be checked.

Returns:

true if the action is available without logging in.

notVisibleWithoutLoggingIn

```
public static boolean notVisibleWithoutLoggingIn(java.lang.String url)
```

Web-specific function. Check whether a URL is not available before logging in. The result depends on the inputs sequences under test.

Parameters:

url - The URL to be checked.

Returns:

true if the URL is not available before logging in.

extractUserGroupParameters

```
public static int[] extractUserGroupParameters(Action action1)
```

Web-specific function. Returns arrays of indexes of parameters relevant to user group in the URL of an

action.

Parameters:

action1 - The action to be processed

Returns:

The array of indexes (in integer if exists)

urlOfActionChangesOverMultipleExecutions

```
public static boolean urlOfActionChangesOverMultipleExecutions(Input input,
                                                                int x)
```

Web-specific function. Check if the URL of the x-th action in the input sequence changes over multiple executions.

Parameters:

input - The input sequence to check.

x - The index of the action to check.

Returns:

true if the the URL of the x-th action changes over multiple executions

urlOfActionChangesOverMultipleExecutions

```
public static boolean urlOfActionChangesOverMultipleExecutions(Action a)
```

Web-specific function. Check if the URL of an action changes over multiple executions.

Parameters:

a - The action to be checked.

Returns:

true if the the URL of the action changes over multiple executions.

LogoutInAnotherTab

```
public static Action LogoutInAnotherTab()
```

Web-specific function. Returns a LogoutInAnotherTab action. The LogoutInAnotherTab action will open a new tab in the web browser, then execute the logout action.

Returns:

The LogoutInAnotherTab action

Wait

```
public static Action Wait(long millis)
```

Web-specific function. Returns a wait action, which makes the framework sleep during the given time

length "millis"

Parameters:

millis - The time length in millisecond

Returns:

The Wait action

isReadEMailAction

```
public static boolean isReadEMailAction(Action action)
```

Web-specific function. Check whether the "action" is for reading an email

Parameters:

action - The action to be checked

Returns:

true if the action is for reading an email

File

```
public static java.lang.Object File()
```

Data Representation Function. Return a file at the 1st file, with respect to the current data view.

Returns:

cannotReachThroughGUI

```
public static boolean cannotReachThroughGUI(java.lang.Object user,  
                                             Input lastURL)
```

Web-specific function. Checks whether the "user" cannot reach one of URL in a input sequence through his graphic user interface.

Parameters:

user - The user to check

lastURL - The input sequence to check

Returns:

true if the "user" cannot reach one or more URL(s) from the input sequence lastURL

Output

```
public static Output Output(Input input,  
                             int pos)
```

Data Representation Function. Returns the output of the i-th element of an input sequence

Parameters:

input -

pos -

Returns:**Output**

```
public static Output Output(Input input)
```

Data Representation Function. Returns the output produced by the last action in an input sequence

Parameters:

input -

Returns:**Collection**

```
public static java.util.Collection Collection(java.lang.Object... objs)
```

Web-specific function. Returns the output produced by the last action in an input sequence

Parameters:

input -

Returns:**RandomFilePath**

```
public static java.lang.Object RandomFilePath(int x)
```

Data Representation Function. Returns a random file path.

Parameters:

x - The x-th file path, with respect to the current data view.

Returns:**RandomAdminFilePath**

```
public static java.lang.Object RandomAdminFilePath(int x)
```

Data Representation Function. Returns a random file path related to the administrator.

Parameters:

x - The x-th admin file path, with respect to the current data view.

Returns:**HttpMethod**

```
public static java.lang.String HttpMethod()
```

Data Representation Function. Returns a random HTTP method (GET, POST, PUT, HEAD,...)

Returns:

RandomHttpMethod

```
public static java.lang.String RandomHttpMethod()
```

Data Representation Function. Returns the 1st random HTTP method (GET, POST, PUT, HEAD,...), with respect to the current data view.

Returns:

RandomFilePath

```
public static java.lang.Object RandomFilePath()
```

Data Representation Function. Returns the 1-th random file path, with respect to the current data view.

Returns:

RandomAdminFilePath

```
public static java.lang.Object RandomAdminFilePath()
```

Data Representation Function. Returns the 1-th random admin file path, with respect to the current data view.

Returns:

RandomHttpMethod

```
public static java.lang.String RandomHttpMethod(int x)
```

Data Representation Function. Returns the x-th random HTTP method (GET, POST, PUT, HEAD,...), with respect to the current data view.

Parameters:

x - The x-th method, with respect to the current data view.

Returns:

changeProtocol

```
public static boolean changeProtocol(java.lang.String protocol,  
                                     Action a)
```

Web-specific function. Changes the protocol in the URL of the action a.

Parameters:

protocol - The protocol to use.

a - The action to be processed.

Returns:

true if the change is successful.

isUserIdParameter

```
public static boolean isUserIdParameter(Action a,  
                                       int parpos,  
                                       java.lang.Object user)
```

Web-specific function. Checks whether the parameter at the parpos position of the action a is for user.

Parameters:

a - The action to check.

parpos - The position of the parameter in the array of parameters of the action a

user - The user containing username, password parameters, which is used to check.

Returns:

true if the parameter is for user.

LoginAction

```
public static Action LoginAction(java.lang.Object user)
```

Web-specific function. Returns a Login action with the given credential "user"

Parameters:

user - The credential used for logging in

Returns:

The Login action with the credential "user"

isSignup

```
public static boolean isSignup(Action action)
```

Web-specific function. Checks whether the "action" is a sign-up action. The result depends on the sign-up URL specified in the configuration.

Parameters:

action - The action to check.

Returns:

true if the action is the sign-up action.

updateStringFormInput

```
public static boolean updateStringFormInput(JsonObject formInput,  
                                           java.lang.Object value)
```

Web-specific function. Updates the value in a form input.

Parameters:

formInput - The form input to update value.

value - The value used to update.

Returns:

true if the updating is successful.

resolveUrl

```
public static java.lang.String resolveUrl(java.lang.String url,  
                                          java.lang.String addedPath)
```

Web-specific function. Combine a path with a given URL.

Parameters:

url - The original URL to combine.

addedPath - The path to add.

Returns:

The URL after combining.

notTried

```
public static boolean notTried(java.lang.Object user,  
                               java.lang.String url)
```

Web-specific function. Checks whether a given user tried to access a given URL until the current execution period.

Parameters:

user - The user to check.

url - The URL to be checked.

Returns:

true if the "user" did not try to access "url".

isAdmin

```
public static boolean isAdmin(java.lang.Object user)
```

Web-specific function. Checks whether a given user is an administrator. The result is based on the information in the configuration file.

Parameters:

user - The user to check.

Returns:

true if the "user" is an administrator.

isFormInputForFilePath

```
public static boolean isFormInputForFilePath(java.lang.Object formInput)
```

Web-specific function. Checks if a form input is for a file path. A form input value is considered as a file path, if it contains a file extension.

Parameters:

formInput - the form input to be checked.

Returns:

true if the form input is for file path.

isSupervisorOf

```
public static boolean isSupervisorOf(java.lang.Object user1,  
                                     java.lang.Object user2)
```

Web-specific function. Checks if user1 is a supervisor of user2. E.g., an administrator is a supervisor of a normal user.

Parameters:

user1, - the user who is expected as a supervisor

user2, - the user who is supervised by user1

Returns:

true if user1 is a supervisor of user2

isError

```
public static boolean isError(java.lang.Object output)
```

Web-specific function. Checks whether the output contains an error message (e.g., HTTP 404)

Parameters:

output - is the output of a sequence of actions

Returns:

true if the output contains an error message

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