

RADS

Hash Variable

<https://github.com/radservice/rad-community/fork>

Prerequisites

- General understanding on how to design an App using the RADS platform (i.e. Process, Form, Datalist, Userview).

Content

1. Introduction to Hash Variable
2. List of Hash Variable and Its Usages
3. Nested Hash Variable



Chapter I

Introduction to Hash Variable

What Is Hash Variable?

- Hash Variable **is not** Workflow Variable

The screenshot shows the RAD Service Process Builder interface for a process named 'purchaseRequisition v1'. The interface is divided into several sections:

- Left Panel:** Contains a 'Participant' table, and buttons for 'Activity', 'Tool', 'Route' (represented by a diamond shape), and 'Subflow' (represented by a rounded rectangle).
- Center Canvas:** Displays 'Process 1' with a grid. A vertical bar labeled 'Participant 1' is on the left, and a green circle is in the center.
- Right Panel:** Contains the 'Process Properties' section, which is further divided into 'Process Properties', 'Subflow Properties', and 'SLA Options'.
 - Process Properties:** Includes fields for 'ID *' (value: 'purchaseRequestProcess') and 'Name *' (value: 'Purchase Request Process').
 - Workflow Variables:** A table with a header 'VARIABLE ID' and one row containing the value 'status'. This section is highlighted with a red rectangle.

What Is Hash Variable?

- Hash Variable is a special **hash-escaped keyword** that can be used in (but NOT limited to)...
 - Form Builder
 - Datalist Builder
 - Userview Builder
 - Supported plugin configuration properties
 - Activity name in Process Builder
 - External Form URL when mapping an activity to an external form...to return the value of useful runtime variables from the (App) environment.

Hash Variable

- Each Hash Variable element has its own **prefix**. E.g.:
 - #**date**.D-MMM-yyyy#
 - #**form**.purchase_requests.name#
 - #**variable**.status#
 - #**i18n**.smtpServer#
- A new Hash Variable (with its own unique prefix) can be built through RADS plugin architecture.

Hash Variable Assistant/ Autocomplete

- Use **CTRL+SHIFT+3 (CTRL + #)** to open up the autocomplete to help you with hash variable.

The screenshot shows the 'Advanced Options' dialog box for editing a text field. The 'Data' tab is selected. The 'Value' field is empty. The 'Max Length' field is empty. The 'Validator' field is empty. The 'Encryption' checkbox is unchecked. The 'UI' tab is also visible. An autocomplete dropdown menu is open, showing a list of hash variables starting with 'currentUser'.

Advanced Options

Edit Text Field > Advanced Options

Data

Value

Max Length

Validator

Encryption ☐

UI

currentUser
currentUser.active
currentUser.department.description
currentUser.department.hod.active
currentUser.department.hod.email
currentUser.department.hod.firstName
currentUser.department.hod.lastName
currentUser.department.hod.timeZone
currentUser.department.hod.username
currentUser.department.id
currentUser.department.name

Chapter Review

- Brief understanding on the purpose that Hash Variable serves.



Chapter 2

List of Hash Variables & Its Usages

Sample Use Case


- How to automatically display requestor's full name in a form?

PURCHASE REQUEST PROCESS - APPROVE / REJECT REQUEST

Request Approval for Cat Grant

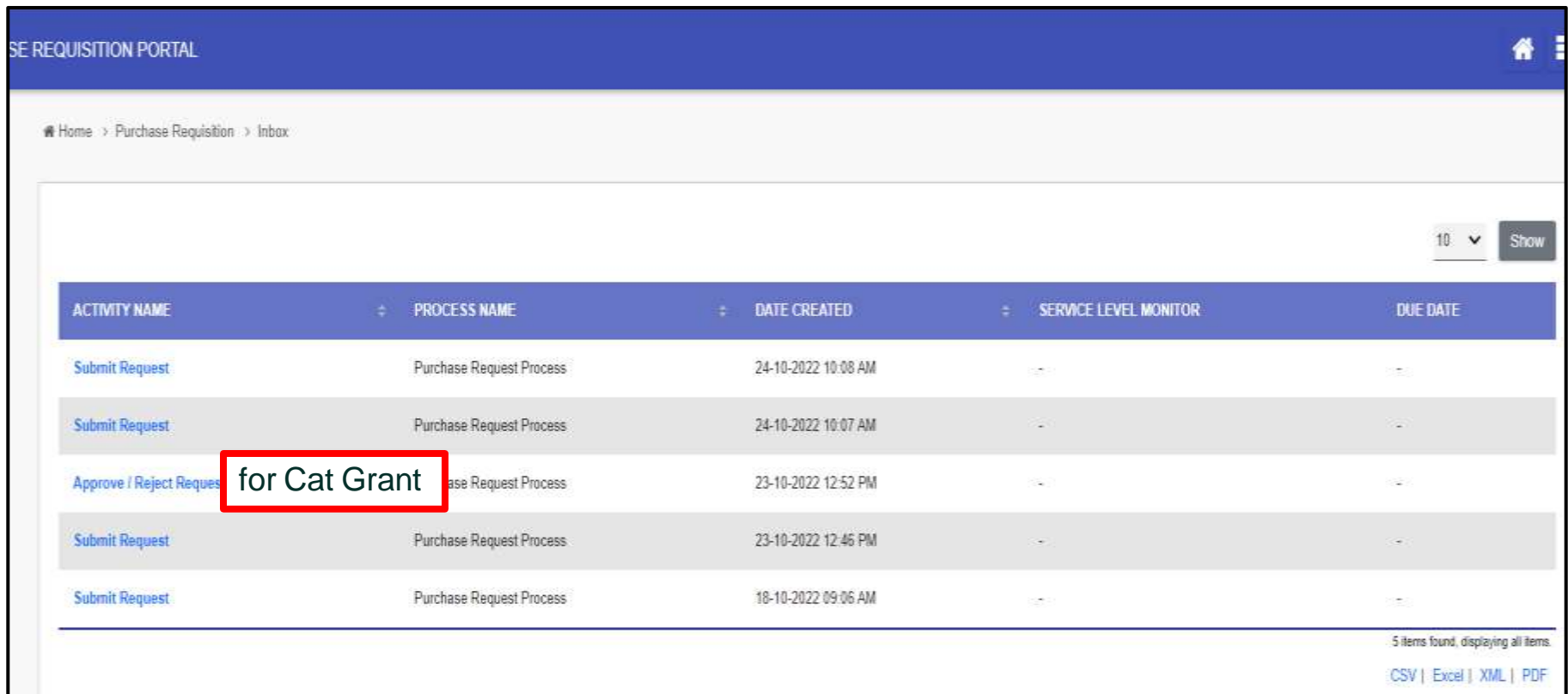
Request Details

Name	Cat Grant
Request Date	* 04/20/2018
Category	Stationary



Sample Use Case

- How to display requestor's full name in task / activity name instead of just "Approve / Reject Request"?



SE REQUISITION PORTAL

Home > Purchase Requisition > Inbox

10 Show

ACTIVITY NAME	PROCESS NAME	DATE CREATED	SERVICE LEVEL MONITOR	DUE DATE
Submit Request	Purchase Request Process	24-10-2022 10:08 AM		
Submit Request	Purchase Request Process	24-10-2022 10:07 AM		
Approve / Reject Request for Cat Grant	Purchase Request Process	23-10-2022 12:52 PM		
Submit Request	Purchase Request Process	23-10-2022 12:46 PM		
Submit Request	Purchase Request Process	18-10-2022 09:06 AM		

5 items found, displaying all items.

[CSV](#) | [Excel](#) | [XML](#) | [PDF](#)

List of Hash Variables

- Workflow Assignment Hash Variable
- Workflow Process Hash Variable
- Current User Hash Variable
- Date Hash Variable
- Environment Variable Hash Variable
- Form Data Hash Variable
- Form Binder Hash Variable
- App Definition Hash Variable
- App Message Hash Variable (Internationalization)
- Performer Hash Variable
- Request Parameter Hash Variable
- User Hash Variable
- Userview Key Hash Variable
- Workflow Variable Hash Variable
- Request Hash Variable
- Platform Hash Variable
- Users Hash Variable
- Bean Shell Hash Variable
- Datalist Hash Variable (New in DX)
- Expression Hash Variable (New in DX)

Reference: <https://docs.rads.purwana.net/Hash+Variable>

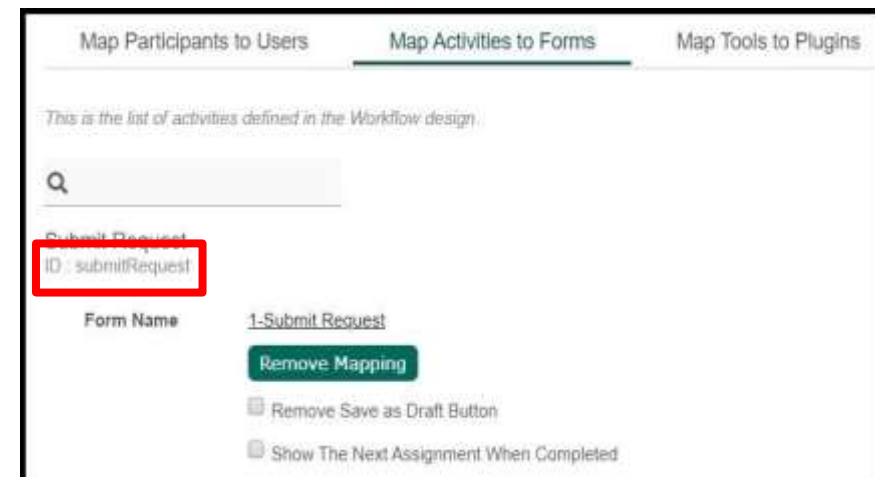
Take 10~15 Minutes

Skim through all the hash variables in our RADS Community - Knowledge Base →

<https://docs.rads.purwana.net/Hash+Variable>

Performer Hash Variable

- Performer
 - To get **user information of the performer** of an activity.
 - #performer.*activityDefId*.id#,
 - #performer.*activityDefId*.username#,
 - #performer.*activityDefId*.firstName#,
 - #performer.*activityDefId*.lastName#,
 - #performer.*activityDefId*.email#,
 - #performer.*activityDefId*.active#,
 - #performer.*activityDefId*.timeZone#
- Replace “*activityDefId*” with the appropriate activity definition id.
- Reference: <https://docs.rads.purwana.net/Hash+Variable#HashVariable-PerformerHashVariable>



Using #performer Hash Variable

Map Participants to Users Map Activities to Forms

This is the list of activities defined in the Workflow design.

Q

Submit Request
ID : submitRequest

Form Name 1-Submit Request

Remove Mapping

☐ Remove Save as Draft Button

☐ Show The Next Assignment When Completed

Approve / Reject Request
ID : approveRejectRequest

Form Name 2-Approve / Reject Request

Remove Mapping

☐ Remove Save as Draft Button

☐ Show The Next Assignment When Completed

#performer.submitRequest.username#

Using #performer Hash Variable In Form Builder

FORM BUILDER purchaseRequisition v1: 1 - Submit Request (Published)

DESIGN FORM | PROPERTIES | PREVIEW | SAVE

Basic

- Hidden Field
- Text Field
- Password Field
- Text Area
- Select Box
- Check Box
- Radio
- Date Picker
- File Upload
- Subform

Custom

- Grid

Request Details `#performer.runProcess.firstName# #performer.runProcess.lastName#`

Name

Request Date *

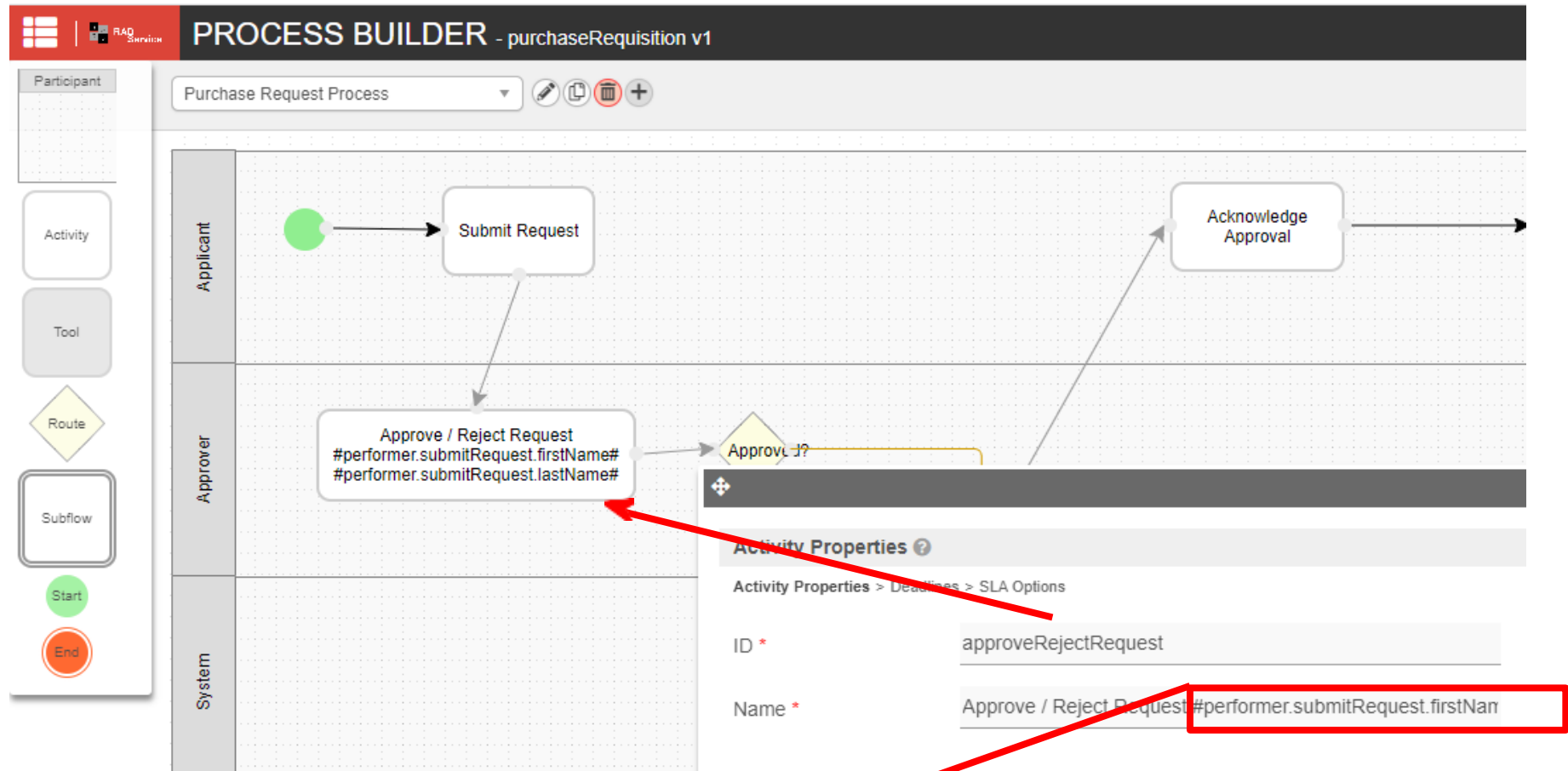
Category

Items

Name	Quantity
Click to edit	Click to edit
Add Row	
Remarks	<div></div>

Hash Variable can be used in Section Name & Form Element

Using #performer Hash Variable In Process Builder



`#performer.submitRequest.firstName#`
`#performer.submitRequest.lastName#`

Using #performer Hash Variable In Plugin Configuration

PLUGIN CONFIGURATION - NOTIFY REJECTED REQUEST (NOTIFYREJECTEDREQUEST)

Configure Email Tool ?

Configure Email Tool > SMTP Settings > Attachments

To (Specific email address)

#performer.submitRequest.email#

To (Participant ID)

CC

BCC

Subject

Rejected Purchase Request Notification

Message

Dear #performer.submitRequest.firstName# #performer.submitRequest.lastName#

your purchase request has been rejected

Internationalization Hash Variable

- Internationalization support on application
 - Support language localization on application level.
 - #i18n.*keyName*#
- Replace “*keyName*” with the appropriate message key.
- Reference:

[https://docs.rads.purwana.net/Hash+Variable#HashVariable-AppMessageHashVariable\(Internationalization\)](https://docs.rads.purwana.net/Hash+Variable#HashVariable-AppMessageHashVariable(Internationalization))

Using #i18n In Userview Builder

- The #i18n Hash Variable retrieves values from the **Message** set of the App.
- E.g. Message with key **app.hello** in 2 locales.

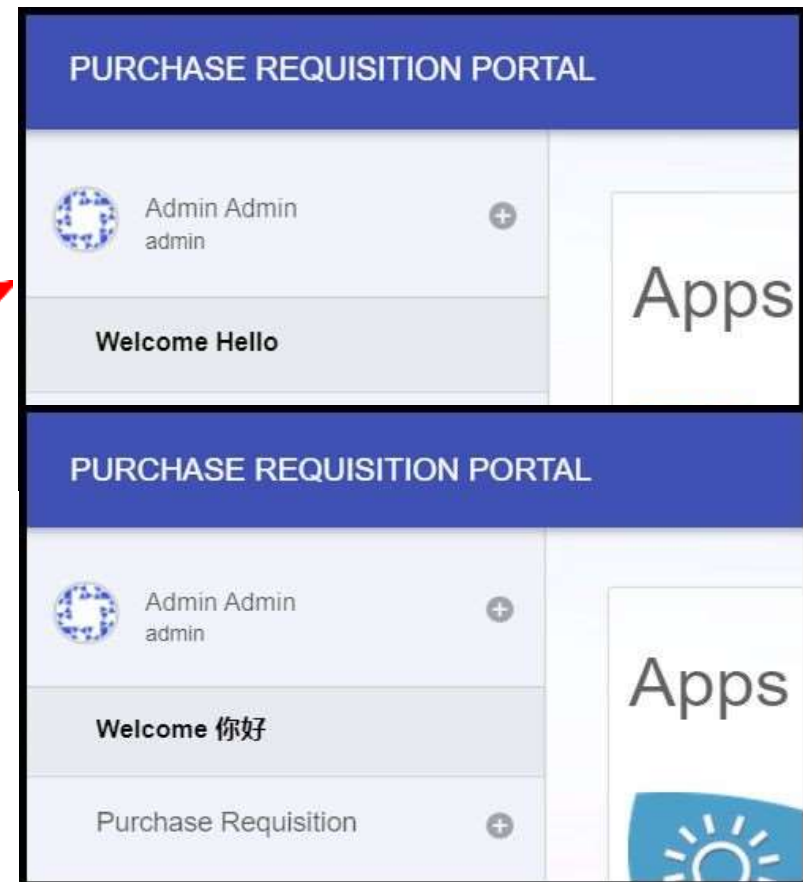
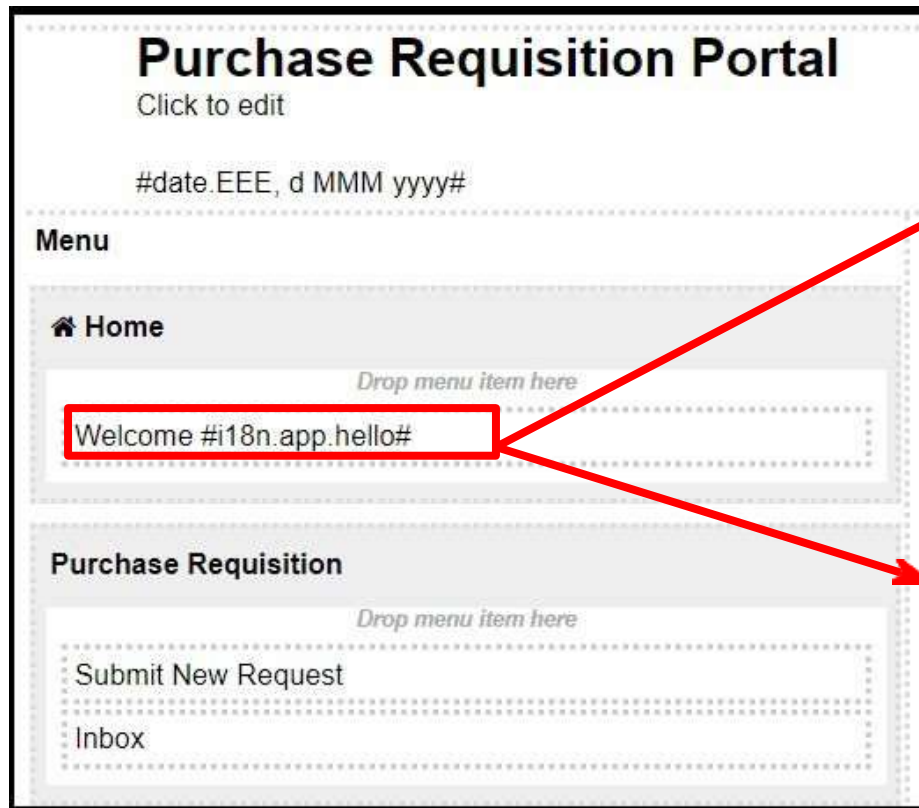
The screenshot shows the Userview Builder interface. On the left is a sidebar with navigation options: 'Design App: purchaseRequisition' (with 'Version 1' and 'Published' buttons), 'Forms & UI', 'Processes', 'Properties & Export' (highlighted), and 'Logs'. The main area has tabs for 'Notes', 'Environment Variable', 'Message' (selected), 'Resources', and 'Plugin Default Properties'. Above the 'Message' tab are buttons for 'Add Environment Variable', 'Add Message', 'Add Resource', and 'Set Plugin Default Properties'. Below the tabs is a 'Filter By Locale' dropdown and a 'Search' input field. A table displays the message data:

<input type="checkbox"/>	KEY	LOCALE	MESSAGE	
<input type="checkbox"/>	app.welcome	en_US	Welcome	
<input type="checkbox"/>	app.welcome	in_ID	Selamat Datang	

The two data rows in the table are highlighted with a red rectangle.

Using #i18n In Userview Builder

- With the key defined, the hash variable can be used in the Userview Builder to dynamically show corresponding value depending on the user's locale.



Request Parameter Hash Variable

- Request Parameter
 - For accessing request parameters.
 - #requestParam.*parameterName*#
- Replace “*parameterName*” with the appropriate request parameter name.

- Reference:

<https://docs.rads.purwana.net/Hash+Variable#HashVariable-RequestParameterHashVariable>

Using #requestParam In Form Builder

- Useful to pre-populate form field.

Remarks

#requestParam.defaultRemarks#

process_submitRequest?defaultRemarks=default

PURCHASE REQUISITION PORTAL

Home > Purchase Requisition > Submit New Request

PURCHASE REQUEST PROCESS - SUBMIT

Request Details Admin Admin

Name

Request Date * MM/DD/YYYY

Category Stationery

Items

Name	Quantity	Price
Click to edit	Click to edit	Click to edit
Add Row		
Remarks	default	

Environment Variable Hash Variable

- **Environment Variable**
 - Application level environment variable is typically used to store common or reusable values, such as company contact number.
 - #envVariable.*keyName*#
- Replace “*keyName*” with the appropriate Environment Variable name.
- Reference:

<https://docs.rads.purwana.net/Hash+Variable#HashVariable-EnvironmentVariableHashVariable>

Using #envVariable In Email Tool

- Use Environment Variable on Email Tool to ease maintenance.

Add Environment Variable Add Message Add Resource Set Plugin Default Properties Export

Notes **Environment Variable** Message Resources Plugin Default Properties

Search

<input type="checkbox"/>	ID	VALUE	REMARKS
<input type="checkbox"/>	smtpPort	465	
<input type="checkbox"/>	smtpServer	smtp.gmail.com	

SMTP Settings

Configure Email Tool > **SMTP Settings** > Attachments

From ?

SMTP Host ?

Current User Hash Variable

- **Current User**
 - Retrieve currently logged in user's information.
 - #currentUser.username#
 - #currentUser.firstName#
 - #currentUser.lastName#
 - #currentUser.fullName#
 - #currentUser.email#
 - and many more...
- Reference:

<https://docs.rads.purwana.net/Hash+Variable#HashVariable-CurrentUserHashVariable>

Using #currentUser In Form Builder

- Prepopulate applicant's name in Form

The diagram illustrates the process of prepopulating a form field. It consists of two panels, both titled "Request Details".

The top panel shows a form with a "Name" field. Above the field is the text "Drag This Column". The field contains the text "#currentUser.firstName# #currentUser.lastName#". A red box highlights this text, and a red arrow points from it to the bottom panel.

The bottom panel shows the same form, but the "Name" field now contains the text "Cat Grant". A red box highlights this text, indicating the result of the prepopulation.

User Hash Variable

- User
 - To get **user information** based on **username**.
 - #user.*username*.username#
 - #user.*username*.firstName#
 - #user.*username*.lastName#
 - #user.*username*.fullName#
 - #user.*username*.email#
 - and many more...
- Replace “*username*” with the appropriate user’s username.
- Reference: <https://docs.rads.purwana.net/Hash+Variable#HashVariable-UserHashVariable>

Using #user Hash Variables

- To get user information based on the username.

Example:

#user.admin.email#

#user.cat.firstName#

#user.{form.purchase_requests.username}.firstName#

#user.{form.purchase_requests.username}.lastName#

This is a **Nested hash variable** where one can include a hash variable inside another hash variable. Subsequent level of hash variable is encapsulated with a pair of **curly bracket**.

Assignment Hash Variable

- Assignment
 - To get **workflow activity information** of the current assignment.
 - #assignment.processId#
 - #assignment.processDefId#
 - #assignment.processDefIdWithoutVersion#
 - #assignment.processName#
 - #assignment.processVersion#
 - #assignment.processRequesterId#
 - #assignment.appld#
 - #assignment.activityId#
 - #assignment.activityName#
 - #assignment.activityDefId#
 - #assignment.assigneId#
- Reference:

<https://docs.rads.purwana.net/Hash+Variable#HashVariable-WorkflowAssignmentHashVariable>

Using #assignment In Form Builder

- Retrieve current assignment information.

Advanced Options

Edit Text Area > Advanced Options

Data

Value

#assignment.processId#
#assignment.processDefId#
#assignment.processDefIdWithoutVersion#
#assignment.processName#
#assignment.processVersion#
#assignment.processRequesterId#
#assignment.appld#
#assignment.activityId#
#assignment.activityName#
#assignment.activityDefId#
#assignment.assigneeId#

Admin Admin

MM/DD/YYYY

Stationery

Quantity	Price
Click to edit	Click to

286_purchaseRequisition_purchaseRequestProcess
purchaseRequisition#4#purchaseRequestProcess
purchaseRequestProcess
Purchase Request Process
4
admin
purchaseRequisition
1136_286_purchaseRequisition_purchaseRequestProcess_submitRequest
Submit Request
submitRequest
admin

Form Data Hash Variable

- **Form**
 - To get **data from form table**.
 - `#form.formDataTableName.fieldId#`
- Replace “*formDataTableName*” and “*fieldId*” with the appropriate table name and field id.
- `#form.purchase_requests.request_date#`

FORM BUILDER purchaseRequisition v1: 1 - Submit Request (F

DESIGN FORM PROPERTIES PREVIEW

Edit Form ?

Edit Form > Advanced

Form ID * submitRequest

Form Name * 1 - Submit Request

Table Name * app_fd_purchase_requests

Edit Date Picker ?

Edit Date Picker > Advanced Options > Validator (Default Validator)

ID * request_date

Label * Request Date

- Reference:

<https://docs.rads.purwana.net/Hash+Variable#HashVariable-FormDataHashVariable>

Using #form In Email Tool / Plugin Configuration

Format: #form.*formDataTableName*.*fieldId*#

- Examples:
 - #form.purchase_requests.name#
 - #form.purchase_requests.request_date#
 - #form.purchase_requests.approval[0001]#
 - To retrieve the field value by specifying a specific record primary key value, 0001.
 - #form.purchase_requests.approval[{variable.recordId}]#
//using **nested Hash Variable** with curly bracket.
 - To achieve the same result like the previous point but by making reference to another Hash Variable for its record primary key value.

Using #form In Email Tool / Plugin Configuration

CC	
BCC	
Subject	Rejected Purchase Request Notification
Message	<p>Dear #performer.submitRequest.username#</p> <p>your purchase request has been rejected: -</p> <p>Items requested : #form.purchase_requests.items#</p>

Workflow Variable Hash Variable

- **Workflow Variable**
 - To get the **value of a workflow variable**.
 - `#variable.variableName#`
- Replace “*variableName*” with the appropriate workflow variable name.

- Reference:

<https://docs.rads.purwana.net/Hash+Variable#HashVariable-WorkflowVariableHashVariable>

Using #variable Hash Variable

- To get the value of a workflow variable.

PROCESS BUILDER - purchaseRequisition v1

Participant 1

Process 1

Process Properties ?

Process Properties > Subflow Properties > SLA Options

ID * purchaseRequestProcess

Name * Purchase Request Process

Workflow Variables

VARIABLE ID
status

Show Additional Info

Map Participants to Users Map Activities to Forms Map Tools to Plugins Map Routes to Plugins **Variable List**

This is the list of variables defined in the Workflow design, for information purposes only.

Q

status

Example: #variable.status#

Date Hash Variable

- **Date**
 - To **get date time** according to a specified format.
 - `#date.dateFormat#`
 - `#date.[DAY/MONTH/YEAR][+/-]IntegerValue.dateFormat#`
 - Examples:
 - **#date.h:mm a#** will produce
12:08 PM
 - **#date.EEE, d MMM yyyy h:mm:ss a#** will produce
Wed, 4 Jul 2009 12:08:56 PM
- Replace “*dateFormat*” with the appropriate keyword documented in **SimpleDateFormat** class
<https://docs.oracle.com/javase/8/docs/api/java/text/SimpleDateFormat.html>
- Reference: <https://docs.rads.purwana.net/Hash+Variable#HashVariable-DateHashVariable>

Using #date Hash Variables

- Source: <https://docs.oracle.com/javase/8/docs/api/java/text/SimpleDateFormat.html>

Letter	Date or Time Component	Presentation	Examples
G	Era designator	Text	AD
y	Year	Year	1996; 96
Y	Week year	Year	2009; 09
M	Month in year (context sensitive)	Month	July; Jul; 07
L	Month in year (standalone form)	Month	July; Jul; 07
w	Week in year	Number	27
W	Week in month	Number	2
D	Day in year	Number	189
d	Day in month	Number	10
F	Day of week in month	Number	2
E	Day name in week	Text	Tuesday; Tue
u	Day number of week (1 = Monday, ..., 7 = Sunday)	Number	1
a	Am/pm marker	Text	PM
H	Hour in day (0-23)	Number	0
k	Hour in day (1-24)	Number	24
K	Hour in am/pm (0-11)	Number	0
h	Hour in am/pm (1-12)	Number	12
m	Minute in hour	Number	30
s	Second in minute	Number	55
S	Millisecond	Number	978
z	Time zone	General time zone	Pacific Standard Time; PST; GMT-08:00
Z	Time zone	RFC 822 time zone	-0800
X	Time zone	ISO 8601 time zone	-08; -0800; -08:00

Using #date Hash Variables

- Example: #date.EEE, d MMM yyyy h:mm:ss a#

Java SimpleDateFormat

- Sample Output: **Mon, 28 Dec 2019 11:27:26 AM**

Using #date Hash Variables

- Example: `#date.DAY+7.EEE, d MMM yyyy h:mm:ss a#`



- Sample Output: **Mon, 4 Jan 2020 11:27:26 AM**

Using #date Hash Variables

- Example: #date.MONTH-2.EEE, d MMM yyyy h:mm:ss a#



- Sample Output: **Wed, 28 Oct 2019 11:27:26 AM**

Using #date Hash Variables

- Example: `#date.YEAR+1.EEE, d MMM yyyy h:mm:ss a#`



- Sample Output: **Tue, 28 Dec 2020 11:27:26 AM**

Chapter Review

- Appreciate the flexibility and convenience brought by the Hash Variable.
- Able to apply the Hash Variable feature into app development.



Chapter 3

Nested Hash Variable

Nested Hash Variable

- **Hash Variable** can be used inside another **Hash Variable** to form a **Nested Hash Variable**.
- The syntax for the inner and subsequent Hash Variables is wrapped by a pair of curly bracket '{' and '}' instead of the usual pair of #.
- Example: **#prefix.{prefix.variableKey}#**
- There is **no** limit to the depth of the nested variable.

Example of Nested Hash Variable

- `#date.{envVariable.dateFormat}#`
- `#user.{variable.username}.fullName#`
- `#form.tableChild.field[{form.tableParent.childId}]#`

Chapter Review

- Appreciate the flexibility and convenience brought by the Hash Variable.
- Able to apply the Hash Variable feature into application development.

Exercise 1

In “Submit Request” form, pre-populate the applicant’s name using hash variable.

PURCHASE REQUEST PROCESS - SUBMIT REQUEST

Request Details

Name	Admin Admin
Request Date	* MM/DD/YYYY
Category	Stationery

Items

Name	Quantity
Click to edit	Click to edit

[Add Row](#)

Remarks

Exercise 2

In “**Notify Rejected Request**” Email Tool, compose the message as the following using hash variable.

Go through the process flow to send out the test email.

Dear **[applicant name]**,

Your request has been **[status]** due to the following reason:-

[rejected reason]

Thank you.

Exercise 3

In Inbox, instead of just showing “Approve / Reject Request”, include the applicant’s name to the example as follow:-

ACTIVITY NAME	PROCESS NAME	DATE CREATED
Approve / Reject Request Cat Grant	Purchase Request Process	19-12-2019 07:09 AM
Submit Request	Purchase Request Process	19-12-2019 07:06 AM
Submit Request	Purchase Request Process	19-12-2019 07:05 AM
Submit Request	Purchase Request Process	19-12-2019 06:24 AM

Exercise 4

Create a new request list that will only show requests that are submitted by the *current logged in user*.

- Create a new Datalist
 - Add filter criteria in “Extra Filter Condition”.
 - E.g. (**c_name = 'Cat Grant'**)
 - Replace 'Cat Grant' with the appropriate Hash Variable
- Add the created list into the existing Userview

Reference: <https://docs.rads.purwana.net/Form+Data+Binder>

Exercise 5 - Optional

Make use of Environment Variable to store commonly used settings or attributes

- e.g. Branding in (more than one) form/page.

Then, display this environment variable value where applicable in your app.

Reference: <https://docs.rads.purwana.net/Environment+Variable>

Exercise 5 - Optional

Branding in (more than one) form/page.

PURCHASE REQUISITION PORTAL

Home > Purchase Requisition > Submit New Request

PURCHASE REQUEST PROCESS - SUBMIT REQUEST

Company letterhead / branding here

Request Details

Name: Admin Admin

Request Date: MM/DD/YYYY

Category: Stationery

Items

Name	Quantity	Price
Click to edit	Click to edit	Click to edit

[Add Row](#)

Remarks:

[Save As Draft](#) [Complete](#)

Exercise 5 - Optional

Branding in (more than one) form/page.

The screenshot displays a web application titled "PURCHASE REQUISITION PORTAL". The main heading is "PURCHASE REQUEST PROCESS - SUBMIT REQUEST". A text input field at the top contains "Company ABC Ltd", which is circled in red. Below this is a "Request Details" section with fields for Name (Admin Admin), Request Date (MM/DD/YYYY), and Category (Stationery). A table lists items with columns for Name, Quantity, and Price, each with a "Click to edit" link. An "Add Row" button is at the bottom left. A sidebar menu on the right includes "Design App: purchaseRequisition" (with Version 1 and Published buttons), "Forms & UI", "Processes", "Properties & Export", and "Logs". An "EDIT ENVIRONMENT VARIABLE" dialog is open on the right, showing "ENVIRONMENT SETTING DETAILS" with ID, Remarks, and Value fields. The "companyName" variable is highlighted in red in the Remarks field, and its value "Company Abc Ltd" is highlighted in red in the Value field.

In the form design, drag in a **Custom HTML form element**, use hash variable to obtain the environment variable value.

Exercise 6 - Optional

Retrieve the total count of records from a specific datalist.

Hint: This is a new feature in RADS DX. Do refer to DOCS!

Discussion

- When will the hash variables be parsed?
- Can end user write hash variable when submitting form?
- Can we develop a new hash variable plugin?
- Can we have redundant hash variable prefix?
(e.g.: another hash variable plugin with the same prefix as currently available ones)

Module Review

1. Introduction to Hash Variable
2. List of Hash Variable and Its Usages
3. Nested Hash Variable

Stay Connected With RADS

- rads.purwana.net
- <https://github.com/radservice/rad-community>