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Preface

About This Document

This document will help you understand how to schedule jobs using the ORMB platform. It will help you to understand the important topics with respect to scheduler, describes screens related to the features and explains how to perform various tasks in the application.

Intended Audience

This document is intended for the following audience:

- End-Users
- Administrators
- Consulting Team
- Implementation Team

Organization of the Document

The information in this document is organized into the following sections:

Section No.	Section Name	Description
Section 1	ORMB Scheduler	Explains the ORMB Scheduler feature.
Section 2	Scheduler Modules	Lists and describes the set of activities that need to be completed to use scheduler feature in ORMB.

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1. ORMB Scheduler

The Scheduler is a set of processes and objects that are defined and executed within the ORMB framework.

The lowest object in a scheduler is the Program. A program describes what is to be run by the schedule. The program object includes a definition of the physical object as well as arguments to execute them. An instance of a program, is a Job. The job is a collection of metadata that defines the program to execute as well as where to execute it (for remote executions), its related schedule (which dictates when it is executed) and any related information.

Jobs are subject to scheduling using the time based, event based and/or dependency of other jobs. The Schedule object defines when and how many times the job is executed. The schedule object uses a rich calendaring syntax to define repeating schedules. Jobs also contain data used for prioritizing as well as resource profiles including support for Windows and Resource Manager.

Sequences of jobs expressing the dependencies are represented by Chains. Chains define steps which link a job or file watcher and also contains Rules to decide the sequence and outcomes based upon the state of another job in the chain. For example, Job B needs to run only if Job A has completed successfully. Chains can support multiple branches and also chains can include other chains for greater reuse.

2. Scheduler Modules

This section lists and describes the following activities that you need to complete in the specified order to work with scheduler feature in ORMB:

1. Create Program
2. Create Chain
3. Create Schedule
4. Create and Run Job
5. Monitoring a job

2.1 Program

A program should be defined for each Batch Job that needs to be scheduled by the DBMS scheduler.

2.1.1 Adding and Viewing Program

To add a new program,

1. From the **Menu** tab, select **Scheduler** and then click **Program Plan**. The **Scheduler Program** screen appears.

The screenshot shows the 'Scheduler Program' interface. At the top right, there are 'Bookmark' and 'Refresh' buttons. Below the title bar, there is a 'Main' tab. A search bar is present with the text 'Scheduler Program Search' and an 'Add' button. Below the search bar, there are two input fields: 'Program Name' and 'Comments'. A 'Search' button is located at the bottom right of the search area.

Figure 1: Scheduler Program

2. Click the **Add** link present in upper right corner of the Search zone. The **Scheduler Program Maintenance** screen appears. It has following fields:

Field	Description	Mandatory (Yes or No)
Program Name	Used to define unique program.	Yes Note: Name must start with CM. There should not be any symbols, special characters and spaces in name. Valid example: CMBILL
Long Description	Used to describe the program.	No

Field	Description	Mandatory (Yes or No)
Batch Control	Used to define the code that executes the logic associated with the background process. Note: Use the Search () icon to search batch name.	Yes
User	Used to define the user name. Note: Use the Search () icon to search user name.	Yes
Thread Count	Used to define total number of parallel threads that have been scheduled.	No
Batch Business Date	Used to identify which batches should be scheduled. Note: If this parameter is left blank, the system date is used.	No
Maximum Timeout Minutes	Used to override each background process.	No
Batch Rerun Number	Used for background processes that download information that belongs to given run number. Note: It should only be supplied if you need to download an historical run (rather than the latest run).	No
Thread Pool Name	Used to specify the thread pool on which you want to execute the batch.	No
Run Status	Used to indicate the status of the batch run. The valid values are: <ul style="list-style-type: none"> • Complete • Error • In Progress • Thread Ready 	No

Field	Description	Mandatory (Yes or No)
Raise Error	Used to define if errors are to be raised. The valid values are: <ul style="list-style-type: none"> • True • False 	No
Thread Notification	The valid values are: <ul style="list-style-type: none"> • True • False 	No

3. In **Parameter Name**, enter parameter name.
4. In **Parameter Value**, enter parameter value.
5. To add multiple parameter names, click () icon.
6. Click **Save**. The Scheduler Program Maintenance screen closes and the new created program is added to the Program list in Filter section.
7. To **view** the program details, click on program name. The program details appear in 'Read Only' mode.

Scheduler Program - Read only		
Program Name	CM_DOCUMENTATION	
Long Description	Documentation	
Batch Control	'BILLING'	
User	'BKADMIN'	
Thread Count	0	
Batch Business Date		
Maximum Timeout Minutes	0	
Batch Rerun Number	0	
Thread Pool Name		
Run Status		
Raise Error	false	
Thread Notification	false	
Parameter Name	Parameter Value	
'Account Number'	'3530 1113 3330 0000'	
Scheduler Option Name	Scheduler Option Value	Scheduler Option Scope

Figure 2: Scheduler Program - Read Only Mode

2.1.2 Searching, Editing and Deleting Program

To **search** an existing Program

1. From the **Menu** tab, select **Scheduler** and then click **Program Plan**. The **Scheduler Program** screen appears.

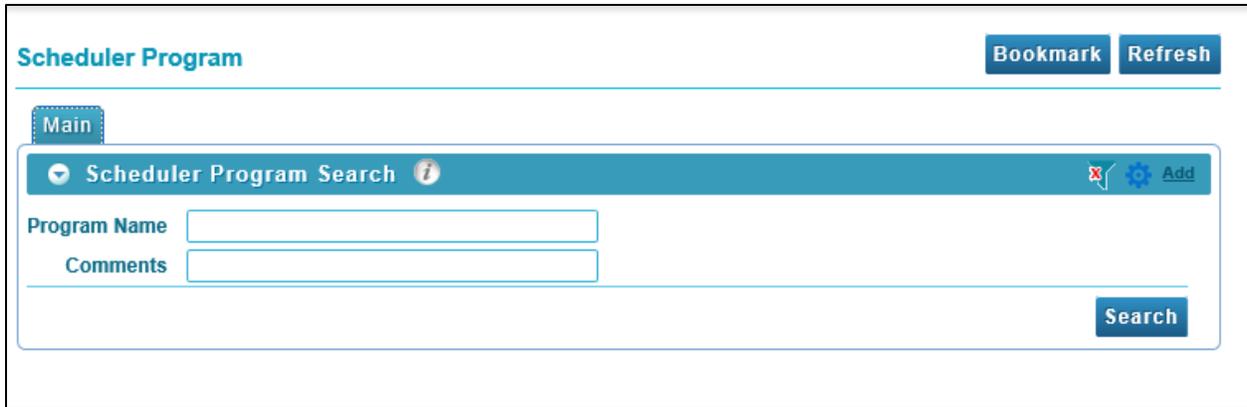


Figure 3: Scheduler Program Search

2. To search Program, enter one of the following text:
 - Program Name
 - Comments

Note: You can also use wildcard character '%' to search for Program Name or Comments.

3. Click **Search**. The Program Name is displayed in Filters.

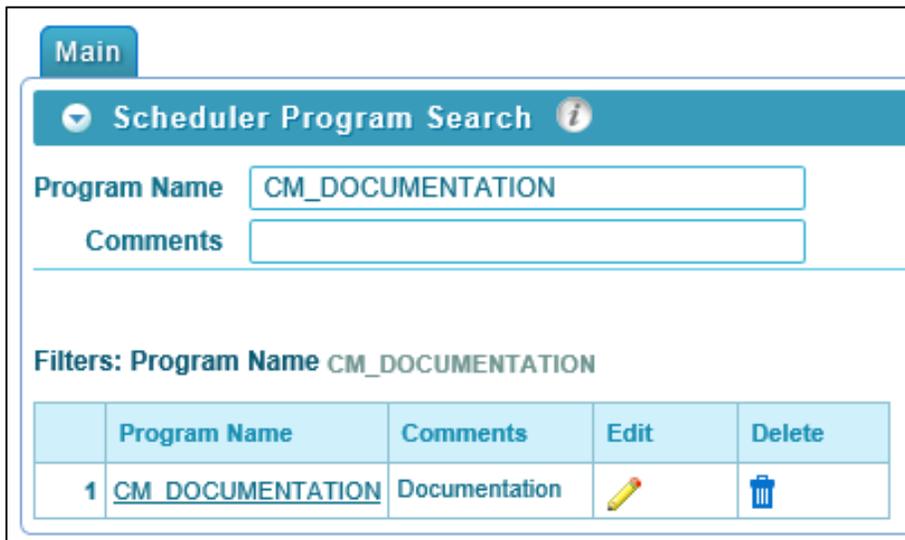


Figure 4: Scheduler Program - Search Results

Note: Click **Search** present on Search screen to view the list of all existing programs.

To **edit** an existing Program

1. Click **Edit** () icon corresponding to the respective program name. The **Scheduler Program Maintenance** screen appears.

Scheduler Program Maintenance

Program Name:

Long Description:

Batch Control:

User:

Thread Count:

Batch Business Date:

Maximum Timeout Minutes:

Batch Rerun Number:

Thread Pool Name:

Run Status:

Raise Error:

Thread Notification:

	Parameter Name	Parameter Value
<input type="button" value="+"/> <input type="button" value="Delete"/>	<input type="text" value="Account Number"/>	<input type="text" value="3530 1113 3330 0000"/>

Figure 5: Scheduler Program - Edit

2. Edit the required fields. Note that you cannot edit the Program name.
3. To add additional parameters, click () icon.
4. Click **Delete** () icon corresponding to Parameter Name to delete the Parameter Name and corresponding Parameter Value.
5. Click **Save**. The changes are saved.

To **delete** an existing Program

1. Click **Delete** () icon corresponding to the respective Program name.
2. A confirmation message appears indicating “Are you sure you want to delete this object?”
3. Click **OK** to delete the respective program.

2.2 Chain

A Chain defines a series of steps with dependency rules between them. A step references a program, with the program performing the actual work for that step. A rule is attached to each step to identify its dependent steps and the condition for when that step should be executed. For example, in a chain

consisting of STEP_A and STEP_B, where STEP_B can only start if STEP_A was successful, the rule for STEP_B to start would specify a condition of "STEP_A SUCCEEDED".

2.2.1 Adding and Viewing Chain

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain** screen appears.

Figure 6: Scheduler Chain

2. Click the **Add** link present in upper right corner of the Search zone. The **Scheduler Chain Maintenance** screen appears.
3. In **Chain Name**, enter chain name. Ensure that the name starts with CM. There should not be any symbols, special characters and spaces in name. Valid example: CMBILL.
4. In **Long Description**, enter description text.
5. In **Step Name**, enter step name.
6. In **Program Name**, enter Program Name. Use **Search** (🔍) to search a program name. **Program Name** search screen appears.

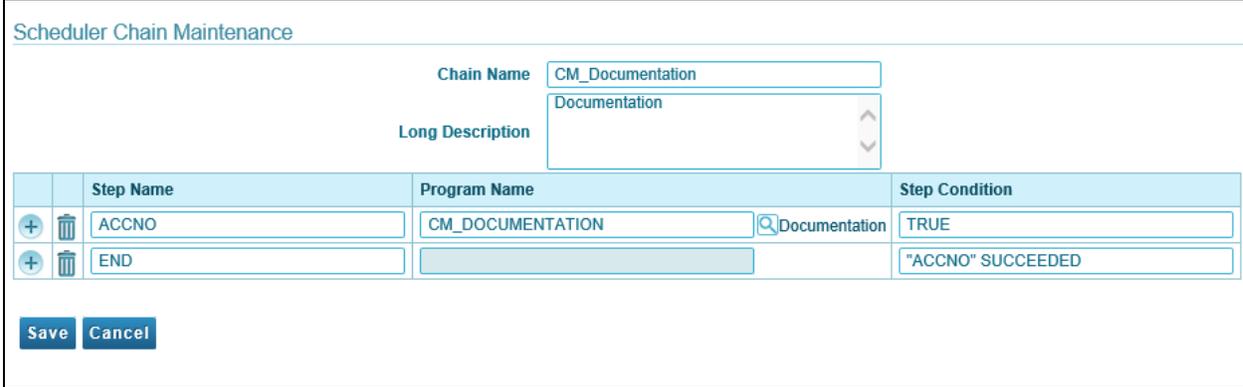
Figure 7: Scheduler Chain – Program Search

7. Type the Program Name or Comments to search a respective program name. Click **Search**.

Note: You can also use wildcard character '%' to search for Program Name or comments.

8. Specify Step Condition.

9. To add multiple steps, click () icon.



	Step Name	Program Name	Step Condition
	ACCNO	CM_DOCUMENTATION	TRUE
	END		"ACCNO" SUCCEEDED

Figure 8: Scheduler Chain Maintenance

Note: 1st step condition should always be set as 'TRUE'.

Chain definition must include an 'End' step.

10. Click **Save**. The **Scheduler Chain Maintenance** screen closes and the new created chain is added to the Chain list in Filter section.

2.2.2 Searching, Editing and Deleting Chain

To **search** an existing Chain

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The Scheduler Chain screen appears.

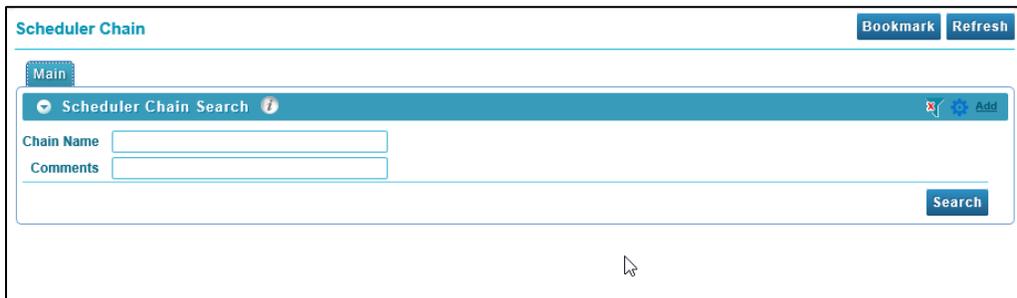


Figure 9: Scheduler Chain

2. To search Chain, enter one of the following text:
- Chain Name
 - Comments

Note: You can also use wildcard character '%' to search for Chain Name or Comments.

- Click **Search**. The Chain Name is displayed in Filters.

Scheduler Chain Bookmark Refresh

Main

Scheduler Chain Search Add

Chain Name

Comments

Search

Filters: Chain Name CM_TEST

	Chain Name	Comments	Edit	Delete
1	CM_TEST	CM_testDesc		
2	CM_TESTDOCUMENTATION	TEST documentation		

Figure 10: Scheduler Chain - Search Results

Note: Click **Search** present on Search screen to view the list of all existing programs.

To **edit** an existing Chain

- Click **Edit** () icon corresponding to the respective Chain Name. The **Scheduler Chain Maintenance** screen appears.

Scheduler Chain Maintenance

Chain Name

Long Description

	Step Name	Program Name	Step Condition
	<input type="text" value="STEP2"/>	<input type="text" value="CM_C1_BLGEN"/> CM_C1_BLGENDESC	<input step1\"="" succeeded"="" type="text" value="\"/>
	<input type="text" value="STEP1"/>	<input type="text" value="CM_C1PNDBL"/> CM_C1PNDBLDECS	<input type="text" value="TRUE"/>
	<input type="text" value="END"/>	<input type="text"/>	<input step2\"="" succeeded"="" type="text" value="\"/>

Save **Cancel**

Figure 11: Scheduler Chain - Edit

- Edit the required fields. Note that you cannot edit the Chain name.
- To add additional steps, click () icon.
- Click **Delete** () icon corresponding to Step Name to delete the Step Name and corresponding Program Name and Step Condition.
- Click **Save**. The changes are saved.

To **delete** an existing Chain

- Click **Delete** () icon corresponding to the respective Chain name.
- A confirmation message appears indicating “Are you sure you want to delete this object?”
- Click **OK** to delete the respective chain.

2.3 Schedule

A schedule is a predefined frequency for jobs that need to be run. It defines when and how many times a job is to be executed.

2.3.1 Adding and Viewing Schedule

1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule** screen appears.

Figure 12: Scheduler Schedule

2. Click the **Add** link present in upper right corner of the Search zone. The Scheduler Schedule Maintenance screen appears.
3. In **Schedule Name**, enter schedule name. Ensure that the name starts with CM. There should not be any symbols, special characters and spaces in name. Valid example: CMBILL.
4. In **Long Description**, enter description text.
5. To set Repeat Interval, click on **Generate**. Select a frequency from the drop-down list.

Figure 13: Scheduler Schedule Maintenance

Frequency field has following drop-down options:

List Options	Description	Parameter Values
Yearly	Used to set yearly schedules. The valid values are: <ul style="list-style-type: none"> Interval On Date At Time 	Interval - enter a number. On Date – select month and date from the list. At Time - specify time. Use Time Picker (🕒) to select a time.
Monthly	Used to set monthly schedules. The valid values are: <ul style="list-style-type: none"> Interval Month Day WeekDay At Time 	Interval - enter a number. Month Day – select day from the list. WeekDay – enter a number. This number relates to the occurrence of the day. Select a day from the list. Example, 3 rd Tuesday of every month. At Time - specify time. Use Time Picker (🕒) to select a time.
Weekly	Used to set weekly schedules. The valid values are: <ul style="list-style-type: none"> Interval WeekDay At Time 	Interval – enter a number. WeekDay – select a week day. At Time - specify time. Use Time Picker (🕒) to select a time.
Daily	Used to set daily schedules. The valid values are: <ul style="list-style-type: none"> Interval WeekDay At Time 	Interval – enter a number. WeekDay – select a week day. At Time - specify time. Use Time Picker (🕒) to select a time.
Hourly	Used to set hourly schedule. The valid values are: <ul style="list-style-type: none"> Interval WeekDay At Time 	Interval – enter a number. WeekDay – select a week day. At Time - specify time. Note: Specify time in min:sec format.
Minutely	Used to set minutely schedule. The valid values are: <ul style="list-style-type: none"> Interval WeekDay 	Interval – enter a number. WeekDay – select a week day.
Secondly	Used to set secondly schedule. The valid values are: <ul style="list-style-type: none"> Interval WeekDay 	Interval - enter a number. Weekday – select a week day

6. Click **OK**. The selected intervals are set.

- Click **Save**. The Scheduler Schedule Maintenance screen closes and the new created schedule is added to the Schedule list in Filter section.

2.3.2 Searching, Editing and Deleting Schedule

To **search** an existing Schedule

- From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule** screen appears.

Figure 14: Scheduler Schedule

- To search Schedule, enter one of the following text:
 - Schedule Name
 - Comments

Note: You can also use wildcard character '%' to search for Schedule Name or Comments.

- Click **Search**. The Schedule Name is displayed in Filters.

	Schedule Name	Comments	Repeat Interval	Edit	Delete
1	CM_TESTDOC	testdoc	FREQ=MINUTELY;INTERVAL=1000;BYDAY=MON,TUE,WED,THU,FRI		

Figure 15: Scheduler Schedule - Search Results

Note: Click **Search** present on Search screen to view the list of all existing programs.

To **edit** an existing Schedule

- Click **Edit** () icon corresponding to the respective Schedule name. The **Scheduler Schedule Maintenance** screen appears.

Scheduler Schedule Maintenance

Schedule Name

Long Description

Repeat Interval

Figure 16: Scheduler Schedule - Edit

2. Edit the required fields. Note that you cannot edit the Schedule name.
3. Click **Save**. The changes are saved.

To **delete** an existing Schedule

1. Click **Delete** (🗑️) icon corresponding to the respective Schedule name.
2. A confirmation message appears indicating “Are you sure you want to delete this object?”
3. Click **OK** to delete the respective Schedule.

2.4 Job

A job is collection of metadata which defines program to execute, where to execute as well as its related schedule. Running a job relates to trigger a chain which will further trigger set of programs (Batch Jobs) with given sequence and rules.

2.4.1 Adding and Viewing Job

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job** screen appears.

Scheduler Job

Main

Scheduler Job Search ⓘ

Job Name

Comments

Figure 17: Scheduler Job

2. Click the **Add** link present in upper right corner of the Search zone. The **Scheduler Job Maintenance** screen appears.
3. Set the values of following fields:

Field	Description	Mandatory (Yes or No)
Job Name	Used to define unique job.	Yes Note: Name must start with CM. There should not be any symbols, special characters and spaces in name. Valid example: CMBILL
Long Description	Used to describe the job.	No
Program Name	Used to identify unique program. Note: Use the Search (🔍) icon to search program name.	Yes
Chain Name	Used to identify the chain name. Note: Use the Search (🔍) icon to search chain name.	Yes
Schedule Name	Used to identify the schedule name. Note: Use the Search (🔍) icon to search schedule name.	No

Note: Program Name and Chain Name fields are interlinked. If you enter Program Name, Chain Name field is disabled and you cannot add Chain Name. Similarly, if you enter Chain Name, Program Name field is disabled and you cannot add Program Name.

4. Click **Save**. The Scheduler Job Maintenance screen closes and the new created job is added to the Job list in Filter section.

2.4.2 Searching, Editing and Deleting Job

To **search** an existing Job

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job** screen appears.

Figure 18: Scheduler Job Search

2. To search Job, enter one of the following text:
 - Job Name

- Comments

Note: You can also use wildcard character '%' to search for Job Name or Comments.

3. Click **Search**. The Job Name is displayed in Filters.

Note: Click **Search** present on Search screen to view the list of all existing programs.

To **edit** an existing Job

1. Click **Edit** (✎) icon corresponding to the respective Job name. The **Scheduler Job Maintenance** screen appears.

The screenshot shows the 'Scheduler Job Maintenance' interface. It contains several input fields and buttons:

- Job Name:** A text field containing 'CM_DOC'.
- Long Description:** A text area containing 'Documentation' with up and down arrow icons on the right side.
- Program Name:** A text field containing 'CM_DOCUMENTATION' with a magnifying glass icon and the text 'Documentation' to its right.
- Chain Name:** An empty text field.
- Schedule Name:** A text field containing 'CM_TESTDOC' with a magnifying glass icon and the text 'testdoc' to its right.
- Buttons:** 'Save' and 'Cancel' buttons are located at the bottom left.

Figure 19: Scheduler Job - Edit

2. Edit the required fields. Note that you cannot edit the Job name.
3. Click Save. The changes are saved.

To **delete** an existing Job

1. Click **Delete** (🗑️) icon corresponding to the respective Job name.
2. A confirmation message appears indicating "Are you sure you want to delete this object?"
3. Click **OK** to delete the respective job.

To **submit** a job

1. Click **Submit Job** (👉) icon.
2. A confirmation message appears indicating "Are you sure you want to submit this job?"
3. Click **OK** to submit the respective job.

2.5 Job Monitor

This section explains the Job Monitor feature in ORMB. The job monitor allows you to see the status of submitted jobs. This feature allows you to

- View all running jobs
- View the steps and step status of a specific job
- Viewing completed jobs based on time interval

To monitor jobs,

- From the **Menu** tab, select **Scheduler** and then click **Job Monitor**. The **Scheduler Job Monitor** screen appears. There are three fields:

Field	Description
Job Status	Indicates the status of the job. The values are: <ul style="list-style-type: none"> Completed In Progress
Start Date	Indicates the start date of the job.
End Date	Indicates the end date of the job.

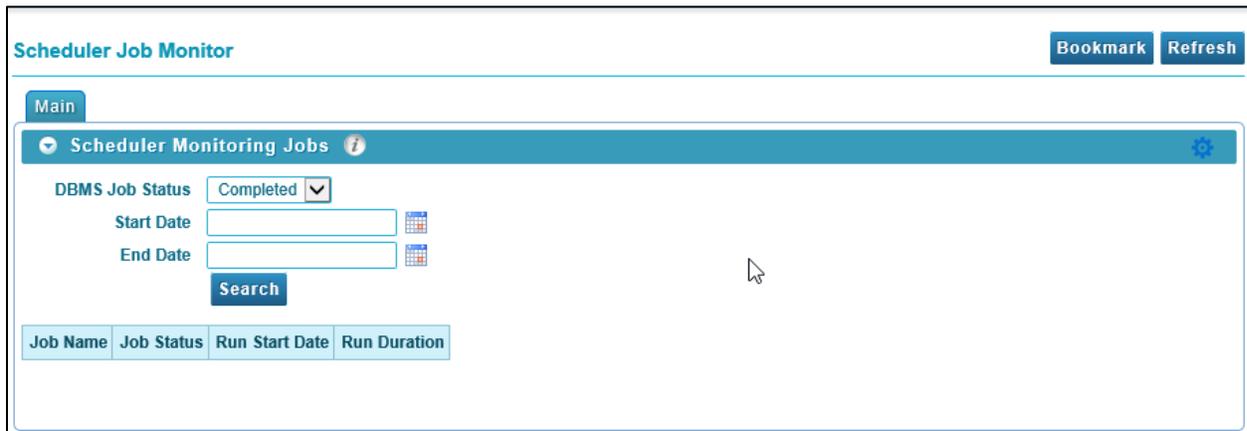


Figure 20: Job Monitor

- In DBMS Job Status, by default you will see Completed status.
- You can also search by Start Date or End Date.
- Click **Search**.
- All the jobs which have 'Completed' or 'Failed' status appear as results in tabular format.

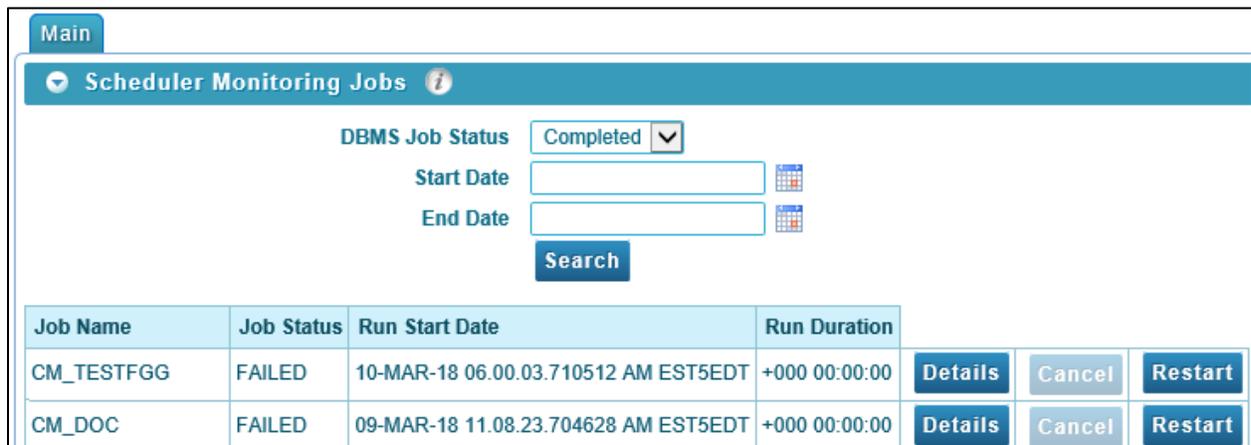


Figure 21: Job Monitor

- To view the details, click **Details**.

2. To start the failed job, click **Restart**. A confirmation message appears indicating “Are you sure you want to restart this job?”
3. Click **OK**.

To monitor ‘In Progress’ jobs

1. Select ‘**In Progress**’ from the DBMS Job Status drop-down list.
2. Click **Search**.
3. All the jobs which have ‘In Progress’ status appear as results in tabular format.
4. To view the details, click **Details**.
5. To start the failed job, click **Restart**.