

Oracle® Revenue Management and Billing

Version 2.7.0.0.0

Batch Scheduler

Revision 1.0

E97631-01

June, 2018

Oracle Revenue Management and Billing Batch Scheduler

E97631-01

Copyright Notice

Copyright © 2018, Oracle and/or its affiliates. All rights reserved.

Trademark Notice

Oracle and Java are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

License Restrictions Warranty/Consequential Damages Disclaimer

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure, and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or de-compilation of this software, unless required by law for interoperability, is prohibited.

Warranty Disclaimer

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

Restricted Rights Notice

If this software or related documentation is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT RIGHTS

Oracle programs, including any operating system, integrated software, any programs installed on the hardware, documentation, and/or technical data delivered to U.S. Government end users are “commercial computer software” or “commercial technical data” pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, documentation, and/or technical data shall be subject to license terms and restrictions as mentioned in Oracle License Agreement, and to the extent applicable, the additional rights set forth in FAR 52.227-19, Commercial Computer Software-Restricted Rights (June 1987). No other rights are granted to the U.S. Government.

Hazardous Applications Notice

This software is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure the safe use of this software. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software in dangerous applications.

Third Party Content, Products, and Services Disclaimer

This software and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third party content, products, or services.

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. It also explains how to define and work with the different modules of scheduler.

Contents

1.	ORMB Scheduler	1
1.1	Oracle Scheduler Interface Architecture	2
1.2	Advantages of Using Oracle Scheduler and Interface	2
2.	Scheduler Modules	3
2.1	Program	3
2.1.1	Defining a New Program	3
2.1.2	Searching a Program	7
2.1.3	Viewing a Program	8
2.1.4	Editing a Program	9
2.1.5	Deleting a Program	10
2.2	Chain	12
2.2.1	Defining a New Chain	12
2.2.2	Searching a Chain	14
2.2.3	Viewing a Chain	15
2.2.4	Editing a Chain	17
2.2.5	Deleting a Chain	17
2.3	Schedule	18
2.3.1	Defining a New Schedule	18
2.3.2	Searching a Schedule	21
2.3.3	Viewing a Schedule	22
2.3.4	Editing a Schedule	23
2.3.5	Deleting a Schedule	24
2.4	Job	25
2.4.1	Defining a New Job	25
2.4.2	Searching a Job	27
2.4.3	Viewing a Job	28
2.4.4	Editing a Job	28
2.4.5	Deleting a Job	29
2.4.6	Submitting a Job	29
2.5	Job Monitor	30

1. ORMB Scheduler

The Scheduler is a set of processes and objects that are defined and executed within the ORMB framework using the objects implemented by the **DBMS_SCHEDULER** package that is embedded in every installation of the Oracle Database. ORMB uses the DBMS scheduler objects to schedule Jobs/Batches in the background.

Some features of ORMB DBMS scheduler include:

- User Interface to help define workflows and/or job dependencies
- User Interface to submit/schedule, monitor and administration of Batch Jobs

The DBMS Scheduler supports the following scheduling methods:

- Time based scheduling - Scheduling job based upon dates and times.
- Dependency scheduling - Scheduling based upon job dependencies using Chains

The ORMB DBMS scheduler uses the following objects:

Program

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.

Job

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.

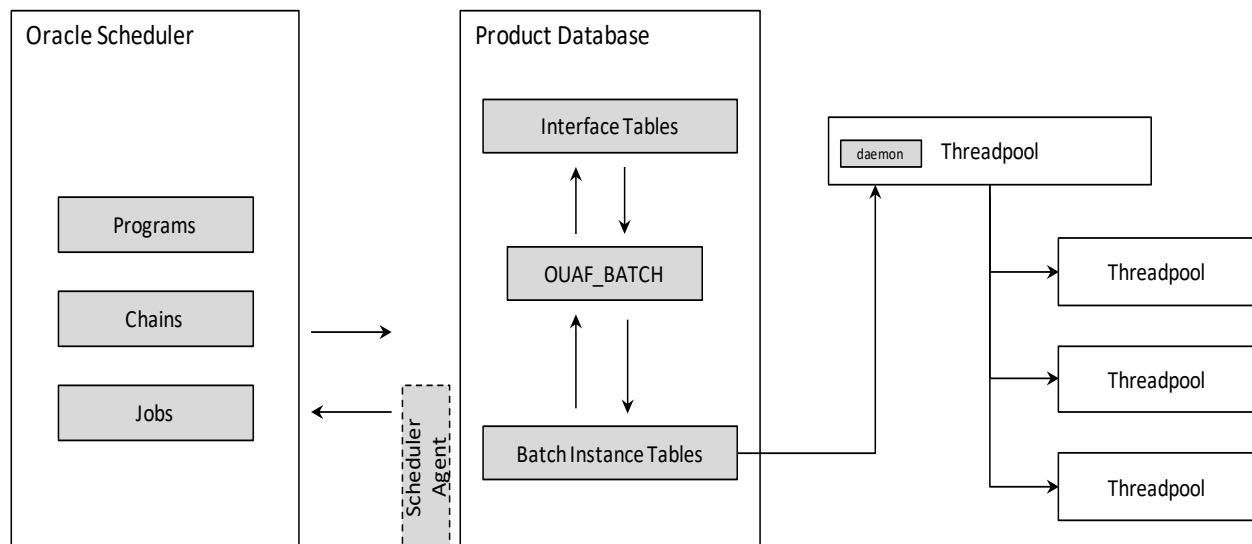
Schedule

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.

Chains

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.

1.1 Oracle Scheduler Interface Architecture



The Oracle Scheduler interface has a flexible architecture that exploits the underlying features of the product to execute and monitor background processes. From an architecture perspective the following applies:

- The Oracle Scheduler objects are held as dictionary objects in the Schedule Administrator schema. At a minimum the Oracle Scheduler uses Programs, Jobs and Chains. Other Schedule objects can be defined as necessary.
- The Oracle Scheduler interface is installed on the product schema which includes a number of interface tables, the OUAF_BATCH pl/sql package and permissions to product batch tables.

1.2 Advantages of Using Oracle Scheduler and Interface

- License free implementation
- ORMB embedded user interfaces for setting up Batch Scheduling
- Less Administration
- Supports High Availability
- Maximum Flexibility

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. Monitor 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 Defining a New Program

To define a new program:

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

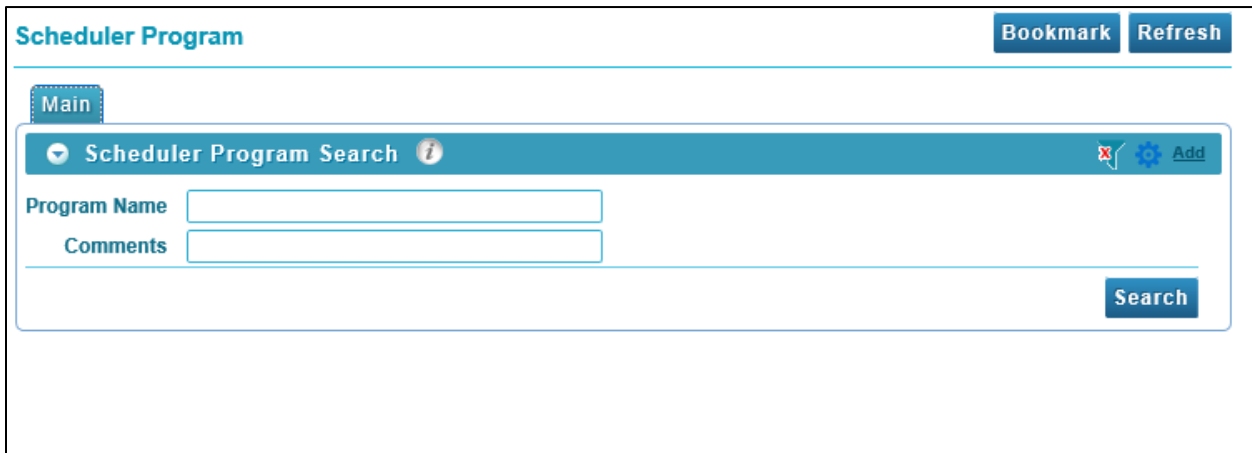
The screenshot shows a web application interface for 'Scheduler Program Search'. At the top, there's a header bar with the title 'Scheduler Program' and two buttons: 'Bookmark' and 'Refresh'. Below the header, there's a 'Main' tab. The main content area is titled 'Scheduler Program Search' and contains two input fields: 'Program Name' and 'Comments'. A 'Search' button is located at the bottom right of the search area. In the top right corner of the search area, there are icons for a close button (X), a settings gear, and an 'Add' link.


Figure 1: Scheduler Program Search


2. Click the **Add** link present in upper right corner of the **Scheduler Program Search** zone. 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	Description	Parameter Value	Required
-----------	-------------	-----------------	----------

Save **Cancel**


Figure 2: Scheduler Program Maintenance Screen

3. The **Scheduler Program Maintenance** screen has following fields:


Field Name	Description	Mandatory (Yes or No)
Program Name	Used to define the program name.	<p>Yes</p> <p>Note: It is mandatory to prefix program name with CM (customer modification) when defining a program on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a program on development environment (for example, any changes to Customer Modification data).</p> <p>The valid values are:</p> <ul style="list-style-type: none"> • C1_BILL • C1BILL • CM_Bill • CMBILL <p>However, following formats are not allowed:</p> <ul style="list-style-type: none"> • C1 – BILL • C1 BILL • CM – BILL • CM BILL
Long Description	Used to describe the program.	No
Batch Control	<p>Used to define the code that executes the logic associated with the background process.</p> <p>Tip: Use the Search () icon to search batch name.</p>	Yes
User	<p>Used to define the user name.</p> <p>Tip: Use the Search () icon to search user name.</p>	Yes
Thread Count	Used to define total number of parallel threads that have been scheduled.	No

Field Name	Description	Mandatory (Yes or No)
Batch Business Date	Used for background processes that use a date in their processing. For example, scheduling a job using the business date to determine which programs or chains should be scheduled. Note: If this parameter is left blank, the system date is used.	No
Maximum Timeout Minutes	Used to specify time duration for overriding 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 Note: Set Run Status value as Error and Raise Error value as True to raise an application error and end the job.
Raise Error	Used to define if errors are to be raised. The valid values are: <ul style="list-style-type: none"> True False 	No Note: Set Run Status value as Error and Raise Error to True to make the procedure raise an application error and end the job.
Thread Notification	Used to define if email notifications for failed threads are to be sent. The valid values are: <ul style="list-style-type: none"> True False 	No

4. Enter program name in **Program Name** field.
5. Enter value in **Batch Control** field. Note that the batch control code should be defined in the application.

Tip: To search for existing batch control name, you can use the **Search** () icon corresponding to the **Batch Control** field.

Note: When the batch control code is populated in **Batch Control** field, the parameter details linked with the respective batch control appear in the **Parameter Details** pane below the basic user defined fields.

6. Enter value in **User** field. To search for existing user name, you can use the **Search** () icon corresponding to the User field.
7. Click **Save**. The Scheduler Program Maintenance screen closes and the new created program is added to the Program list in Filter section.

2.1.2 Searching a Program

To search an existing program:

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

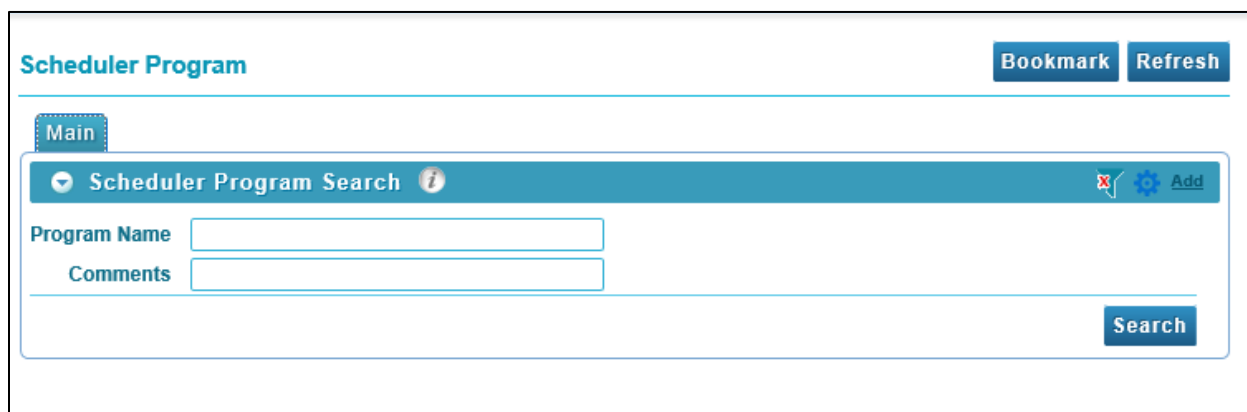


Figure 3: Scheduler Program Search

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

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

Click **Search** button present in Search zone to view the list of all existing programs.

3. Click **Search**. The search results are filtered based on the specified search criteria.
4. The Filter section has following columns:

Column Name	Description
Program Name	Displays the program name. Note: It has a link. Click on the link to view the program details.
Comments	Displays the description of the program.
Edit	Allows you to edit the program details.
Delete	Allows you to delete the program.

Scheduler Program

Main

Scheduler Program Search

Program Name: C1_PNDBL

Comments:

Filters: Program Name C1_PNDBL

	Program Name	Comments	Edit	Delete
1	C1_PNDBL	Generate Pending Bills		

Figure 4: Program - Search Results

2.1.3 Viewing a Program

To view details of an existing program:

1. From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program Search** zone appears.
2. Search a Program for which you want to view the details. For more information, refer to the [Searching a Program](#) section.
3. Click on the text in **Program Name** column. The **Scheduler Program Read** screen appears with the details of the respective program.

The **Scheduler Program Read** screen displays the user specified details and the parameters associated with the applied batch. These parameter details are represented in a tabular format.

Column Name	Description
Parameter	Displays the name of the parameter linked with the respective batch.
Description	Displays the description of the parameter.
Parameter Value	Displays the default value, if applicable.
Required	Indicates whether or not this is a required parameter.

Scheduler Program Read

Program Name: C1_TESTH

Long Description: Accounting

Batch Control: F1-BFCRL ILM Crawler - Business Flag

User: BKADMIN Banking, Admin

Thread Count: 0

Batch Business Date: 01-22-2018

Maximum Timeout Minutes: 5

Batch Rerun Number: 5

Thread Pool Name:

Run Status: In Progress ▼

Raise Error: true

Thread Notification: true

Parameter	Description	Parameter Value	Required
maintenanceObject	Maintenance Object	F1-BUSFLG	Yes
cutoffDate	Override Cutoff Date		


Save Cancel

Figure 5: Scheduler Program - Read Mode

2.1.4 Editing a Program

To edit an existing program:


1. From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program** Search zone appears.
2. Search a Program which you want to edit. For more information, refer to the [Searching a Program](#) section.


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

Scheduler Program Maintenance


Program Name:

Long Description:

Batch Control:  Pending Bill Generation

User:  Banking, Admin

Thread Count:

Batch Business Date: 

Maximum Timeout Minutes:

Batch Rerun Number:

Thread Pool Name:

Run Status:

Raise Error:

Thread Notification:

Parameter	Description	Parameter Value	Required
CIS-DIVISION	Division	<input type="text" value="930"/>	
BILL-CYC-CD	Bill Cycle	<input type="text" value="BDD"/>	
DEL-BILL-SW	Delete Existing Bill	<input type="text"/>	
BILLING-MODE	Bill Generation Type	<input type="text"/>	
BATCH-RUN-DESCR	Description for Trial Billing Batch Run	<input type="text"/>	
SELECTED-ACCTS	Process All or Selected Accounts	<input type="text"/>	
ACCT-ID	Account ID	<input type="text" value="9116287127"/>	
MAX-ERRORS	Override Maximum Number of Errors	<input type="text"/>	


Figure 6: Scheduler Program Maintenance Screen

- Edit the required fields. Note that you cannot edit the Program Name.
- Click **Save**. The changes are saved.

2.1.5 Deleting a Program

To delete an existing program:

- From the **Menu** tab, select **Scheduler** and then click **Program**. The **Scheduler Program Search** zone appears.

2. Search a Program which you want to delete. For more information, refer to the [Searching a Program](#) section.
3. Click **Delete** () icon corresponding to the respective Program name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to confirm deletion.

Note: Program can be deleted only if it is not being used in any of the jobs.

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 Defining a New Chain

To define a new chain:

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

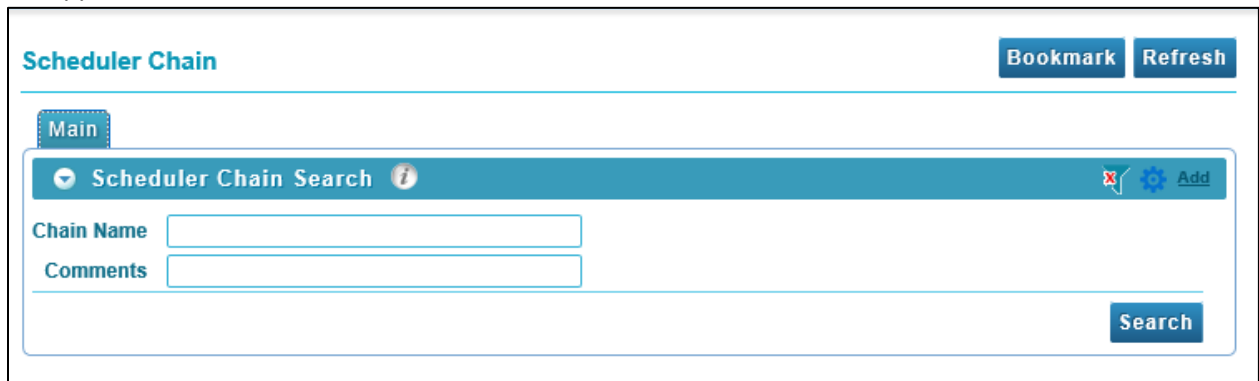


The screenshot shows a web interface titled "Scheduler Chain". In the top right corner, there are two buttons: "Bookmark" and "Refresh". Below the title, there is a "Main" tab. The main content area is titled "Scheduler Chain Search" and contains two input fields: "Chain Name" and "Comments". To the right of the "Chain Name" field is a "Search" button. In the top right corner of the search area, there are three icons: a red 'X', a gear, and a plus sign labeled "Add".

Figure 7: Scheduler Chain Search

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

Field Name	Description	Mandatory (Yes or No)
Chain Name	Used to define the chain name.	Yes Note: It is mandatory to prefix chain name with CM (customer modification) when defining a chain on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a chain on development environment (for example, any changes to Customer Modification data). The valid values are: <ul style="list-style-type: none"> • C1_BILL • C1BILL • CM_Bill • CMBILL However, following formats are not allowed: <ul style="list-style-type: none"> • C1 – BILL • C1 BILL • CM – BILL • CM BILL
Long Description	Used to describe the chain.	No
Step Name	Used to specify name of the step.	Yes
Program Name	Used to specify program name to be linked with the chain.	Yes
Step Condition	Used to specify condition for the step.	Yes

4. In **Chain Name**, enter chain name.
5. In **Long Description**, enter description text.
6. In **Step Name**, enter step name.
7. In **Program Name**, enter Program Name. You can also use **Search** () to search a program name. For more information, refer to the [Searching a Program](#) section.
8. Specify **Step Condition**.
9. To add multiple steps, click () icon.

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

Chain definition **must** include an 'End' step. For example, "ACCNO" SUCCEEDED.

Scheduler Chain Maintenance

Chain Name: C1_BILLING_CHAIN

Long Description: Chain for Billing batches

	Step Name	Program Name	Step Condition
	PNDL	C1_PNDL	TRUE
	END		"PNDL" SUCCEEDED

Save **Cancel**

Figure 8: Scheduler Chain Maintenance Screen

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

Effects on Chains

Depending on the setup of the chain rules, the chain will react differently to a job cancellation:

- If the chain rule has an end condition for a FAILED execution, then the chain will stop executing.
- If the chain rule is setup for a SUCCEEDED execution, the default, then the chain will be in a STALLED state and must be manually set to resume.
- If the chain rule is setup for COMPLETED execution, then the next job in the chain will be executed.

2.2.2 Searching a Chain

To search an existing chain:

- From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.

Scheduler Chain Bookmark Refresh

Main

Scheduler Chain Search

Chain Name:

Comments:

Search

Figure 9: Scheduler Chain Search

- To search a Chain, enter text in any one of the following fields:
 - Chain Name
 - Comments

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

Click **Search** button present in Search zone to view the list of all existing chains.

- Click **Search**. The search results are filtered based on the specified search criteria.
- The Filter section has following columns:

Column Name	Description
Chain Name	Displays the name of the chain. Note: It has a link. Click on the link to view the chain details.
Comments	Displays the description of the chain.
Edit	Allows you to edit the chain details.
Delete	Allows you to delete the chain.

The screenshot shows the 'Scheduler Chain' interface. At the top is a 'Main' tab. Below it is a 'Scheduler Chain Search' section with a search icon and an information icon. There are two input fields: 'Chain Name' with the value 'C1_BILL' and 'Comments' which is empty. Below the search fields, it says 'Filters: Chain Name C1_BILL'. At the bottom is a table with the following data:

	Chain Name	Comments	Edit	Delete
1	C1 BILLING CHAIN	Chain for Billing batches		
2	C1 BILLOPENCHNT	Test chain		

Figure 10: Chain - Search Results

2.2.3 Viewing a Chain

To view details of an existing chain:

- From the Menu tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.
- Search a Chain for which you want to view the details. For more information, refer to the [Searching a Chain](#) section.
- Click on the text in **Chain Name** column. The **Scheduler Chain Read** screen appears with the details of the respective chain.
- The Scheduler Chain Read screen has following fields:

Field Name	Description
Chain Name	Displays the name of the chain.
Long Description	Displays the description of the chain.

- The Scheduler Chain Read screen also shows the steps associated with the respective chain.

Scheduler Chain Read

Chain Name

Long Description







	Step Name	Program Name	Step Condition
 	<input type="text" value="STEP1"/>	<input type="text" value="C1_BILLOPEN"/>  BILLOPEN	<input type="text" value="TRUE"/>
 	<input type="text" value="END"/>	<input type="text" value=""/>	<input type="text" value="'STEP1' SUCCEEDED"/>

Figure 11: Scheduler Chain Read Mode

2.2.4 Editing a Chain

To edit an existing chain:

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.
2. Search a Chain for which you want to view the details. For more information, refer to the [Searching a Chain](#) section.
3. 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="PNDBL"/>	<input type="text" value="C1_PNDBL"/>  Generate Pending Bills 1212	<input type="text" value="TRUE"/>
 	<input type="text" value="BLGEN"/>	<input type="text" value="C1_BLGEN"/>  Generate bills	<input type="text" value="'PNDBL' SUCCEEDED"/>
 	<input type="text" value="END"/>	<input type="text" value=""/>	<input type="text" value="'BLGEN' SUCCEEDED"/>

Figure 12: Scheduler Chain Maintenance Screen

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

2.2.5 Deleting a Chain

To delete an existing chain:

1. From the **Menu** tab, select **Scheduler** and then click **Chain**. The **Scheduler Chain Search** zone appears.
2. Search a Chain which you want to delete. For more information, refer to the [Searching a Chain](#) section.
3. Click **Delete** () icon corresponding to the respective Chain name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to confirm deletion.

Note: Chain can be deleted only if it is not being used in any of the jobs.

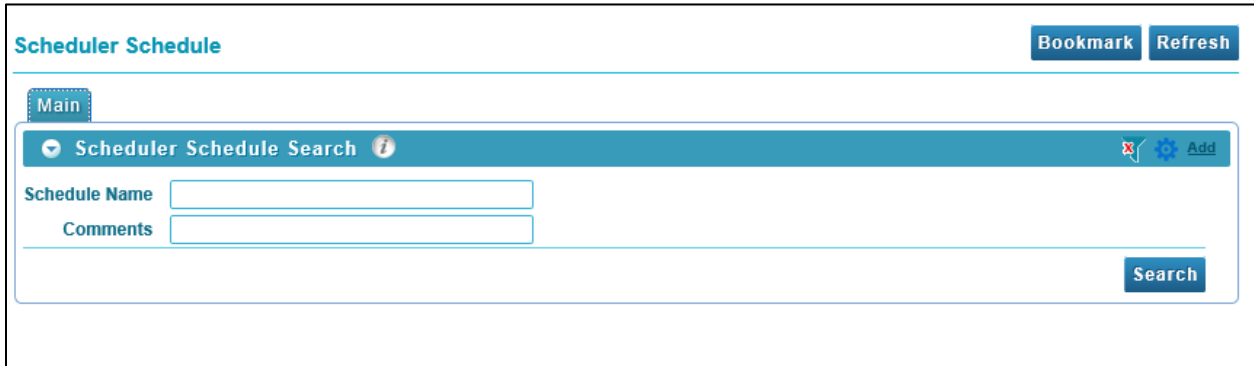
2.3 Schedule

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 Defining a New Schedule

To define a new schedule:

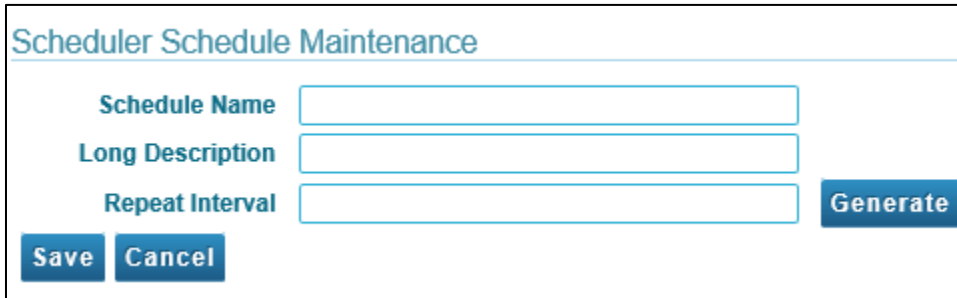
1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule Search** zone appears.



The screenshot shows the 'Scheduler Schedule' interface. At the top right are 'Bookmark' and 'Refresh' buttons. Below is a 'Main' tab. The main area is titled 'Scheduler Schedule Search' and contains two input fields: 'Schedule Name' and 'Comments'. A 'Search' button is located at the bottom right of the search area. In the top right corner of the search area, there are icons for a search, settings, and an 'Add' link.

Figure 13: Scheduler Schedule Search

2. Click the **Add** link present in upper right corner of the Scheduler Schedule Search zone. The **Scheduler Schedule Maintenance** screen appears.



The screenshot shows the 'Scheduler Schedule Maintenance' interface. It features three input fields: 'Schedule Name', 'Long Description', and 'Repeat Interval'. To the right of these fields is a 'Generate' button. At the bottom left, there are 'Save' and 'Cancel' buttons.

Figure 14: Scheduler Schedule Maintenance Screen

3. The **Scheduler Schedule Maintenance** screen has following fields:

Configuration	Processor	Memory (RAM)
Schedule Name	Used to define the schedule code.	<p>Yes</p> <p>Note: It is mandatory to prefix schedule name with CM (customer modification) when defining a schedule on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a schedule on development environment (for example, any changes to Customer Modification data).</p> <p>The valid values are:</p> <ul style="list-style-type: none"> • C1_BILL • C1BILL • CM_Bill • CMBILL <p>However, following formats are not allowed:</p> <ul style="list-style-type: none"> • C1 – BILL • C1 BILL • CM – BILL • CM BILL
Long Description	Used to describe the schedule.	No
Repeat Interval	Used to define the interval when the system should start a job scheduling.	Yes
Frequency	Used to define the frequency of recurrence.	<p>Yes (Conditional)</p> <p>Tip: Click Generate to select a frequency type.</p>

4. In **Schedule Name**, enter a schedule name.
5. In **Long Description**, enter description text.
6. Enter the date and time on which the system should automatically run a job.

Tip: You can have the system to generate a time interval.

To set a time interval:

- i. Click **Generate**. Select a frequency from the drop-down list.

The screenshot shows the 'Scheduler Schedule Maintenance' form. It has four input fields: 'Schedule Name', 'Long Description', 'Repeat Interval', and 'Frequency'. A 'Generate' button is located to the right of the 'Repeat Interval' field. The 'Frequency' dropdown menu is open, showing the following options: 'YEARLY', 'MONTHLY', 'WEEKLY', 'DAILY', 'HOURLY', 'MINUTELY', and 'SECONDLY'. The dropdown is currently displaying '— select a frequency —'.

Figure 15: Scheduler Schedule Maintenance – Set Frequency

ii. Frequency field has following drop-down options:

List Options	Description	Parameter Values
Yearly	Used to set yearly schedules.	Interval - define if the schedule should be created every year (a value of 1), every other year (a value of 2), every third year (a value of 3), etc. On Date – select month and date from the list. At Time – used to specify the start time. Use Time Picker (🕒) to select a time.
Monthly	Used to set monthly schedules.	Interval - define if the schedule should be created every month (a value of 1), every other month (a value of 2), every third month (a value of 3), etc. 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. For example, 3 rd Tuesday of every month. At Time – used to specify the start time. Use Time Picker (🕒) to select a time.
Weekly	Used to set weekly schedules.	Interval - define if the schedule should be created every week (a value of 1), every other week (a value of 2), every third week (a value of 3), etc. WeekDay – select a week day. At Time – used to specify the start time. Use Time Picker (🕒) to select a time.

List Options	Description	Parameter Values
Daily	Used to set daily schedules.	Interval - define if the schedule should be created every day (a value of 1), every other day (a value of 2), every third day (a value of 3), etc. WeekDay – select a week day. At Time – used to specify the start time. Use Time Picker (🕒) to select a time.
Hourly	Used to set hourly schedule.	Interval - define if schedule records should be created every hour (a value of 1), every other hour (a value of 2), every third hour (a value of 3), etc. WeekDay – select a week day. At Time – used to specify the start time. Note: Specify time in min:sec format.
Minutely	Used to set minutely schedule.	Interval - define if the schedule should be created every minute (a value of 1), every other minute (a value of 2), every third minute (a value of 3), etc. WeekDay – select a week day.
Secondly	Used to set secondly schedule.	Interval - define if the schedule should be created every second (a value of 1), every other second (a value of 2), every third second (a value of 3), etc. Weekday – select a week day.

- iii. Select appropriate pattern from the options.
- iv. Click **OK**. The Repeat Interval field is populated with the selected intervals.
7. 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 a Schedule

To search an existing schedule:

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

The screenshot shows a web-based interface for searching schedules. At the top, there's a header 'Scheduler Schedule' with 'Bookmark' and 'Refresh' buttons. Below this is a 'Main' tab. The main content area is titled 'Scheduler Schedule Search' and includes an information icon and an 'Add' button. There are two text input fields labeled 'Schedule Name' and 'Comments'. A 'Search' button is located at the bottom right of the search area.

Figure 16: Scheduler Schedule Search

2. To search a Schedule, enter text in any one of the following fields:

- Schedule Name
- Comments

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

Click **Search** button present in Search zone to view the list of all existing schedules.

3. Click **Search**. The search results are filtered based on the specified search criteria.

4. The Filter section has following columns:

Column Name	Description
Schedule Name	Displays the name of the schedule. Note: It has a link. Click on the link to view the schedule details.
Comments	Displays the description of the schedule.
Repeat Interval	Displays the set time interval.
Edit	Allows you to edit the schedule details.
Delete	Allows you to delete the schedule.

Scheduler Schedule

Main

Scheduler Schedule Search ⓘ

Schedule Name
Comments

Filters: Schedule Name C1_SCH

	Schedule Name	Comments	Repeat Interval	Edit	Delete
1	C1_SCH	Schedule	FREQ=SECONDLY;INTERVAL=899;BYDAY=TUE,THU		
2	C1_SCH1	Schedule 1	FREQ=DAILY		
3	C1_SCHE2	New Test Schedule	FREQ=Monthly		
4	C1_SCHEDULETEST	Schedule Test	FREQ=DAILY		

Figure 17: Schedule - Search Results

2.3.3 Viewing a Schedule

To view details of an existing schedule:

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

2. Search a schedule for which you want to view the details. For more information, refer to the [Searching a Schedule](#) section.
3. Click on the text in **Schedule Name** column. The **Scheduler Schedule - Read only** screen appears with the details of the respective program.
4. The Scheduler Schedule - Read only screen has following fields:

Field Name	Description
Schedule Name	Displays the name of the schedule.
Long Description	Displays the description of the schedule.
Repeat Interval	Indicates the interval defined.


Scheduler Schedule - Read only

Schedule Name C1_BILLING
 Long Description Billing batch schedule
 Repeat Interval FREQ=MINUTELY;INTERVAL=5;BYDAY=MON,SUN

Figure 18: Scheduler Schedule - Read Only Mode

2.3.4 Editing a Schedule

To edit an existing schedule:

1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The Scheduler Schedule Search zone appears.
2. Search a Schedule which you want to edit. For more information, refer to the [Searching a Schedule](#) section.
3. Click **Edit** () icon corresponding to the respective Schedule name. The **Scheduler Schedule Maintenance** screen appears.

Scheduler Schedule Maintenance

Schedule Name C1_SCH
 Long Description Schedule
 Repeat Interval FREQ=DAILY;BYDAY=FRI,SAT,SUN


Save Cancel Generate

Figure 19: Scheduler Schedule Maintenance Screen

4. Edit the required fields. Note that you cannot edit the Schedule Name.
5. Click **Save**. The changes are saved.

2.3.5 Deleting a Schedule

To delete an existing schedule:

1. From the **Menu** tab, select **Scheduler** and then click **Schedule**. The **Scheduler Schedule Search** zone appears.
2. Search a Schedule which you want to delete. For more information, refer to the [Searching a Schedule](#) section.
3. Click **Delete** () icon corresponding to the respective Schedule name.
4. A confirmation message appears indicating “Are you sure you want to delete this object?”
5. Click **OK** to confirm deletion.

Note: Schedule can be deleted only if it is not being used in any of the jobs.

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 Defining a New Job

To define a new job:

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

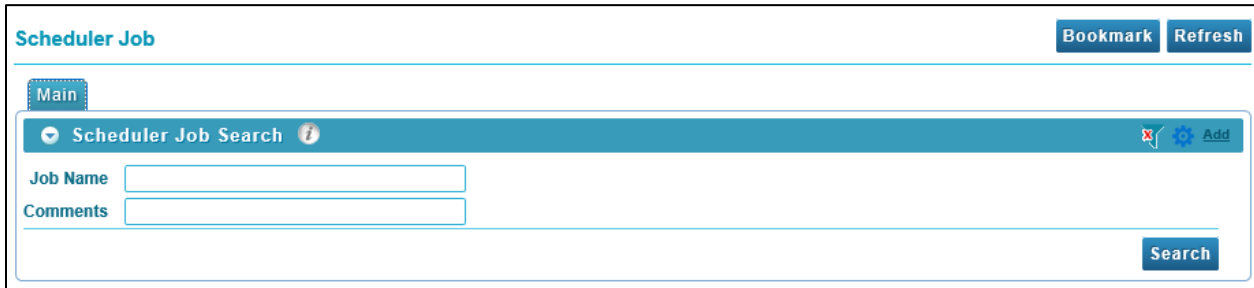


Figure 20: Scheduler Job Search

2. Click the **Add** link present in upper right corner of the Scheduler Job Search zone. The **Scheduler Job Maintenance** screen appears.

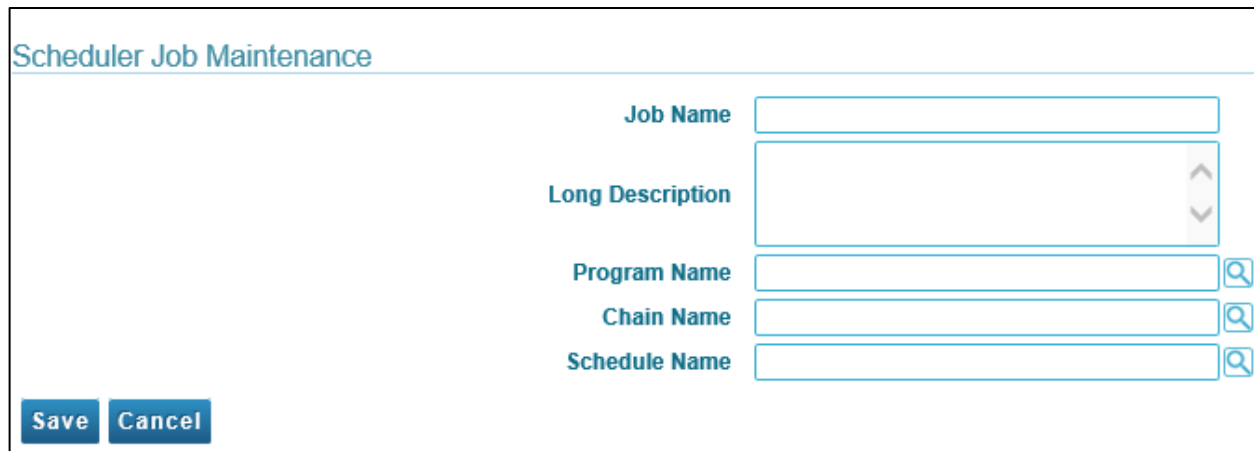





Figure 21: Scheduler Job Maintenance Screen

3. The **Scheduler Job Maintenance** screen has following fields:

Field Name	Description	Mandatory (Yes or No)
Job Name	Used to define job name.	<p>Yes</p> <p>Note: It is mandatory to prefix job name with CM (customer modification) when defining a job on a deployed environment (for example, changes performed during and after installation of the product) and C1 when defining a job on development environment (for example, any changes to Customer Modification data).</p> <p>The valid values are:</p> <ul style="list-style-type: none"> • C1_BILL • C1BILL • CM_Bill • CMBILL <p>However, following formats are not allowed:</p> <ul style="list-style-type: none"> • C1 – BILL • C1 BILL • CM – BILL • CM BILL
Long Description	Used to describe the job.	No
Program Name	<p>Used to link a program name.</p> <p>Tip: Use the Search () icon to search program name.</p>	Yes
Chain Name	<p>Used to link a chain name.</p> <p>Tip: Use the Search () icon to search chain name.</p>	Yes
Schedule Name	<p>Used to link a schedule name.</p> <p>Tip: Use the Search () icon to search schedule name.</p>	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. In Program Name, enter Program Name. You can also use **Search** (🔍) to search an existing program. For more information, refer [Searching a Program](#) section.
5. In Chain Name, enter Chain Name. You can also use **Search** (🔍) to search an existing chain. For more information, refer [Searching a Chain](#) section.
6. In Schedule Name, enter Schedule Name. You can also use **Search** (🔍) to search an existing schedule. For more information, refer [Searching a Schedule](#) section.
7. 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 a Job

To search an existing job:

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

Figure 22: Scheduler Job Search

2. To search a Job, enter text in any one of the following fields:
 - Job Name
 - Comments

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

Click **Search** button present in Search zone to view the list of all existing jobs.

3. Click **Search**. The search results are filtered based on the specified search criteria.
4. The Filter section has following columns:

Column Name	Description
Job Name	Displays the name of the job. Note: It has a link. Click on the link to view the job details.
Comments	Displays the description of the job.
Edit	Allows you to edit the job details.
Delete	Allows you to delete the job.

Submit Job	Allows you to submit a job.
------------	-----------------------------

2.4.3 Viewing a Job

To view details of an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
2. Search a job for which you want to view the details. For more information, refer to the [Searching a Job](#) section.
3. Click on the text in **Job Name** column. The **Scheduler Job Read** screen appears with the details of the respective job.
4. The Scheduler Job Read screen has following fields:

Field Name	Description
Job Name	Displays the name of the job.
Long Description	Displays the description of the job.
Program Name	Displays the respective program attached with the job.
Chain Name	Displays the respective chain attached with the job.
Schedule Name	Displays the respective schedule attached with the job.

Scheduler Job Read

Job Name: C1_PGMTESTJOB

Long Description: test PGM JOB

Program Name: C1_FLUSH Flush Batch for Testing

Chain Name:

Schedule Name: C1_PGMTESTSCH Test PGM Schedule


Save **Cancel**

Figure 23: Scheduler Job Read Mode

2.4.4 Editing a Job

To edit an existing job:

1. From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
2. Search a job which you want to edit. For more information, refer to the [Searching a Job](#) section.

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

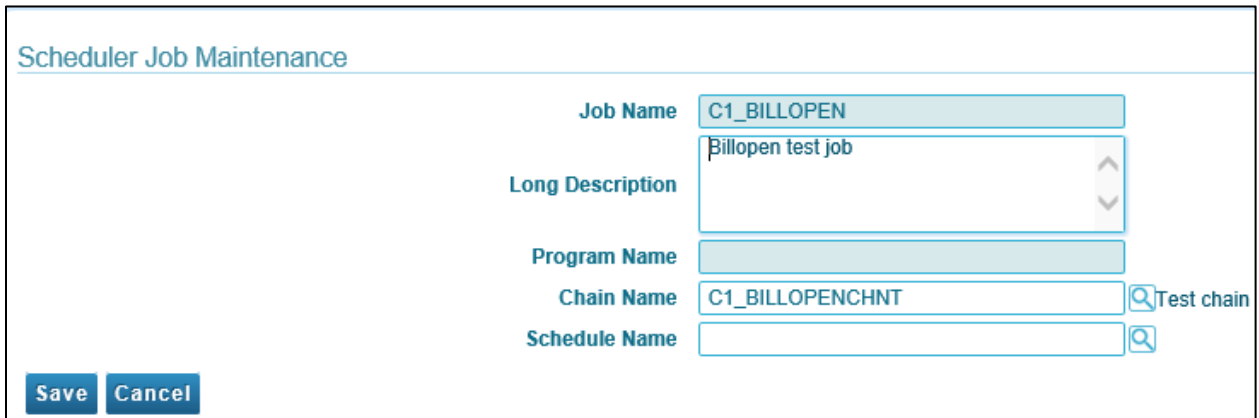



Figure 24: Scheduler Job Maintenance Screen

- Edit the required fields. Note that you cannot edit the Job Name.
- Click **Save**. The changes are saved.

2.4.5 Deleting a Job

To delete an existing job:


- From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
- Search a job which you want to delete. For more information, refer to the [Searching a Job](#) section.
- Click **Delete** () icon corresponding to the respective Job name.
- A confirmation message appears indicating “Are you sure you want to delete this object?”
- Click **OK** to confirm deletion.

2.4.6 Submitting a Job

Most batch jobs are submitted via a batch scheduler. Batch jobs may be configured as Timed, which means they will automatically be run based on the set timer frequency.

However, if you want to execute another predefined job, you have an option to submit the same using the **Submit Job** icon. When you click on Submit Job icon, it triggers the job and starts the job execution immediately.

To submit an existing job:

- From the **Menu** tab, select **Scheduler** and then click **Job**. The **Scheduler Job Search** zone appears.
- Search a job which is to be submitted. For more information, refer to the [Searching a Job](#) section.
- Click **Submit Job** () icon corresponding to the respective job name.
- A confirmation message appears indicating “Are you sure you want to submit this job?”
- Click **OK** to confirm submission.

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:

1. From the **Menu** tab, select **Scheduler** and then click **Job Monitor**. The **Scheduler Monitoring Jobs** zone appears. It has following three fields:

Field Name	Description	Comments
DBMS Job Status	Allows you to search by status of the job. The values are: <ul style="list-style-type: none"> • Completed • In Progress 	Note: All jobs which are succeeded, failed or stopped are considered as Complete.
Start Date	Allows you to search by starting date of the job.	Note: You must specify the date in MM-DD-YYYY format.
End Date	Allows you to search by ending date of the job.	Note: You must specify the date in MM-DD-YYYY format.

Figure 25: Scheduler Monitoring Jobs

2. Select a DBMS Job Status from the drop-down list. The default value is set as Completed. You can also search by 'In Progress' status.
3. Enter a Start or End date in MM-DD-YYYY format.

Tip: You can also use **Date Picker** () icon to select the date.

4. Click **Search**. The jobs with Completed status appear as results.

The screenshot shows the 'Scheduler Monitoring Jobs' window. The 'DBMS Job Status' dropdown is set to 'Completed'. Below it are 'Start Date' and 'End Date' input fields with calendar icons, and a 'Search' button. The results table lists several jobs with their status, run start date, and duration. Each row has 'Details', 'Cancel', and 'Restart' buttons.

Job Name	Job Status	Run Start Date	Run Duration	Details	Cancel	Restart
C1_USER	FAILED	29-MAY-18 12.26.08.498409 PM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_JOB	SUCCEEDED	28-MAY-18 11.55.41.391720 PM ASIA/CALCUTTA	+000 00:02:15	Details	Cancel	Restart
C1_PGMTESTJOB	STOPPED	28-MAY-18 03.38.13.123259 PM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_BILLOPEN	FAILED	25-MAY-18 10.10.58.349464 AM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_PGMDELEJOB	FAILED	22-MAY-18 12.28.09.099850 PM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart
C1_BILLOPENJT	FAILED	22-MAY-18 11.41.17.375222 AM ASIA/CALCUTTA	+000 00:00:00	Details	Cancel	Restart

Figure 26: Job Monitor – Complete Status

5. To view the details, click **Details**.
6. To start the failed job, click **Restart**. A confirmation message appears indicating “Are you sure you want to restart this job?”
7. 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 cancel any ongoing job, click **Cancel**.

The screenshot shows the 'Scheduler Job Monitor' window. The 'DBMS Job Status' dropdown is set to 'In Progress'. Below it are 'Start Date' and 'End Date' input fields with calendar icons, and a 'Search' button. The results table shows one job in progress.

Job Name	Job Status	Run Start Date	Run Duration	Details	Cancel	Restart
C1_BILL	RUNNING		+001 21:52:52.99	Details	Cancel	Restart

Figure 27: Job Monitor - In Progress Status