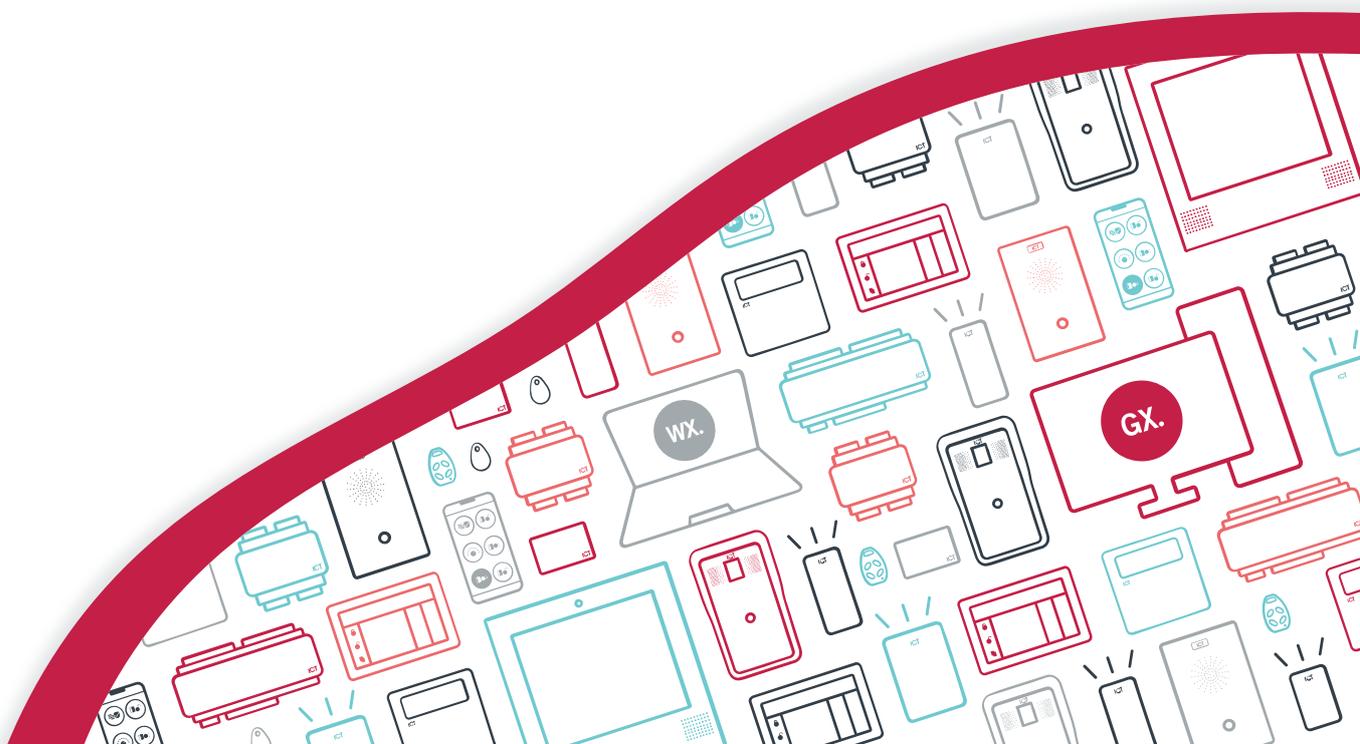




**AN-179**

# Configuring Calendar Actions in Protege GX

Application Note



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# Contents

<b>Introduction</b>	<b>4</b>
Prerequisites	4
<b>Calendar Actions Overview</b>	<b>5</b>
Adding Calendar Actions	5
Actions for Doors and Outputs	6
Canceling and Restoring Calendar Actions	6
Overlapping Calendar Actions	6
Calendar Action Priority	7
<b>Programming Scenario</b>	<b>8</b>
Controlling the Doors and Outputs	9
Controlling the Area	9
Validating the Calendar Action	11

# Introduction

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Calendar actions is a licensed feature that provides the ability to override the normal behavior of doors and outputs for a specified duration. You can configure calendar actions as one-offs or set them to recur every day, week, month or year.

Calendar actions are ideal for situations which aren't covered by existing schedules. This feature allows simple configuration of the following scenarios:

- Cleaners come in later one day during the week and require the lights and HVAC system to turn on when they would otherwise be off.
- Some employees plan to come to work earlier than usual and require free access to the internal doors, the lights to turn on and the HVAC system to activate.
- Staff training takes place once a week on a Wednesday night for four weeks. During this time doors remain unlocked, the HVAC system stays active and the lights stay on.
- The staff Christmas party is planned for an offsite location after a half day of work. After employees leave the office the doors lock, lights and HVAC turn off and the office area arms.

## Prerequisites

### Supported Software/Hardware

All specified software and hardware requirements must be met prior to programming this feature.

Component	Software/Firmware Version
<b>Software</b>	
Protege GX software	Version 4.0.0 or higher
<b>Hardware</b>	
PRT-CTRL-DIN	Version 2.08.508 or higher
PRT-CTRL-DIN-1D	

# Calendar Actions Overview

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Calendar actions can be found in the Protege GX software by navigating to **Sites | Calendar Actions**. This window displays past and future calendar actions in a convenient calendar view. You can use the icons in the toolbar to switch between daily, weekly and monthly calendars, in schedule and list style views.

Before you add a calendar action, make sure that you have identified what the calendar action needs to achieve. Consider the following:

- If people are coming in outside of normal hours, where will they enter and exit the building? What doors and facilities do they need to access once inside? Can doors remain unlocked for the whole duration, or should they be locked to prevent entry after the event starts?
- If the building will be empty at an unusual time, what doors and areas would normally be unsecured but need to be secured for this event?
- Are lights and HVAC required during this period, or should they be turned off to save power?
- Is it a one-off event, or will it recur on a regular basis?

## Adding Calendar Actions

To add a basic calendar action:

1. In Protege GX, navigate to **Sites | Calendar Actions**.
2. Click the **New Appointment** button in the toolbar, or double-click on the period where you want to add a calendar action. This opens the new appointment window.
3. Give the calendar action a useful **Description**.
4. Adjust the **Start time** and **End time** so that they cover the date and time of the first occurrence of the calendar action.

If you check the **All day event** option, the calendar action will apply for the whole day (midnight to midnight).

**Note:** The time zone for the calendar action is determined by the **controller time**, not the server time. For example, if a calendar action is programmed to start at 11:00AM, it will start when the controller time reaches 11:00AM even if it is only 09:00AM at the server.

5. If the calendar action needs to occur more than once, click the **Recurrence** button at the top of the window.
  - **Activity Time:** If required, adjust the **Start**, **End** and **Duration** of the calendar action.
  - **Recurrence Pattern:** Set the days when this calendar action will recur. You can choose from:
    - **Daily:** Can recur every day or defined sequence of days, or every weekday.
    - **Weekly:** Can recur on one or more days of the week, every week or defined sequence of weeks.
    - **Monthly:** Can recur on a specific date or a specific weekday, of every month or defined sequence of months (e.g. the last Sunday of every second month).
    - **Yearly:** Can recur on a specific date or a specific weekday of the month, every year or defined sequence of years (e.g. the last Sunday of August every four years).
  - **Range of Recurrence:** Set the **Start** date for the calendar action, and select how it will end:
    - **No end date:** The calendar action will repeat indefinitely.
    - **End after X occurrences:** The calendar action will repeat a set number of times, and then end.
    - **End by:** The calendar action will repeat until the set date, and then end.

After you have entered the recurrence settings, click **OK**.

6. In the **List of Devices** section, click **Add** to open the Select Devices window.
7. Set the **Device Type** to Door or Output.  
If you are choosing outputs, select the **Controller** they are connected to.
8. Check the boxes for each door or output that you want to control with the calendar action, then click **OK**.

9. If you need to select more doors or outputs, click the **Add** button again. You can add both doors and outputs to the same calendar action, and outputs from different controllers.
10. Set the **Action** for each record that you need to control.  
For more information, see [Actions for Doors and Outputs](#) (below).
11. If you have selected Extended Lock Time for a door, set the **Extended Time** that the door will unlock for.
12. Once all of the settings are complete, click **Save & Close** to close the appointment window.
13. In the calendar view, confirm that the new calendar action occurs on the correct days and times.

## Actions for Doors and Outputs

### Door Actions

- **Lock:** The door is locked for the duration of the calendar action, even if it should be unlocked by schedule or operator command. It can still be unlocked temporarily when a user is granted access.  
For example, if work finishes early on a certain day you could use this action to lock the doors earlier than normal without changing the unlock schedule.
- **Unlock:** The door is unlocked for the duration, event if it should be locked by schedule. It can still be locked down in an emergency situation.  
For example, if the office needs to stay open late for a staff party you could use this action to keep the doors unlocked later than normal without changing the unlock schedule.
- **Extended Lock Time:** For the duration, whenever a user accesses the door it will be unlocked for a longer time. This time is specified by the **Extended Time** field in the calendar action.  
For example, if contractors are moving furniture through the building this action will allow them to keep the doors unlocked for longer.

### Output Actions

- **Off:** The output turns off.
- **On:** The output turns on.

Output actions can be used to control lights, HVAC and other utilities in the building that are connected to the Protege GX system. Additional programming such as schedule validation and programmable functions allow you to control security system features such as areas, input types and door types using outputs.

For help with advanced programming options, consult the [Protege GX Operator Manual](#) or discuss with your integrator. A programming example is included below (see page 9).

## Canceling and Restoring Calendar Actions

Sometimes it is necessary to end a calendar action early, or temporarily suppress some of its functions.

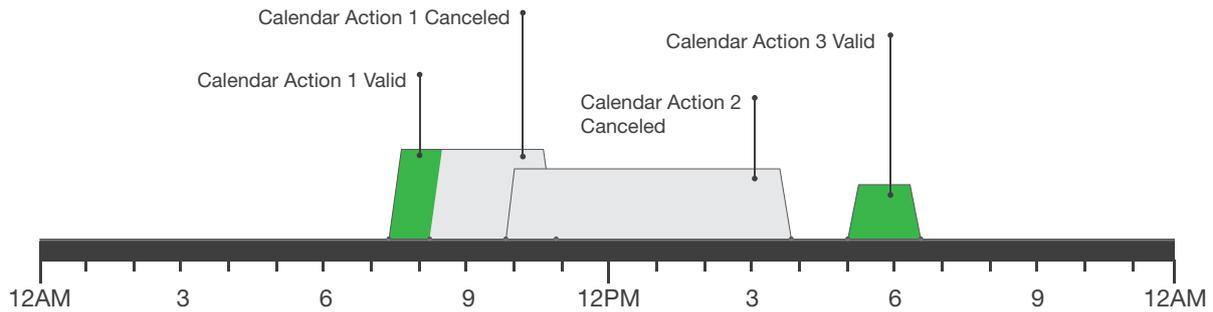
When a calendar action is active you can cancel it for an individual device by right clicking on the door or output record and clicking **Cancel Calendar Action**. This suppresses the calendar action and returns that door or output to its original state. At a later point you can right click on the record again and click **Restore Calendar Action** to reinstate the effect of the action.

This feature allows you to cancel and restore the calendar action for individual records (e.g. a single door or output) without needing to change or cancel the calendar action.

## Overlapping Calendar Actions

In order for the calendar actions feature to operate as expected it is recommended to avoid overlapping calendar actions that are applied to the same door or output. Overlaps may generate unexpected results.

If multiple calendar actions applied to the same record happen to overlap, the cancel and restore functions apply to all overlapping calendar actions. The diagram below shows three calendar actions, two of which overlap, applied to a single record.



- At 7:30AM Calendar Action 1 becomes valid, but an operator cancels it from the user interface shortly after 8:00AM.
- As Calendar Action 2 overlaps with Calendar Action 1 it is also canceled, even though the action has not yet started.
- Calendar Action 3 is not canceled as it does not overlap with either of the canceled calendar actions.

## Calendar Action Priority

### Doors

When a door is locked or latch unlocked by a calendar action the following rules apply:

- Lockdown commands from any source override calendar actions.
- User access (including REX and REN) overrides calendar actions.
- Calendar actions block doors from being locked, unlocked or latch unlocked by function codes, schedule control, area control, operator commands and programmable functions.

**Warning:** The **Lock** calendar action overrides the **Fire Control Door Unlock** programmable function, causing doors to lock again when they are unlocked by fire control. This is a known issue and is under development. Until updated firmware is provided, please use this calendar action with caution.

When a door has its unlock time extended by a calendar action the following rules apply:

- The extended time set in the calendar action overrides the **REX Time (Programming | Doors | Inputs)**, but not the **Door Extended Access Time (Programming | Doors | Advanced Options)**.
- There is no effect on any lock, latch unlock or lockdown command.

### Outputs

Calendar actions block outputs from being turned on or off by any other function, including operator commands, schedule control, programmable functions, function codes, etc.

# Programming Scenario

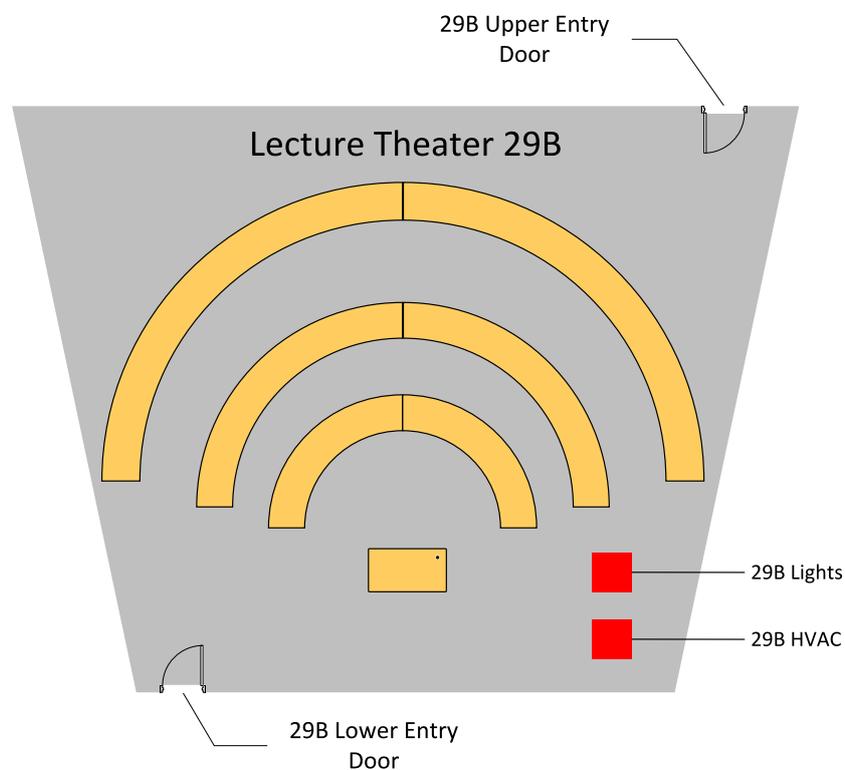
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In this programming scenario we will look at Lecture Theater 29B at University X. The building is normally unsecured for regular classes during the day (7:30AM - 6:30PM) and secured at night. However, there is a public lecture series planned by the ancient history department which will occur each Wednesday, 7:00PM - 9:00PM over the next four weeks.

To allow public access to the lecture theater after hours, we must program a calendar action with the following effects:

- Entry doors are latch unlocked, and relock after the lecture
- Lights and HVAC turn on, and turn off after the lecture
- Lecture theater area is disarmed, and rearms after the lecture

To allow time for people to enter and exit the hall, the calendar action will be in effect from 6:50PM - 9:10PM. The calendar action must start next Wednesday, and recur on the same day for 3 more weeks.



For simplicity, we will treat 29B as a standalone building. The following records must be programmed before you begin:

- **Area:** Lecture Theater 29B
- **Doors:**
  - 29B Upper Entry Door
  - 29B Lower Entry Door
- **Outputs:**
  - 29B Lights
  - 29B HVAC
- **Status page:** Create a status page with an event window and status list so you can monitor the status of these devices.

# Controlling the Doors and Outputs

First, we will create the calendar action that will be used to control the doors and outputs.

1. Navigate to **Sites | Calendar Actions**.
2. Use the **Month** button to switch to the monthly calendar view.
3. Double-click on the square for next Wednesday. This will open the calendar action editor window.
4. Enter the **Description**: Ancient History Public Lecture Series.
5. Disable the **All day event** checkbox.
6. For the **Start Time**, enter 06:50 PM.
7. For the **End Time**, set the end date to the same as the start date.  
Set the time to 09:10 PM.
8. Click the **Recurrence** button to configure how many times the event will recur:
  - **Recurrence pattern**: Weekly - Recur every 1 week on Wednesday.
  - **Range of Recurrence**: End after 4 occurrences.Click **OK**.
9. Under **List of Devices**, click **Add** to open the Select Devices window.
10. Set the **Device Type** to Door and select the following doors:
  - 29B Upper Entry Door
  - 29B Lower Entry DoorClick **OK**.
11. Set the **Action** for both doors to Unlock Latched.
12. Click **Add** again.
13. Set the **Device Type** to Output and select the relevant **Controller**. Select the following outputs:
  - 29B Lights
  - 29B HVACClick **OK**.
14. Set the **Action** for both outputs to On.
15. Click **Save & Close**.

You should see that the Ancient History Lecture Series calendar action appears on the calendar for the next four Wednesdays.

## Controlling the Area

Currently our calendar action will unlock the doors and turns on the lights and HVAC, but it will not disarm the area. Because calendar actions cannot control areas directly, we have to link the area to an output which the calendar action can control.

The first two parts of this procedure could be programmed ahead of time and used for any number of calendar actions that need to control this area. Discuss any specific requirements with your integrator or security manager.

### Adding a Virtual Output

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To begin, we must program a virtual output which will be used to control the area:

1. If you do not already have virtual outputs available, navigate to **Expanders | Output Expanders** and create a virtual output expander:

- From the toolbar, select the **Controller** that will control these outputs, then click **Add**.
  - Ensure that the **Virtual Module** option is enabled.
  - Set the **Physical Address** to a value above existing physical expanders (e.g. 32). Click **Save**.
  - Disable **Add Trouble Inputs** and click **Add Now**.
  - In **Programming | Outputs**, rename the resulting outputs so that they include the term Virtual in their names.
2. Select an output and name it: 29B Area Control (ON=DISARM OFF=ARM)
  3. Navigate to **Monitoring | Status Lists** and add this output to your status list so that you can easily view the status.

## Creating the Programmable Functions

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Next, we require two programmable functions to control the area arming and disarming based on the output state. The first function will disarm the area when the output turns on, and the second will arm the area when the output turns off.

1. Navigate to **Automation | Programmable Functions** and set the **Controller** in the toolbar.
2. Click **Add** to create a new programmable function called 29B Disarming.
3. Set the **Type** to Area Control.
4. In the **Area Control** tab, set the following:
  - **Area Function:** 3 - Area Disarms on Output Turning On
  - **Output to Check:** 29B Area Control (ON=DISARM OFF=ARM)
  - **Area to Control:** Lecture Theater 29B
5. Click **Save**.
6. Click **Add** again to create another programmable function called 29B Arming.
7. Set the **Type** to Area Control.
8. In the **Area Control** tab, set the following:
  - **Area Function:** 4 - Area Arms on Output Turning Off
  - **Output to Check:** 29B Area Control (ON=DISARM OFF=ARM)
  - **Area to Control:** Lecture Theater 29B
9. Click **Save**.
10. Wait for the programming to be downloaded to the controller, then right click on each programmable function and click **Start**.

**Note:** It is possible to arm and disarm the area using a single programmable function using the 1 - Area Follows Output State area function, however this programmable function would control the area state at all times, not only during the calendar action.

## Editing the Calendar Action

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Finally, we can update our existing calendar action to include the virtual output which will trigger the area arming and disarming:

1. Navigate to **Sites | Calendar Actions** and double-click on the Ancient History Lecture Series event.
2. Select **Open the series** so that you can edit all occurrences of this calendar action. Click **OK**.
3. Under **List of Devices**, click **Add**.
4. Set the **Device Type** to Output and select the relevant **Controller**.
5. Select 29B Area Control (ON=DISARM OFF=ARM) and click **OK**.
6. Set the **Action** for the new output to On.
7. Click **Save & Close**.

# Validating the Calendar Action

To validate the calendar action, we want to check that the doors, outputs and areas all change state when the lecture time starts, and reset to their original state afterwards.

## Setting the Controller Time

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First we need to set the controller's time to just before the calendar action starts so we can observe the behavior.

1. Navigate to **Sites | Controllers** and right click on the relevant controller.
2. Enter the date of the first public lecture and the time 6:49:55 PM.
3. Click **Set Controller Date Time**.

## Effects of the Calendar Action Starting

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Navigate to **Monitoring | Status Page View** and watch your status page as the calendar action becomes active. You should see the following events:

```
Calendar Action 'Ancient History Public Lecture Series' (4) Is Valid
Door 29B Upper Entry Door (DR12) Unlocked By Calendar Action 'Ancient History
Public Lecture Series' (4)
Door 29B Lower Entry Door (DR13) Unlocked By Calendar Action 'Ancient History
Public Lecture Series' (4)
Output 29B Lights (130) ON By Calendar Action 'Ancient History Public Lecture
Series' (4)
Output 29B HVAC (131) ON By Calendar Action 'Ancient History Public Lecture
Series' (4)
Output 29B Area Control (ON=DISARM OFF=ARM) (132) ON By Calendar Action
'Ancient History Public Lecture Series' (4)
Area Lecture Theater 29B (AR14) Disarmed By System Using SYSTEM USER
Report In Lecture Theater 29B (14) User SYSTEM USER Report Keyswitch Flags
[NEW+ALARM]
```

In the status list, the status of the doors will change to unlocked, all outputs will change to on, and the area will change to disarmed.

Right click on the 29B Upper Entry Door in the status list and attempt to lock it. The door will not lock and you will see this event:

```
Door 29B Upper Entry Door (DR12) State Change Blocked By Calendar Action
'Calendar Actions' (0)
```

Right click on the 29B Lights output in the status list and attempt to turn it off. The output will not turn off and you will see this event:

```
Output 29B HVAC (131) State Change Blocked By Calendar Action 'Calendar
Actions' (0)
```

## Setting the Controller Time

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To see what happens at the end of the calendar action, we can set the controller time forward a few hours.

1. Navigate to **Sites | Controllers** and right click on the relevant controller.
2. Enter the date of the first public lecture and the time 9:09:55 PM.
3. Click **Set Controller Date Time**.

## Effects of the Calendar Action Ending

---

Return to view your status page as the calendar action ends. You should see the following events:

```
Calendar Action 'Ancient History Public Lecture Series' (4) Is Invalid
Door 29B Upper Entry Door (DR12) State Restored By Calendar Action 'Ancient
History Public Lecture Series' (4)
```

Door 29B Lower Entry Door (DR13) State Restored By Calendar Action 'Ancient History Public Lecture Series' (4)  
Output 29B Lights (130) Off By SYSTEM USER Using SERVICE  
Output 29B Lights (130) State Restored By Calendar Action 'Ancient History Public Lecture Series' (4)  
Output 29B HVAC (131) Off By SYSTEM USER Using SERVICE  
Output 29B HVAC (131) State Restored By Calendar Action 'Ancient History Public Lecture Series' (4)  
Output 29B Area Control (ON=DISARM OFF=ARM) (132) Off By SYSTEM USER Using SERVICE  
Output 29B Area Control (ON=DISARM OFF=ARM) (132) State Restored By Calendar Action 'Ancient History Public Lecture Series' (4)  
Area Lecture Theater 29B (14) Arming Started By System Using SYSTEM USER

The door status will change to locked and the output status to off. After the exit delay, the area will arm:

Area Lecture Theater 29B (AR14) Armed By System Using SYSTEM USER  
Report In Lecture Theater 29B (14) User SYSTEM USER Report Keyswitch Flags [NEW+ALARM]

Now the lecture theater is secured again following the public lecture.

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