

# Creating a Respondent Self-Scheduling Interface Using Blaise 5

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## 1. Background

With refusals increasing and contact rates decreasing, researchers are having to expend more effort to reach people than ever before. When an interviewer makes contact, some portion of that time is spent finding a time when the person actually has the time required for the survey request. One possible way to minimize that effort is to have the person self-schedule a time that is convenient for them. Self-scheduling is common in daily life, for things like salon appointments, restaurant reservations, and automobile service appointments, so why not allow, at least for those who want to, an opportunity to set an appointment without involving an interviewer?

## 2. Scheduling System

The University of Michigan has created a scheduling system that allows a person to schedule an appointment time that is convenient for them. The system has three main components:

1. An *appointment configuration settings* interface that allows the project to define parameters that are used to calculate appointment slots,
2. A *logon portal* that controls access to the self-scheduling interface (survey), and
3. A *Blaise datamodel* used as the self-scheduling interface.

### 2.1 Appointment Configuration Settings

There are 12 different appointment configuration settings a project defines (see Figure 1). The scheduling system uses the defined parameters to calculate available appointment slots for the respondent to select from.

Figure 1. Appointment Configuration Settings

Setting	Value
Appointment Length	90
	Sunday Monday Tuesday Wednesday Thursday Friday Saturday
Open Hours Start	07:00 AM 07:00 AM 07:00 AM 07:00 AM 07:00 AM 07:00 AM 07:00 AM
Open Hours End	11:00 PM 11:00 PM 11:00 PM 11:00 PM 11:00 PM 11:00 PM 11:00 PM
Max In Slots	4
Black Out Dates (Multiple dates allowed, comma separated)	e.g. 1/1/2023,7/4/2023
Schedule Delay Value	4
Schedule Delay Time	days
Schedule Window Value	2
Schedule Window Time	months
Appointment Interval	30
Start Date	07/09/2023
End Date	12/24/2023

### **2.1.1 Flexible Time Slot Generation**

The program initiates its operation by generating potential time slots based on the defined parameters. These parameters include the intervals (e.g., every 15, 30, 45, 60 minutes) displayed to the respondent specified by [Appointment Intervals], the daily start and end times of availability (specified as [Open Hours Start] and [Open Hours End]), and the allowable scheduling period defined by [Start Date] and [End Date].

### **2.1.2 Flexible Time Slot Generation**

Each time interval generated is assigned a maximum number of interview slots, as specified by [Max Iw Slots]. This allocation accounts for the anticipated capacity for interviews within those intervals, ensuring efficient resource utilization.

### **2.1.3 Accounting for Existing Appointments**

To provide an accurate representation of available slots, the program deducts the number of current appointments from the maximum slots available by matching interval time slots and all time slots within the next [Appointment Length] minutes. This mechanism guarantees that only genuinely open slots are presented to users, factoring in the expected duration of each survey.

### **2.1.4 Dynamic Date Range Selection**

The program next dynamically determines the available date range for scheduling appointments. This range starts with a delay, as defined by [Schedule Delay Value] and [Schedule Delay Time]. For example, if today is October 1 and the delay values are [2] and [days], the first available time slots presented to users would begin on October 3. The program also limits the scheduling horizon by considering [Schedule Window Value] and [Schedule Window Time], ensuring that respondents can't schedule appointments too far in advance. For instance, if those values are [2] and [months] with the delay values above, the date range of dates available for time slots would be from October 3 to December 3. Different unit types are available, including days, weeks, and months.

### **2.1.5 Blackout Date Filtering**

Lastly, the program ensures that any dates defined as [Black Out Dates] are filtered out from the available options, preventing respondents from scheduling appointments on these restricted dates. Additionally, it enforces all dates to fall within the project's specified [Start Date] and [End Date], maintaining alignment with project timelines.

Overall, these configuration settings, which are customizable for each project, empower project leaders to adapt and respond to changing interviewer availability and organizational needs. This systematic approach not only streamlines the scheduling process, but also enhances the user experience by providing a comprehensive and tailored set of options for survey completion.

## **3. Logon Portal**

The portal is a .NET web application that collects the user's login credentials, performs checks, retrieves

current case status from the management system, and launches the Blaise self-scheduling survey if appropriate. It has been implemented in both English and Spanish (see Figure 2).

The usual method of entering through the portal is via a fully qualified URL. That is, the full web address and parameters are supplied. For example,

```
https://[TestingSite]/[SS_Survey]/logon.aspx?l=[loginID]&p=[pin]5&iwerid=[iwerid]&S=[SessionContact]
```

The portal has been designed so the respondent is taken to the logon site with the login credentials passed from the URL, but the respondent needs to manually click/tap the “Start” button in order to launch the self-scheduling survey.

After the user has entered their login credentials, or has had these credentials and other parameters automatically supplied via an email, QR code, or other means, the portal checks to see if the browser is supported (i.e., not too old) and that cookies and JavaScript have been enabled. If these checks pass, then the portal passes the supplied credentials to an authentication endpoint (that communicates with the management system) and receives back a status and the primary key (if appropriate) for the attempt:

- Authorized (login credentials are okay, and the self-scheduling survey is active and available)
- NotAuthenticated (wrong login credentials)
- Paused/Locked/Stopped/Canceled (self-scheduling survey is not available)
- Expired/Closed (study has been closed and is not available)
- NotAvailable (study is not available)

**Figure 2. Scheduling System Logon Portal**

**Welcome!**

To schedule your interview, please enter your unique Login and Pin and click Start.

Your unique Login and Pin are on the materials that were mailed to you.

To protect the confidentiality of your responses, your session will end after 15 minutes of inactivity.

[Haga clic aquí para español](#)

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(v1.2)

The portal page also checks for concurrent sessions of the self-scheduling survey and, if found, will deny the later login attempt from accessing the self-scheduling survey (a wait message is displayed to try again later). The portal will attempt to clear any existing Blaise session using the returned primary key before starting the self-scheduling survey with several parameters passed into the survey (such as the project ID, a web server identifier, mode, and others).

## **4. Blaise Datamodel**

### **4.1 Alien Procedure Calls**

The Blaise data model communicates with the management system and with the scheduling database via alien procedure calls to a Windows service installed on the web server (see the Blaise Fibonacci sample program for an example of using an alien procedure). Implemented calls include:

#### **4.1.1 Scheduling Database Specific**

- **procSchedDateRange:** Start and end date for the study, days of week available, and enabled and disabled dates. This information had originally been used with a date control, but in the current implementation, the dates are displayed in a drop-down list. The dates are still filtered by the

service configuration settings. A study-specific rule to restrict appointment start dates by three days from the current date has been implemented in the data model.

- `procSchedTimeSlots`: Retrieves all the time slots available for a selected date. This is populated to the drop-down list of times.

#### **4.1.2 Management System Specific**

- `procGetApptInfo`: Whether this is a prior appointment, along with date, time, time zone, and appointment ID of the appointment.
- `procSetNewAppt`: Set a new appointment with the management system using start date/time, end date/time, time zone, contact phone, session contact method, alternative contact phone, and appointment ID.
- `procRescheduleAppt`: Reschedule an existing appointment with the management system using start date/time, end date/time, time zone, contact phone, session contact method, alternative contact phone, and appointment ID.
- `procCancelAppt`: Cancel an existing appointment using appointment ID and session contact method.
- `procRecordContact`: Write to the management system the type of appointment contact: canceled, scheduled, or rescheduled, with the parameters of start date/time, end date/time, time zone, contact phone, session contact method, alternative contact phone, and appointment ID.
- `procGetContactInfo`: Get the first and last name, email, email type [confirmation/cancellation], phone, and phone type [confirmation/cancellation].
- `procGetLanguage`: Get the initial current language to use for the appointment (English or Spanish).
- `procSetContactInfo`: Write out to the management system the first and last name, email, email type [confirmation/cancellation], phone, and phone type [confirmation/cancellation].

#### **4.1.2 Service Specific**

- `getDateTime`: Converts date and time with time zone into a single string representation of the time.

### **4.2 Windows Service**

A Windows service, `SS_Svc.exe`, was developed to reside on the web server in the Windows services and to communicate with Blaise via the alien procedure method. A port was “opened” to enable these communications to the Blaise self-scheduling survey. The service then sends/retrieves information from the survey, the management system, and the database endpoint. It transforms raw data from any of the three sources to appropriate formats; sets up secure communications; and handles authentication, logins, and so forth behind the scenes.

In prior releases, the service had communicated directly with the database via stored procedures. An even earlier implementation had no external database with dates and time slots, but just a few settings that were read from the configuration file: start/end dates, start/end shift times, daily schedule, enabled dates,

disabled dates, and interviewer-assisted flags. Appointment information was still retrieved and stored using the management system.

### **4.3 Respondent Interface**

The Blaise data model serves as the interface for the respondent to enter their appointment. The self-scheduling survey uses just five pages: three are for setting up a new/rescheduled appointment, one is for choosing to cancel/reschedule an appointment, and one is for canceling.

#### **4.3.1 Scheduling an Appointment**

If a respondent is scheduling an appointment, they will see the first of three appointment entry screens. The respondent selects the time zone they want, and then the date and time controls are populated with the available dates and times adjusted by the time zone difference between the call center (in EST) and the respondent's time zone. If there is a big time difference between time zones, then either the starting time will be later than the call center beginning shift time or the ending time will likely be in the afternoon. In either situation, the appointments made by the respondent will fall somewhere within the call center hours of operation.

Time zones will adjust the date/time drop-down lists shown to the respondent. In addition, the time zone information collected has to be transformed between standard time zone names and time zones as they are stored in the management system. As a result, a time zone external lookup database was created to handle the name translations, as well as retrieve the appropriate time zone offset the management system expects.

Navigation between pages is accomplished by clicking the section buttons (see Figure 3). These have been made extra wide so they appear as a button bar. Respondents are free to move between the first two screens (*Choose Your Interview Date and Time* and *Enter Your Contact Information*) and make changes.

Once the respondent has selected the time zone, date, and time of their appointment and has navigated to the contact information section, a summary of the appointment date and time is displayed in the first section. In the second section (see Figure 4), the respondent is asked for their contact name (first and last), email, and phone number, and to provide any relevant notes for things like an international phone number or the need to be called at a different number than the one entered in the phone field, etc.

Figure 3. Section Buttons

**1. Choose Your Interview Date and Time**

**Time Zone**

USA - Eastern ▼

**Date**

Select a date ▼

**Time:**

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**Select 2. Enter Your Contact Information to continue.**

**2. Enter Your Contact Information**

**3. Confirmation**

Figure 4. Contact Information Screen

The screenshot displays a web form with the following elements:

- 1. Choose Your Interview Date and Time** (Section Header)
- Monday, October 2, 2023 @ 07:00 AM USA - Eastern (Date and Time)
- 2. Enter Your Contact Information** (Section Header)
- Contact Name** (Section Header)
- First name (Text input field)
- Last name (Text input field)
- Email** (Section Header)
- abc@xyz.tuv (Text input field)
- Phone** If you have an international number enter it in the note field. (Section Header)
- ( ) - (Text input field)
- Note** Enter the phone number to call for your interview (if different than above) and any other notes you have for your interviewer. (Section Header)
- (Text area for notes)

Once the respondent navigates to the confirmation screen, the system checks to make sure there is still an appointment slot available. If there is, the respondent is presented with the confirmation screen (see Figure 5). If there are no slots available, the respondent is asked to select a different date or time.

Figure 5. Confirmation Screen

The screenshot displays a web form with the following elements:

- 1. Choose Your Interview Date and Time** (Section Header)
- Monday, October 2, 2023 @ 07:00 AM USA - Eastern (Date and Time)
- 2. Enter Your Contact Information** (Section Header)
- 3. Confirmation** (Section Header)
- Confirmation - Thanks! Your interview is scheduled! We will send an email and a text message for your records shortly. Your appointment is scheduled for: (Text)
- Monday, October 2, 2023 @ 07:00 AM USA - Eastern (Date and Time)
- Exit (Text button)

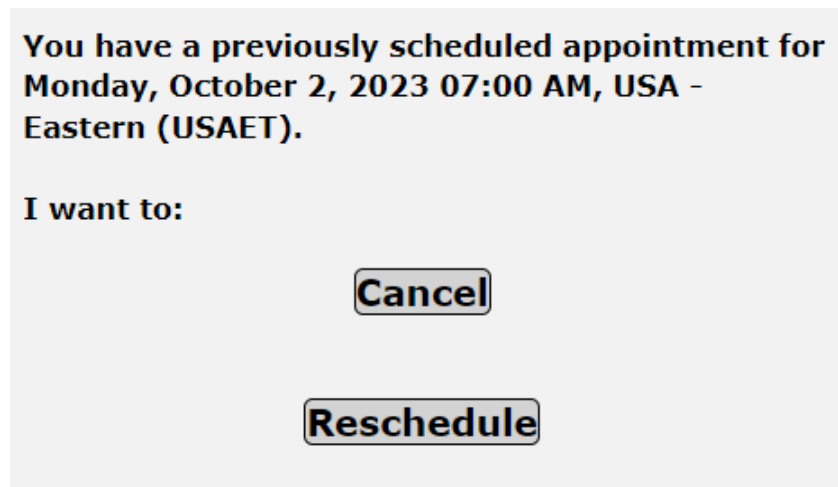


Successful appointments decrement the number of slots available for a date/time, and once that count is less than one, it will no longer be available in this interface. Each time the respondent changes time zone, date, or time on this screen, the service is contacted again to refresh the values in an effort to avoid overbooking appointments.

#### 4.3.2 Rescheduling an Appointment

When a respondent already has a scheduled appointment, they have an option to reschedule (or cancel) that appointment date/time (see Figure 6). When an appointment is being rescheduled, the prior appointment is automatically canceled, and the self-scheduling survey collects the new appointment information. The information is collected in exactly the same way as a new appointment.

Figure 6. Reschedule/Cancel Screen



For rescheduled appointments, the self-scheduling survey will create a new appointment ID (the letter “A” + primary key) and launch the self-scheduling survey again. The management system needs to know the difference between a newly scheduled appointment and one that has been rescheduled, so this mechanism was chosen to pass that information, and then start with a fresh survey to gather the new appointment.

#### 4.3.3 Canceling an Appointment

A simple verification screen is displayed to show the appointment has been canceled (see Figure 7). In this case, the appointment is marked as canceled, and the number of available slots for this date/time is incremented in the database.

Figure 7. Reschedule/Cancel Screen

**Your appointment for Monday, October 2, 2023  
07:00 AM, USA - Eastern (USAET), has been  
canceled.**

**Exit**

## **5. Future Work**

The logon portal needs to be changed to use .NET's resource files, .resx, for language-specific texts. Currently, the portal switches between two logon pages. This means there is code duplication, a small delay as the page loads, and some extra programming required to transfer parameters between the pages. By using .resx files, there would be one source page with no code duplication, no delay between language switches, and easier maintenance of texts.

The endpoints in the Windows service have been kept as work progressed and are currently backward compatible with all prior versions of the self-scheduling survey but will be removed to keep the code clean.