|  |  |  | given CalendarDB, if a <br> task of the same time, <br> duration, and title is <br> not already scheduled. |
| :--- | :--- | :--- | :--- |
| ViewDay |  |  |  |
| Viewltem | CalendarDB, Date | DailyAgenda |  |
|  | CalendarDB, Date | Scheduledltem |  |


|  | GlobalOptions, UserWorkSpace |  | calendar file of the given name and put the data from that file in the workspace. |
| :---: | :---: | :---: | :---: |
| FileSave | FileSpace, UserWorkSpace | FileSpace, UserWorkSpace | If the calendar in the given workspace requires saving, save it in the given file space. |
| FindGroup | GroupDB, Name | GroupRecord | Find a group by unique name. |
| FindUser (overload 1) | Id, Name, UserDB | UserRecord | Find a user by both name and id. This overload of FindUser is presumably used infrequently. Its utility is to confirm that a particular user name and id are paired as assumed. |
| FindUser (overload 2) | Name, UserDB | UserRecord | Find a user or users by real-world name. If more than one is found, the output list is sorted by id. |
| FindUser (overload 3) | Id, UserDB | UserRecord | Find a user by unique id. |
| ScheduleAppointment | Appointment, CalendarDB | CalendarDB | ScheduleAppointment adds the given Appointment to the current user's Calendar of the given CalendarDB, if an appointment of the same time, duration, and title is not already scheduled. The RequiresSaving flag of the calendar is set to true. |
| ScheduleEvent | CalendarDB, Event | CalendarDB | ScheduleEvent adds the given Event to the given CalendarDB, if an event of the same time, duration, and title is not already scheduled. |
| ScheduleMeeting | CalendarDB, MeetingRequest | PossibleMeetingTimes | ScheduleMeeting uses the given MeetingRequest to determine possible times that the requested meeting might be held, within the existing set of scheduled items in the CalendarDB. The PossibleMeetingTimes output is a list of zero or more possible times and dates that the meeting can be held. |
| ScheduleTask | CalendarDB, Task |  | ScheduleTask adds the |


|  |  |  | record must already be in the input db. Typically the user runs the FindUser operation prior to Delete to locate an existing record to delete. In addition, delete the user from all groups of which the user is a member. If the deleted user is the only leader of a one more groups, output a warning indicating that those groups have become leaderless. |
| :---: | :---: | :---: | :---: |
| EditCopy | UserWorkSpace | UserWorkSpace | The currently selected text segment is copied into the clipboard; |
| EditCut | UserWorkSpace | UserWorkSpace | The currently selected text segment is copied into the clipboard and removed from its context. The workspace selection in set to empty. |
| EditDelete | UserWorkSpace | UserWorkSpace | The currently selected text is removed from the context. The workspace selection in set to empty. |
| EditPaste | UserWorkSpace | UserWorkSpace | Paste the contents of the clipboard into the currently selected start position, replacing any selected text from start to end position. |
| EditUndo | UserWorkSpace | UserWorkSpace | Undo the most recent scheduling operation. Only one level of undo/redo is specified here. Successive invocations of undo toggle between the current and previous states of the calendar. Note that the calendar editing operations support undo by saving a snapshot of the input calendar in the previous_state component of the workspace. |
| FileClose | FileSpace, UserWorkSpace | FileSpace, UserWorkSpace | Close the current calendar if it does not require saving. |
| FileNew | GlobalOptions, UserWorkSpace | UserWorkSpace | Add a new empty calendar to the workspace and make it current. |
| FileOpen | FileName FileSp | FileSpace UserWorkSpace |  |


|  | GroupRecord, GroupRecord, UserDB |  | GroupRecord to the given new record. The old and new records must not be the same. The old record must already be in the input db. The new record must meet the same conditions as for the input to the AddGroup operation. Typically the user runs the FindGroup operation prior to Change to locate an existing record to be changed. |
| :---: | :---: | :---: | :---: |
| ChangeUser | GroupDB, UserDB, UserRecord, UserRecord | GroupDB, UserDB | Change the given old UserRecord to the given new record. The old and new records must not be the same. The old record must already be in the input db. The new record must meet the same conditions as for the input to the AddUser operation. Typically the user runs the FindUser operation prior to Change to locate an existing record to be changed. If the user record id is changed, then change all occurrences of the old id in the group db to the new id. |
| ConfirmMeeting | CalendarDB, <br> MeetingRequest, PossibleMeetingTimes, SelectedTime | CalendarDB | ConfirmMeeting takes a CalendarDB, MeetingRequest, list of <br> PossibleMeetingTimes, and a Selected time from the list. It outputs a new CalendarDB with the given request scheduled at the selected time. Further details of output constraints are forthcoming. |
| DeleteGroup | GroupDB, GroupRecord | GroupDB | Delete the given group record from the given GroupDB. The given record must already be in the input db. Typically the user runs the FindGroup operation prior to Delete to locate an existing record to delete. |
| DeleteUser | GroupDB, UserDB, UserRecord | GroupDB, <br> LeaderlessGroupsWarning, UserDB | Delete the given user record from the given |


|  |  | is used with the Edit cut, copy, and paste operations. |
| :---: | :---: | :---: |
| Vertical |  | Option indicator for displaying overlaps vertically. |
| Wednesday |  | One of the seven days of the week. |
| Weekly |  | Indicates a scheduled item recurs weekly. |
| WeeklyDetails | OnSun and OnMon and OnTue and OnWed and OnThu and OnFri and OnSat | WeeklyDetails has an on/off setting for each day of the week on which an item recurs. These details are also used for the BiWeekly setting of the recurrance interval. |
| Width | integer | Width value for the default height and width option. |
| Year | integer | The four-digit year number. (Yes, this Calendar Tool has a Y10K problem.) |
| Yearly |  | Indicates a scheduled item recurs yearly. |
| Yellow |  | One of the built-in category colors. |

## Operation Dictionary

| Operation Name | Inputs | Outputs | Description |
| :---: | :---: | :---: | :---: |
| AddGroup | GroupDB, GroupRecord, UserDB | GroupDB | Add the given GroupRecord to the given GroupDB. The name of the given group must not be the same as a group already in the GroupDB. All group members must be registered users. The leader(s) of the group must be members of it. |
| AddUser | UserDB, UserRecord | UserDB | Add the given UserRecord to the given UserDB. The Id of the given user record must not be the same as a user record already in the UserDB. The Id component is required and must be eight characters or less. The email address is required. The phone number is optional; if given, the area code and number must be 3 and 7 digits respectively. |
| ChangeGroup | GroupDB | GroupDB |  |


|  |  | clock. Which clock type currently in use is determined by a user-selectable option setting. |
| :---: | :---: | :---: |
| Title | string | A Title is a free-form text string describing a scheduled item. |
| Tuesday |  | One of the seven days of the week. |
| UserCalendar | Userld and File and UserOptions and RequiresSaving and ScheduledItem* | A UserCalendar has the id of the user who owns it, the specialized user options for the calendar, a flag indicating if the calendar requires saving, and the list of scheduled items. |
| UserCalendars | UserCalendar* | UserCalendars is the list of active calendars upon which the user is working. The list is maintained in the order visited by the user, with the first element being the most recently visited, and hence current, and the last element being the earliest visited. |
| UserDB | UserRecord* | UserDB is the repository of registered user information. |
| Userld | Id | The id of a registered user. |
| UserName | string | The name of a registered user. |
| UserOptions | Option* | The personal options of a user, initially a copy of the default global options, and subsequently changed if the user chooses to do so using the EditPreferences dialog. |
| UserRecord | Name and Id and EmailAddress and PhoneNumber | A UserRecord is the information stored about a registered user of the Calendar Tool. The Name component is the user's real-world name. The Id is the unique identifier by which the user is known to the Calendar Tool. The EmailAddress is the electronic mail address used by the Calendar Tool to contact the user when necessary. The PhoneNumber is for information purposes; it is not used by the Calendar Tool for contacting the user. |
| UserWorkSpace | Userld and UserCalendar* and UserOptions and PreviousState and Clipboard and Selection and SelectionContext | The UserWorkSpace contains the active calendars upon which the user is working. The first component is the Userld of the current user, which is used as necessary by operations that input the workspace to determine who the user is. The UserCalendars component is the list of active calendars. The UserOptions component is the list of individualized user options, some of which may be different than the global calendar options. The previous_state component is used to support one level of |


|  | RemindInfo and Details and CompletedFlag and CompletionDate | follows: (1) Appointments have Duration and Location, Tasks do not. (2) For Appointments, the priority is either 'Must' or 'Optional'; for Tasks, priority is a positive integer indicating the relative priority of a task compared to other tasks. (3) Tasks have a CompletedFlag and CompletionDate components; Appointments do not. |
| :---: | :---: | :---: |
| TaskDescriptor | TaskNumber and TaskTitle | A TaskDescriptor is one item in a number list of tasks. |
| TaskNumber | integer | The ordinal number of a task relative to other tasks. |
| TaskPriority | integer | A TaskPriority is a positive integer that defines the priority of one task relative to others. |
| TaskTitle | Title | The free-form title of a task. |
| ThirdWeekDetails | WeeklyDetails | Scheulding details for the third week of a month. |
| Thursday |  | One of the seven days of the week. |
| Time | string | As with Date, Time is for now just as string. This definition will expand soon. |
| TimeIncrementOption | Hours and Minutes | TimeIncrementOption defines the time increment of the left column labels in the daily agenda. The smallest allowable time increment is five minutes, the largest is twelve hours. When the time increment is less than one hour, the time labels are shown in hour and minute format; when the increment is one hour or greater, the labels are shown as hours with no minutes. The default increment is one hour. |
| TimeSlotDescriptor | TimeSlotName and BriefltemDescriptor* and Overlaps | A time slot descriptor represents one slot (physically, a row) in a daily agenda. The TimeSlotName component is the start time for the slot. The list of BriefltemDescriptors contains the items that begin within the slot, where "within" is defined as the start time plus the current time increment. The overlaps component is a list of items with start times that overlap with an item in the BriefltemDescriptor list. |
| TimeSlotName | TimeValue and AmOrPm | A TimeSlotName consists of a numeric TimeValue and an AmOrPm indicator. TO DO: this definition should be reconciled as appropriate with the definition of Time in the Schedule module. |
| TimeValue | integer | The numeric value of a time of |


| ShowHideDashedLinesOption | Show or Hide | ShowHideDashedLinesOption toggles between showing and not showing the dashed lines that appear above and below items that do not start or end on the hour in a daily agenda. The default is to show dashed lines. |
| :---: | :---: | :---: |
| ShowHideEventsOption | Show or Hide | ShowHideEventsOption toggles between showing or not showing the list of events in a daily agenda. The default is to show events if any are scheduled. |
| ShowHideExactTimeOption | Show or Hide | ShowHideExactTimeOption toggles between showing or not showing the starting and ending times for each scheduled item immediately to the left of the title in a daily agenda. This option is useful when items do not typically start or end exactly on the hour. The default value for this option is to hide the exact time. |
| ShowHideExtensionArrowsOption | Show or Hide | ShowHideExtensionArrowsOption toggles between showing and not showing the down-pointing arrows for items with end times that extend beyond the hour of the start time in a daily agenda. The default is to show extension arrows. |
| ShowHideTasksOption | Show or Hide | ShowHideTasksOption toggles between showing or not showing the list of tasks in a daily agenda. The default is to show tasks if any are scheduled. |
| StandardColor | Black or Brown or Red or Orange or Yellow or Green or Blue or Purple | A StandardColor is one of a fixed set of possibilities. |
| StartOrDueDate | Date | StartOrDueDate is a multi-purpose component of ScheduledItem. Its purpose depends on whether an item is a Task and whether it is recurring (Events cannot recur). For non-recurring appointments and meetings, StartOrDueDate is used as the single date on which the item is scheduled. If the item is recurring, StartOrDueDate is the first date on which it occurs. For a non-recurring Task, StartOrDueDate is the single date the task is due. If the task is recurring, StartOrDueDate is the first date it is due. |
| StartTime | Time | StartTime is the starting time of a scheduled appointment or meeting. |
| Sunday |  | One of the seven days of the week. |
| Task | Inherits from: ScheduledItem <br> DueTime and RecurringInfo and Security <br> TaskPriority | Like an Appointment, a Task adds a number of components to a generic ScheduledItem. A Task |


|  |  | operations has been performed on the calendar since the most recent save. The calendar edit operations are Schedule, Change, and Delete. |
| :---: | :---: | :---: |
| RoomDB | RoomRecord* |  |
| RoomRecord |  |  |
| Saturday |  | One of the seven days of the week. |
| ScheduledItem | Title and StartOrDueDate and EndDate and Category | A Scheduledltem is the generic definition for the types of items stored in a calendar. The Title component is a brief description of what the item is for. The StartOrDueDate and EndDate components indicate when the item is scheduled. The Category component is used to organize items into related color-coded categories. There are four specializations of ScheduledItem. They are Appointment, Meeting, Event, and Task, q.q.v. |
| SecondWeekDetails | WeeklyDetails | Scheulding details for the second week of a month. |
| Security | Public or PublicTitle or Confidential or Private | Security is one of four possible levels, from Public to Private. The levels specify the degree of visibility a scheduled item has to other users. For an appointment, task, or event, "other users" are defined as all users other than the user on whose calendar the scheduled item appears. For a meeting, "other users" are all users not on the Attendees list of the meeting. |
| SelectedTime | integer |  |
| Selection | integer and integer and string | The workspace text selection is the defined as the starting and ending character positions in current workspace text context. |
| SelectionContext | string | SelectionContext is the text context in which the user makes a selection. |
| September |  | One of the twelve months of the year. |
| Show |  | Option indicator for a show/hide option, indicating that the option state is "show". |
| ShowHide24HoursOption | Show or Hide | ShowHide24HoursOption toggles between showing a full 24 hours of display versus the normal time range only in daily agenda. If the 24-hour time range is shown, non-normal times are shown with a light grey background, to distinguish them from normal times. The default value for this option is to hide non-normal times. |


|  |  | appointments can have private security. |
| :---: | :---: | :---: |
| ProportionalSpacingOnOffOption | On or Off | ProportionalSpacingOnOffOption toggles between placing items proportionally down from the top of the hour based on starting time in a daily agenda. When the option is off, the first (only) item in an hour is placed at the top of that hour and any other items starting in the hour are placed immediately below it. The default is proportional spacing on. |
| Public |  | Public security means other users can see the scheduled item and all the information about the item. |
| PublicTitle |  | PublicTitle security means other users can see the title of the scheduled item but none of the other information about the item. |
| Purple |  | One of the built-in category colors. |
| RecurringInfo | IsRecurring and Interval and IntervalDetails | RecurringInfo has components to specify the nature of a recurring item. IsRecurring is an on/off flag that indicates whether an item recurs. Interval is one of Weekly, Biweekly, Monthly, or Yearly. The IntervalDetails component defines the precise means to define recurrence for the different interval levels. |
| Red |  | One of the built-in category colors. |
| RemindInfo | RemindWhen and RemindWhere |  |
| RemindWhen | integer and ReminderTimeUnits | RemindWhen defines how soon before a scheduled item the reminder is to be sent. The time units are minutes, hours, or days. |
| RemindWhere | OnScreen or BeepOnly or Email | RemindInfo defines one of three ways that the user is alerted when a scheduled event is to occur. OnScreen means the user is reminded with a pop-up alert on her computer screen. BeepOnly means the user is reminded with a simple audible tone on the computer. Email means the user is sent an electronic mail message reminder. |
| ReminderTimeUnits | MinutesBefore or HoursBefore or DaysBefore | Reminders can come minutes, hours, or days before an appointment. Each of these units can be fractional, for maximum flexibility. |
| RequiresSaving | boolean | True if a calendar requires saving, which is the case if one |


| OnWed | boolean | Indicates that an item recurs on Wednesday. |
| :---: | :---: | :---: |
| Option | $\ldots$ |  |
| Optional |  | Indicates a scheduled item is 'Optional' priority. |
| Orange |  | One of the built-in category colors. |
| OtherType |  | File data typing tag indicating that a file contains data other than calendar data created by the Calendar Tool |
| Overlaps | BriefltemDescriptor* | Overlaps contain zero or more BriefltemDescriptors that overlap with with the master item in a given time slot. An overlapping item is one with a StartTime within the same time slot as other items. The "master" item in a time slot is the item that is first in a sorted order based on start time, duration, and alphabetic title as the primary, secondary, and tertiary sort keys, respectively. |
| PM |  | The 12 -hour time suffix indicating an afternoon time. |
| PhoneNumber | Area and Number | A phone number consists of a three-digit area code and seven-digit number. |
| PossibleMeetingTimes | (StartTime and Date)* |  |
| PreviousState | Scheduledltem* | PreviousState is the snapshot of scheduled items before the most recently performed scheduling operation used by EditUndo. The Schedule, Change, and Delete operations save the previous state to support Undo. |
| Priority | Must or Optional | Priority indicates whether an appointment is a must or if it is optional. This information is used to indicate the general importance of an appointment to the user. The operational use of Priority is in the ScheduleMeeting operation, where the meeting scheduler can elect to consider optional appointments as allowable times for a meeting. |
| Private |  | Private security means other users see no information at all about a scheduled item, not even that the item is scheduled. Note that private security hides a scheduled item from the ScheduleMeeting operation, q.v., so that a meeting may be scheduled at the same time as a private appointment. It is up to the user to handle this situation by accepting or refusing the scheduled meeting. Given the nature of private security, it does |


|  |  | the settings in FifthWeekDetails do not apply, and the settings in LastWeekDetails, if present, override any settings in FourthWeekDetails. For months with 5 weeks only, the settings in LastWeekDetails, if present, override any settings in FifthWeekDetails. (For months with 6 weeks, the LastWeekDetails component applies to the 6th week, and there are no conflicts.) |
| :---: | :---: | :---: |
| MonthlyDetails | MonthlyDayDetails or MonthlyDateDetails | MonthlyDetails can be specificed on a day-of-the-week basis or on specifc date(s) basis. The two components contain the specific details for these two types of settings. |
| Must |  | Indicates a scheduled item is 'Must' priority. |
| Name (in Module Admin) | string | The name of a registered user. |
| Name (in Module Schedule) | string | The name of a category or a meeting attendee. |
| NormalTimeRangeOption | StartTime and EndTime | NormalTimeRangeOption defines the starting and ending times that normally appear in the left column of the daily agenda. The default range of times is 8 AM to 5PM. |
| November |  | One of the twelve months of the year. |
| Number | integer | The seven-digit number component of a user phone number. |
| October |  | One of the twelve months of the year. |
| Off |  | Option indicator for an on/off option, indicating that the option state is "off". |
| On |  | Option indicator for an on/off option, indicating that the option state is "on". |
| OnFri | boolean | Indicates that an item recurs on Friday. |
| OnMon | boolean | Indicates that an item recurs on Monday. |
| OnSat | boolean | Indicates that an item recurs on Saturday. |
| OnScreen |  | Indicates that reminders are displayed in an on-screen pop-up window. |
| OnSun | boolean | Indicates that an item recurs on Sunday. |
| OnThu | boolean | Indicates that an item recurs on Thursday. |
| OnTue | boolean | Indicates that an item recurs on Tuesday. |


|  |  | location an item is scheduled. |
| :---: | :---: | :---: |
| March |  | One of the twelve months of the year. |
| May |  | One of the twelve months of the year. |
| Meeting | Inherits from: Appointment <br> Attendees | A Meeting adds an Attendees component to an Appointment. This extra component reflects the fact that a meeting is scheduled for more than one person, whereas an appointment is for a single user. Scheduling a meeting involves checking more than one user calendar and finding a common time among all attendees. The description of the ScheduleMeeting operation has further details. |
| MeetingRequest | Inherits from: Meeting <br> LatestStartDate and LatestEndDate and LatestStartTime | A meeting request has all the components of a meeting plus three additional components to specify the latest dates and time at which the meeting can be scheduled. A meeting request is used to specify a range of possible meeting times, to allow scheduling alternatives to be considered. The description of the ScheduleMeeting operation has further details on how meeting requests are handled. |
| Members | Id* | List of user ids for the zero or more members of a group. |
| Minutes | integer | Minutes component of a scheduled item duration. |
| MinutesBefore | real | Number of minutes before a scheduled item to issue the reminder. |
| Monday |  | One of the seven days of the week. |
| MonthName | January or February or March or April or May or June or July or August or September or October or November or December | One of the twelve months of the year. |
| Monthly |  | Indicates a scheduled item recurs monthly. |
| MonthlyDateDetails | DateNumber* | MonthlyDateDetails is a list of zero or more specific dates in a month on which an item recurs. |
| MonthlyDayDetails | FirstWeekDetails and SecondWeekDetails and ThirdWeekDetails and FourthWeekDetails and FifthWeekDetails and LastWeekDetails | MonthlyDayDetails contains a weekly details component for each possible week of a month. The First- through ThirdWeekDetails are distinct for all possible months. Depending on the configuration of a particular month in a particular year, there is potential conflict in specifying recurrance in the fourth, fifth, or last weeks. The conflicts are resolved as follows: |


|  |  | each time increment of a daily agenda. If there are more items starting in an increment than fit in the minimum number of lines, the system automatically increases the height for that increment to a size sufficient to display all items fully. The default value is two lines per increment. |
| :---: | :---: | :---: |
| Interval | Weekly or Biweekly or Monthly or Yearly | Interval specifies the granularity at which recurring items are defined. The Weekly and Biweekly settings allow the user to specify recurrence on one or more days of the week. The Monthly setting allows the user to specify recurrence on one or more days in one or more weeks of each month. The Yearly setting allows the user to specify recurrence on one or more specific dates in the year. |
| IntervalDetails | WeeklyDetails or MonthlyDetails | IntervalDetails are either weekly or monthly. |
| IsReadable | boolean | Flag indicating whether a file is readable, which is required to be true by the FileOpen operation. |
| IsRecurring | boolean |  |
| IsWritable | boolean | Flag indicating whether a file is writable, which is required to be true by the FileSave operation. |
| January |  | One of the twelve months of the year. |
| July |  | One of the twelve months of the year. |
| June |  | One of the twelve months of the year. |
| LastWeekDetails | WeeklyDetails | Scheulding details for the last week of a month. |
| LatestEndDate | Date | In a meeting request, the latest possible end date for a recurring meeting to be scheduled. |
| LatestStartDate | Date | In a meeting request, the latest possible start date for the meeting to be scheduled. |
| LatestStartTime | Time | In a meeting request, the latest possible start time for the meeting to be scheduled. |
| LeaderlessGroupsWarning | Name* | LeaderlessGroupsWarning is an secondary output of the Change and DeleteUser operations, indicating the names of zero or more groups that have become leaderless as the result of a user having been deleted. |
| Leaders | Id* | List of user ids for the zero or more leaders of a group. |
| Location | string | Location is a free-form string |


|  |  | FileSpace is simply a collection of zero or more Files, with no other properties modeled here. |
| :---: | :---: | :---: |
| FileType | CalendarType or OtherType | The type of file data is either CalendarType data (which we care about) or any other type of data that can be stored in a file, which we don't care about. |
| FirstWeekDetails | WeeklyDetails | Scheulding details for the first week of a month. |
| FourthWeekDetails | WeeklyDetails | Scheulding details for the fourth week of a month. |
| Friday |  | One of the seven days of the week. |
| FullDayName | DayName and MonthName and DateNumber and Year | A FullDayName has the complete and unique designation of a calendar day. |
| GlobalOptions | Option* | The global default options for all users. The local options for each user calendar are initially a copy of the global options. The local options can be changed if the user chooses to do so using the EditPreferences dialog. |
| Green |  | One of the built-in category colors. |
| GroupDB | GroupRecord* | UserDB is the repository of user group information. |
| GroupRecord | Name and Leaders and Members | A GroupRecord is the information stored about a user group. The Name component is a unique group name of any length. Leaders is a list of zero or more users designated as group leader. Members is the list of group members, including the leaders. Both lists consist of user id's. Normally a group is required to have at least one leader. The only case that a group becomes leaderless is when its leader is deleted as a registered user. |
| Height | integer | Height value for the default height and width option. |
| Hide |  | Option indicator for a show/hide option, indicating that the option state is "hide". |
| Horizontal |  | Option indicator for displaying overlaps horizontally. |
| Hours | integer | Hours component of a scheduled item duration. |
| HoursBefore | real | Number of hours before a scheduled item to issue the reminder. |
| Id | string | The unique id of a registered user. |
| IncrementHeightOption | integer | IncrementHeightOption option defines the default minimum |


|  |  | possible start date for the meeting to be scheduled. |
| :---: | :---: | :---: |
| EarliestStartTime | Time | In a meeting request, the earliest possible start time for the meeting to be scheduled. |
| Email |  | Indicates that reminders are send as email messages. |
| EmailAddress | string | The electronic mail address of a registered user. |
| EndDate | Date | In recurring appointments, meetings, and tasks, the end date defines the last date on which the item will recur. In events, the end date defines the last date of a multi-day event. When the value of end date is empty, the StartOrDueDate component is interpreted as the single date on which the item occurs. |
| EndTime | TimeSlotName | Ending time in the normal time range option. |
| Event | Inherits from: ScheduledItem Location | An Event is the simplest type of Scheduledltem. The only component it adds to is Location. |
| EventTitle | Title | The title of an event as shown in the list of events for a day. |
| February |  | One of the twelve months of the year. |
| FifthWeekDetails | WeeklyDetails | Scheulding details for the fifth week of a month. |
| File | FileName and FilePermissions and FileType and FileData | A File is an abstraction of a file stored in the file space. It has a name, permissions, type, and data. These are the components sufficient to specify the behavior of Calendar Tool file operations. |
| FileData | UserCalendar | The abstract representation of calendar-type FileData is a UserCalendar object. Calendar Tool implementors may use any concrete file data representation that accurately holds all UserCalendar components. |
| FileName | string | The name of a file. The string representation here is an abstraction of file names used in specific operating environments. Implementations may obey any syntactic or semantic constraints imposed by a particular environment. |
| FilePermissions | IsReadable and IsWritable | FilePermissions indicate whether a file is readable and/or writable. |
| FileSpace | File* | A FileSpace is an abstract model of a file space in the operating environment in which the |


|  |  | on this day. |
| :---: | :---: | :---: |
| DailyFormatOptions | NormalTimeRangeOption and TimeIncrementOption and IncrementHeightOption and ShowHide24HoursOption and ShowHideExactTimeOption and ShowHideDashedLinesOption and ShowHideExtensionArrowsOption and ProportionalSpacingOnOffOption and DisplayOverlapsOption and ShowHideEventsOption and ShowHideTasksOption and DefaultHeightAndWidthOption | DailyFormatOptions control the details of how daily agenda information is formated. |
| Date | string | For now, a Date is just a string. This definition will expand soon. |
| DateNumber | integer | The numeric value of the date in a month, between 1 and 31 . |
| DayName | Sunday or Monday or Tuesday or Wednesday or Thursday or Friday or Saturday | The standard names of the days of the week. |
| DaysBefore | real | Number of days before a scheduled item to issue the reminder. |
| December |  | One of the twelve months of the year. |
| DefaultHeightAndWidthOption | Height and Width | DefaultHeightAndWidthOption controls the width and height of the full daily agenda. If one or both of the default dimensions is too small to accommodate all information in the display, the information is truncated appropriately and scrollbars are added to the display window. |
| Details | string | Details is a plain text string describing any details about a scheduled item the user may care to add. |
| DisplayOverlapsOption | Horizontal or Vertical | DisplayOverlapsOption controls how items with overlapping times are displayed in a daily agenda. When displayed horizontally, overlapping items appear side-by-side in separate columns of the day view. When displayed vertically, overlapping items appear on separate lines in a single column, sorted by start time, duration, and title. The default is horizontal display. |
| DueTime | Time | DueTime is the time a task is due. |
| Duration | Hours and Minutes | Duration is the time length of a scheduled item, in hours and minutes. |
| EarliestEndDate | Date | In a meeting request, the earliest possible end date for a recurring meeting to be scheduled. |
| EarliestStartDate | Date |  |


|  |  | UserWorkSpace component is active calendars upon which the current user is working. |
| :---: | :---: | :---: |
| CalendarType |  | File data typing tag indicating that a file contains calendar data created by the Calendar Tool |
| Category | Name and StandardColor | A Category has a Name and StandardColor, which serve distinguish it from other categories. Colored-coded categories serve visual cues to the user when viewing lists of scheduled items in some form. Categories can also be used in filtered viewing. |
| Clipboard | string | The clipboard holds a selection of cut or copied text. |
| CompletedFlag | boolean | CompletedFlag is true if a Task has been completed, false if not. The system does not enforce any specific constraints on the setting of a task's CompletedFlag. That is, the user may set or clear it at will. Hence the meaning of the CompletedFlag is up to user interpretation, particularly for recurring tasks. |
| CompletionDate | Date | CompletionDate is date on which as task is completed. The system does not enforce any specific constraints on the setting of a task's CompletionDate (other than it being a legal Date value). The meaning of the CompletionDate value is up to user interpretation, particularly for recurring tasks. |
| Confidential |  | Confidential security means other users can only see that a user is unavailable for the time period of a scheduled item; no other information about the scheduled item is visible. Since confidential security applies to a specific time period, it is meaningful only for appointments and meetings, not for tasks or events; tasks and events do not have specific time components. |
| DailyAgenda | FullDayName and EventTitle* and TimeSlotDescriptor* and TaskDescriptor* | A DailyAgenda is contains scheduled item information for a calendar day. The FullDayName consists of the day name itself (e.g., Wednesday), the month, the numeric date, and the year. The EventTitle list contains the titles of zero or more events scheduled to occur on this day. The TimeSlotDescriptor list contains time-tagged descriptors for scheduled appointments and meetings. The TaskDescriptor list is an number |


| Data Dictionary |  |  |
| :---: | :---: | :---: |
| Object Name | Components | Description |
| AM |  | The 12 -hour time suffix indicating a morning time. |
| AmOrPm | AM or PM | Normal suffix used in 12-hour time value. |
| Appointment | Inherits from: ScheduledItem <br> StartTime and Duration and RecurringInfo and Location and Security and Priority and RemindInfo and Details | An Appointment adds a number of components to a generic ScheduledItem. The StartTime and Duration indicate when the appointment starts and how long it lasts. The Location is where it is held. The Security indicates who can see that the appointment is scheduled. Priority is how important the appointment is. RemindInfo indicates if and how the user is reminded of the appointment. Details are free form text describing any specific appointment details. |
| April |  | One of the twelve months of the year. |
| Area | integer | The three-digit area code component of a user phone number. |
| Attendees | Name* | Attendees is a list of names of those who attend a meeting. |
| August |  | One of the twelve months of the year. |
| BeepOnly |  | Indicates that reminders are signaled with an audible beep only, with no pop-up window. |
| Biweekly |  | Indicates a scheduled item recurs bi-weekly. |
| Black |  | One of the built-in category colors. |
| Blue |  | One of the built-in category colors. |
| BriefltemDescriptor | Title and StartTime and Duration and Category | A brief item descriptor contains a subset of the information for a full scheduled item. The information is a Title, StartTime, Duration, and Category. |
| Brown |  | One of the built-in category colors. |
| CalendarDB | UserCalendars and UserDB and GroupDB and RoomDB and GlobalOptions and UserWorkSpace | The CalendarDB is the top-level object for the Calendar Tool. The first component is the list of UserCalendars for all registered users. The next three components are the registered UserDB, the user GroupDB, and the RoomDB. The GlobalOptions component is the set of calendar options common by default for all users, both registered and |

