iTime Developer Documentation

Introduction

This documentation is written by Yuming Shen (Ethan Shin). The objective of writing this documentation is to provide a basic architecture, API and models that are used in the iOS application "iTime".

The whole documentation consists of three parts: Architecture, Views and API(models).

Tools used in the development

- Swift
 - Swift is the programming language used in this project.
- Realm
 - The Object-Oriented Database (OODB) used for our local database.
- Lean cloud
 - The mobile backend as a service (BaaS) provider, which manages all functionalities of the notification.
- Google/Firebase
 - Several Google APIs have been used in the project
- Apple developer account/Testflight
 - Responsible for testing the application
 - other configurations

Architecture

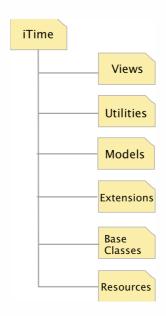


Figure 1: Project Architecture in Xcode

The project architecture in Xcode has been shown in Figure 1. The whole project comprised of six main parts. The Views part includes all view controller files. All utility functions are in Utilities folder and models used in the application are in Models folder. Files in Extensions folder extends some classes with some convenient functions. BaseClasses and Resources contains other important resources for instance, icon images.

Views

Tabbar ViewController



Figure 2 Tabbar

- There are five main components in the tabbar
 - Meetings, Activities, Functional Button, Calendar and Contacts.

 In this project, the tabbar is simply created by using storyboard (Main.storyboard)

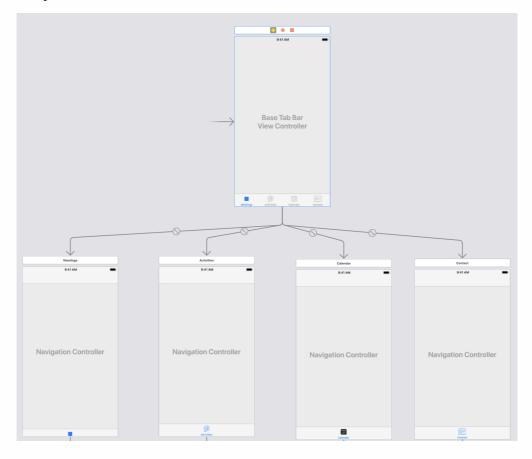


Figure 2: Main Storyboard

Tabbar-related codes are written in BaseTabBarViewController.swift

```
class BaseTabBarViewController: UITabBarController {
   override func viewDidLoad(){
        //Notification setting
        if UserUtility.isLoggedin(){
            // Utility initiation
            // setup socket
        }
        // UI part
    }
    func syncFunctions{
        // sync functions
    }
    @objc func longPressed(){
        // long-press
    }
}
```

Meetings ViewController

- The Meeting module is one of the most important parts of the iTime. The Meeting module comprises of three independent components: Invitations module, Hosting module and Coming module.
- The Invitation part displays all events that the current user has been invited. And all meetings that are created by the user will be shown in the Hosting module. In addition, if the user has voted for a certain meeting, and the event has not outdated, those events will be moved into the Coming module.
- In order to provide the convenience for hosting events, the information about how many people have <u>voted/refused/no reply</u> will be shown in the event cell.
- In addition, outdated events will be presented after the "out of date" line so that users can manage them quickly.
- If the user confirmed to attend an event, the left part of the event cell will change from **Vote** to **Going**, as you can see in the left screen of the figure 3.1.

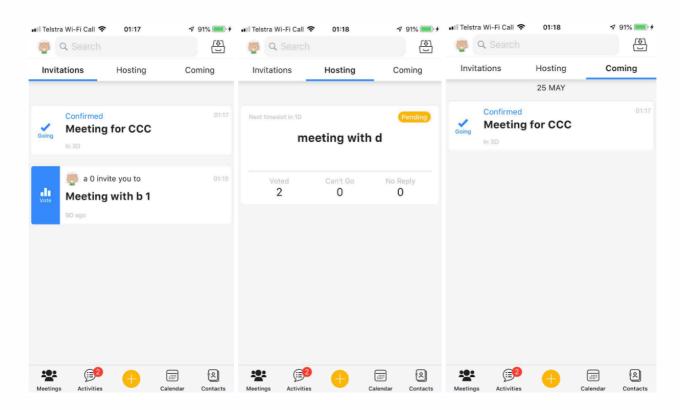


Figure 3.1. Meeting Module

Code structure

- XLPagerTabStrip is a Container View Controller that allows us to switch easily among a collection of view controllers.
- In this case, the BaseMeetingViewController is the container view and Invitation VC, Hosting VC and ComingVC are subVCs of the MeetingVC.

```
let subViewController1 = MeetingInvitationViewController()

let subViewController2 = MeetingHostingViewController()

let subViewController3 = MeetingComingViewController()
```

 BaseMeetingViewController is the VC holds the whole structure of the meeting views.

```
class BaseMeetingViewController:
ButtonBarPagerTabStripViewController {
      override func viewDidLoad() {
        // setupButtonBar should be called before
super.viewDidLoad()
        setupButtonBar()
        super.viewDidLoad()
        setupBasicUI()
        setupNavigationBar()
        setupNotification()
    }
    // UI functions
  func setButtonBar {
    func setNavigationBar{
    //@objc func functions
    @objc func searchBarTapped() {
    }
```

Activities ViewController

- All event-related notification messages will be presented in the ActivityModule.
- It can be seen from Figure 3.2 that there are two main parts: the last cell is for official messages (from the iTime) and others are for recording event-related messages. When the user taps the event, three cells containing information of changes will appear and tap any of them will jump to the event detail page. The iTime messages view contains all other changes such as share calendar creation and permission setting changes.

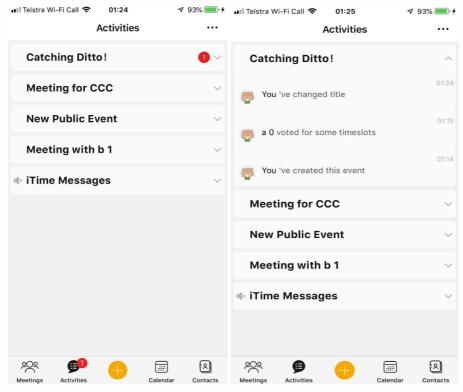


Figure 3.2 Activity Module

Code Structure

```
class ActivityViewController: UIViewController,
UITableViewDelegate, UITableViewDataSource {
  override func viewDidLoad() {
    // add notification observer
    // reloadActivities
    // set UI
  }
}
```

```
// Second part is about right corner ... button
var rightConnerBtnVC : ActivityShowMoreViewController?
// The Third part is about cell
}

extension ActivityViewController:
UIPopoverPresentationControllerDelegate{
    // pop over effect
}
```

Main Functional Button ViewController

- The orange button in the middle of the tabbar is the main function button (addBtn).
- When the user taps the button just once, the event creation buttons appear, and the user can not only create public events, but also group meetings and personal event. which shows in Figure 3.3.

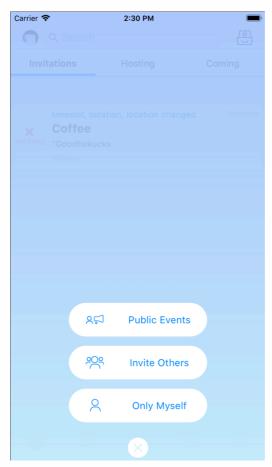


Figure 3.3 CreateEventViewController

code for Main Functional Button ViewController

```
// Create Event VC
class CreateEventViewController: UIViewController {
   // did load
   private func setupBasic(){
        self.view.backgroundColor = UIColor.clear
        // solo event button
        let soloView = UIView(frame: CGRect())
        let soloImageView = UIImageView(frame: CGRect())
        soloImageView.image = #imageLiteral(resourceName:
"icon_event_onlyme")
        let soloLabel = UILabel(frame: CGRect())
        // UI setup part
        createSoloBtn.addSubview(soloView)
        // group event button
        let groupView = UIView(frame: CGRect())
        let groupImageView = UIImageView(frame: CGRect())
        groupImageView.image = #imageLiteral(resourceName:
"icon_event_inviteothers")
        let groupLabel = UILabel(frame: CGRect())
        // UI setup part
        createGroupBtn.addSubview(groupView)
```

```
//The public event button
let publicView = UIView(frame: CGRect())
let publicImageView = UIImageView(frame: CGRect())

publicImageView.image = #imageLiteral(resourceName:
"icon_popover_publicevent")
let publicLabel = UILabel(frame: CGRect())

// UI setup part
}
```

• When the user taps the button longer than 0.5 seconds, a new pop menu appears with some other hotkeys (Figure 3.4).

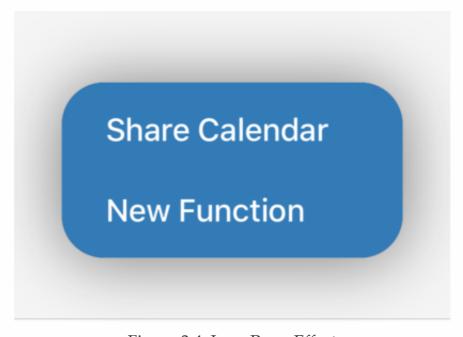


Figure 3.4: LongPress Effect

Calendar ViewController

• In the calendar view, all events will be presented in the corresponding cells in the view. User is able to see the calendar in day, week or agenda type. It can be seen from the figure 3.5 that the left screenshot is the calendar in day type, the middle one shows the calendar in week type and the right one is in agenda type.

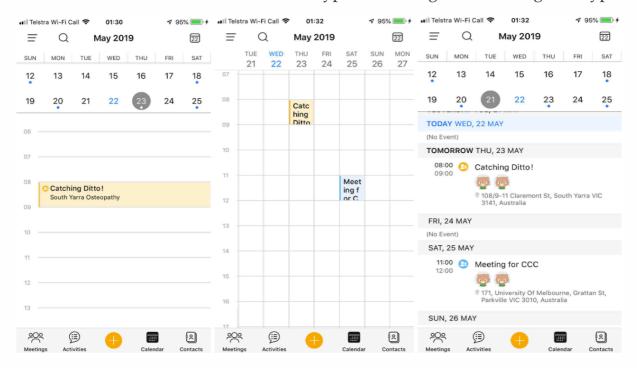


Figure 3.5: Calendar Module

```
enum CalendarViewType{
    case day
    case week
    case agenda
}
```

```
// monthView appears when the calendar type is day or agenda
var upperMonthView: BasicCalendarView!
var agendaVC: AgendaTableViewController!
var agendaView: UIView!
// addChildViewController part -- in viewdidload part
addChildViewController(agendaVC)
agendaVC.agendaViewDelegate = self
agendaVC.didMove(toParentViewController: self)
agendaView = agendaVC.view
view.addSubview(agendaView)
```

Contact ViewController

• The Contacts Module displays all contact information, users can add or find users that they want to connect with. If the user click any one of the user cells, the app will jump to this user's profile detail page. And the user can directly invite that user to the new Event or subscribe this user.

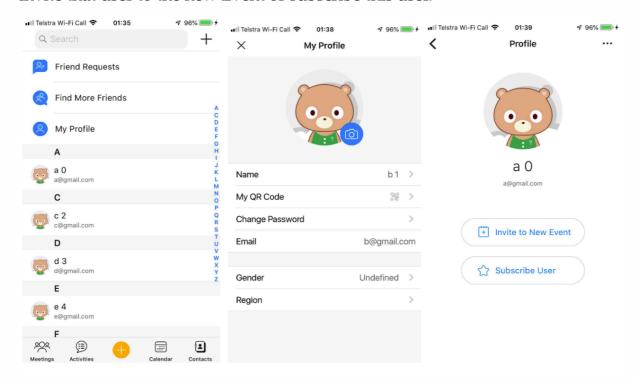


Figure 3.6: Contact Module

```
class ContactsViewController: UIViewController{
    var tableView = UITableView()
    var viewModel = ContactsViewModel()
    var popoverController:UIPopoverPresentationController!

    override func viewDidLoad() {
        super.viewDidLoad()

        setupBasic()
        setupNaviBar()
        setupTableView()
        reloadContactsViewController()
}
```

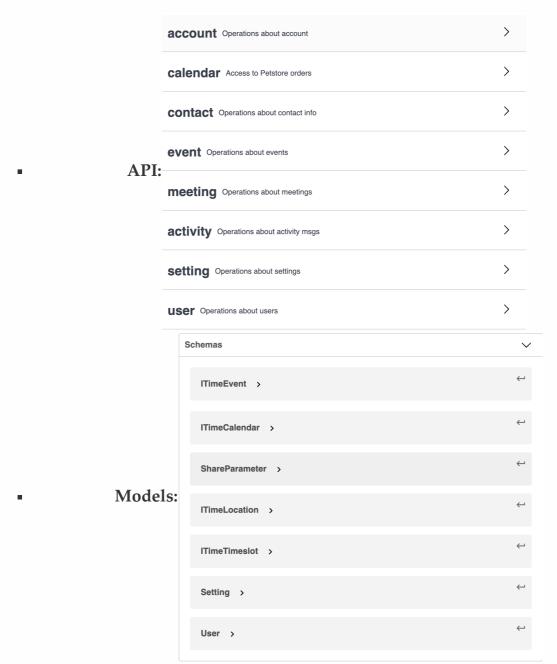
```
func setupBasic(){
     // UI & notification
    }
    func setupNaviBar(){
     // search bar and addbtn
    }
    func setupTableView(){
     // UI
    }
    // @objc functions
    @objc func searchBarTapped() {
    }
    @objc func addFriendsBtnTapped(_ sender: UIBarButtonItem){
    @objc func reRenderContactsViewNotification(_ notification:
Notification){
   }
}
// Tableview delegate
extension ContactsViewController: UITableViewDelegate,
UITableViewDataSource{
}
// popover effect
extension ContactsViewController:
UIPopoverPresentationControllerDelegate,
ContactsMoreOptionsDelegate{
}
```

Utilities

- The Utilities functions contains most of utility functions that can be called in other places
- Take the EventUtility as an example, following are some utility functions in the EventUtility class:
 - class func initContacts()
 - Get all contact information from the local database (realm).
 - class func initBlockedUser()
 - Get the list of blocked users from the local database.
 - class func initFriendRequest()
 - Get all friend request information from the local database.
 - class func postRerenderContactsViewNotification()
 - post notification to tell corresponding views to re-render.
 - static func getContactsWithAlphabetOrder()
 - used when reload the view model, put the new contact information in alphabetic order.
 - static func checkIfSubscribed(_ contactUid: String)->Bool
 - returns a boolean value to tell whether the user has subscribed a specific user or not.
 - class func listBlockedUsersRemote(parameters)
 - This is a HTTP GET request to the server to get all blocked users.
 - class func listContactsRemote
 - Same as above, a HTTP GET request to get all contact information.
 - class func sendFriendRequest()
 - A POST request to the server to send a friend request to other users.
 - class func deleteContact()
 - Delete a specific contact with a user.
 - class func unSubscribeUser()
 - A corresponding function to the subscribe function.
 - class func updateContacts
 - When sync an updated contact from the server, update it to the view.

API & Model

- baseUrl = ConfigurationManager(environment:.prod).baseUrl()
- baseApiUrl = "\(baseUrl)/api"
- baseSocketUrl = "http://socket.timagic.net"



NOTE: The API documentation showing below is not completely same as what
was written in the project, responses used in the project are comprised of only
"success" and "fail". The response part in the API doc showing below is just a
template.



http://127.0.0.1:8080/

Explore

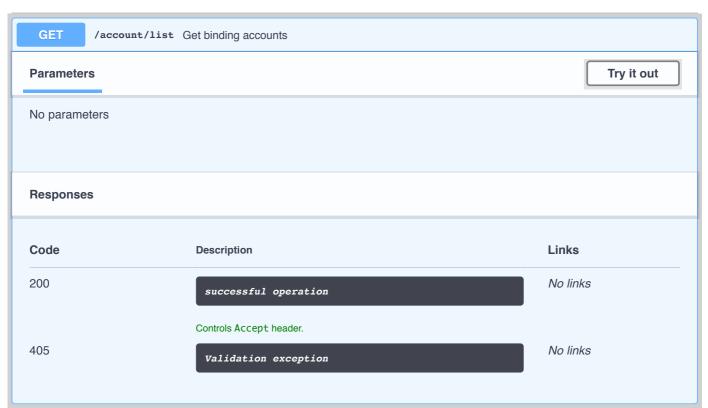


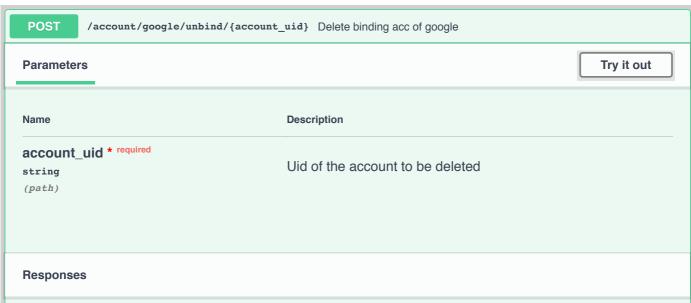
http://127.0.0.1:8080/dist/iTimeAPI.json

This is an API documentation for the mobile application named "iTime"

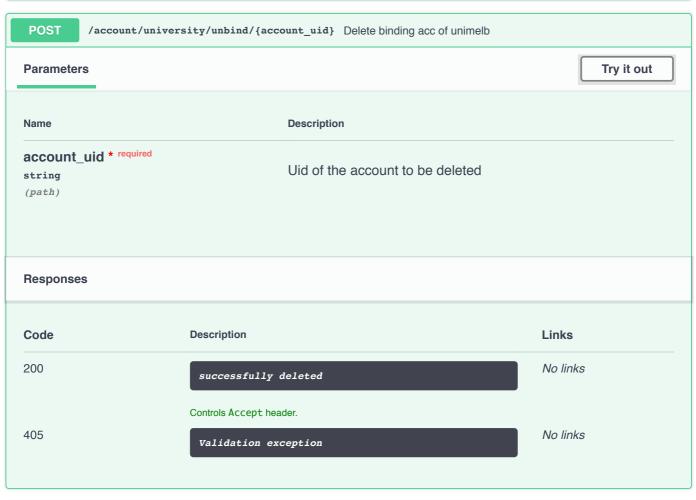
Terms of service Contact the developer Apache 2.0

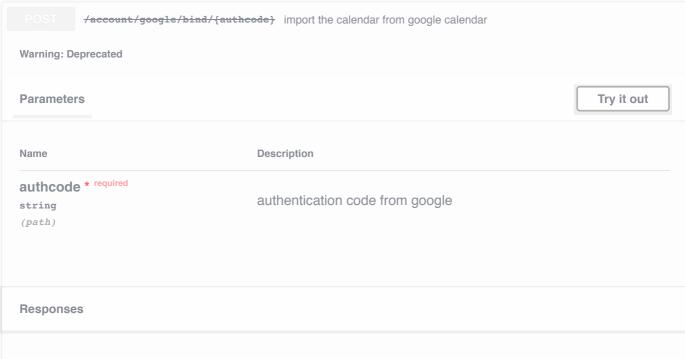
account Operations about account



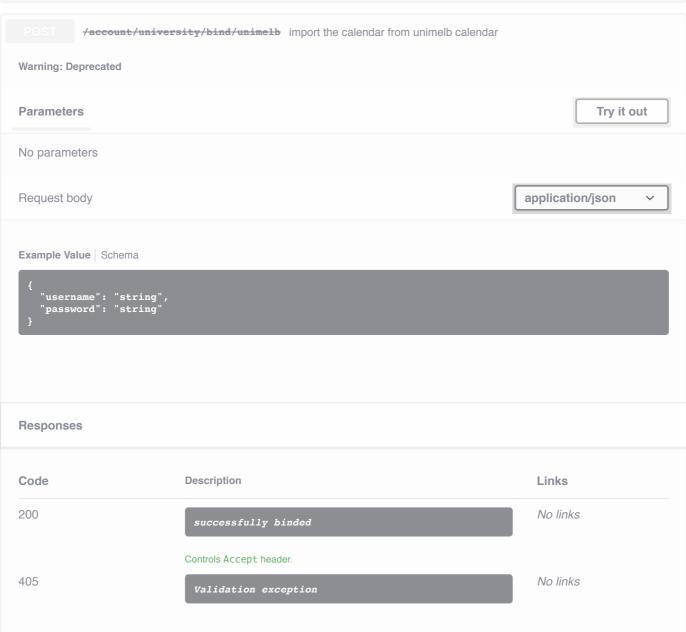


Code	Description	Links
200	successfully deleted	No links
405	Controls Accept header. Validation exception	No links

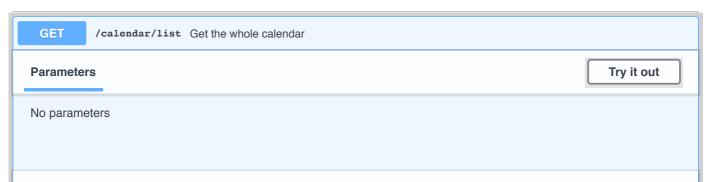


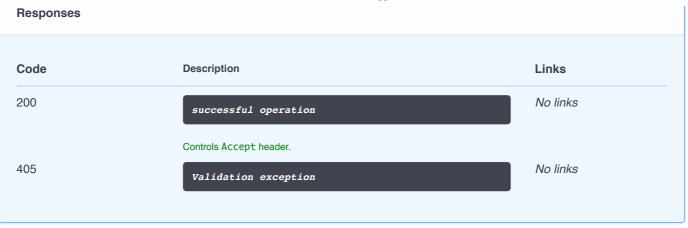


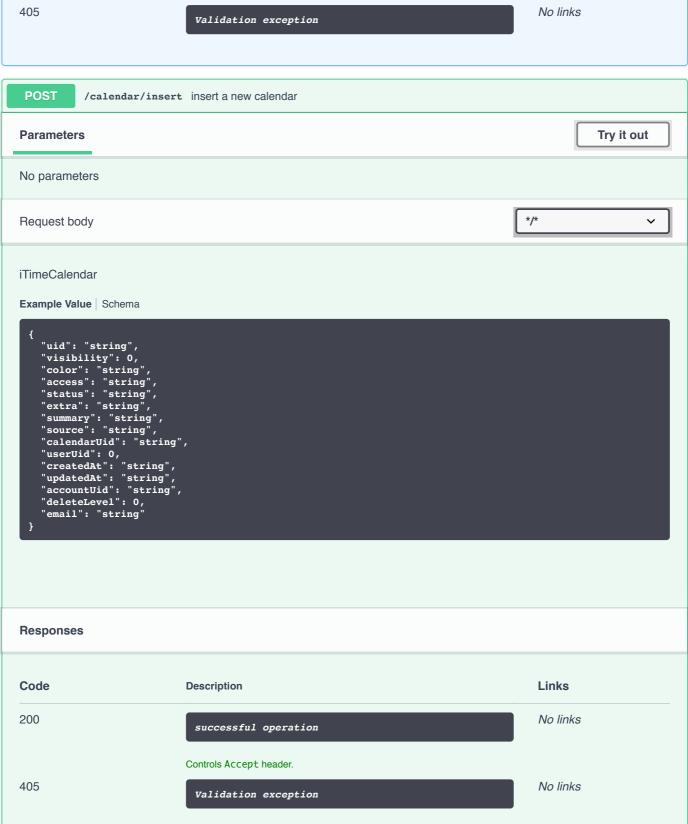




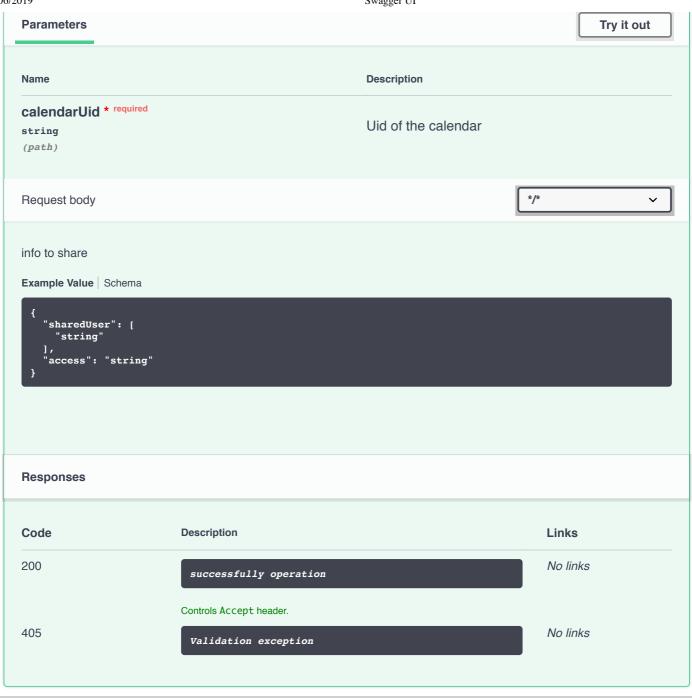
calendar Access to Petstore orders

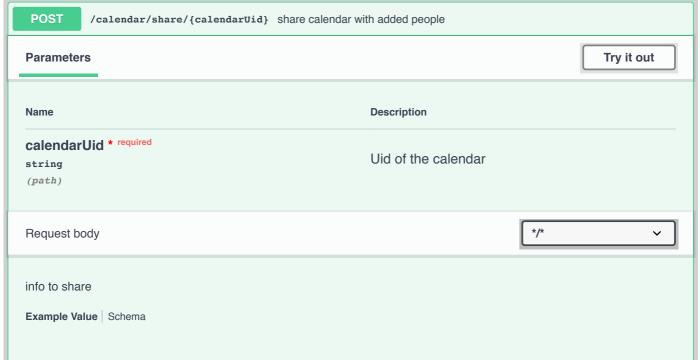


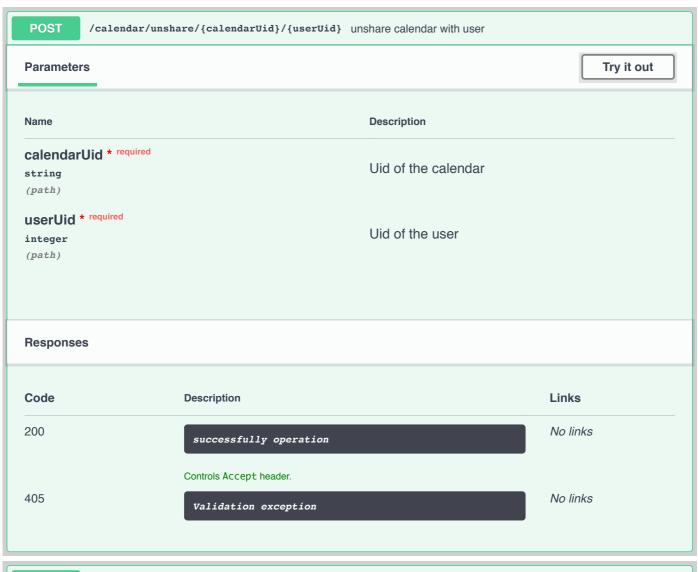


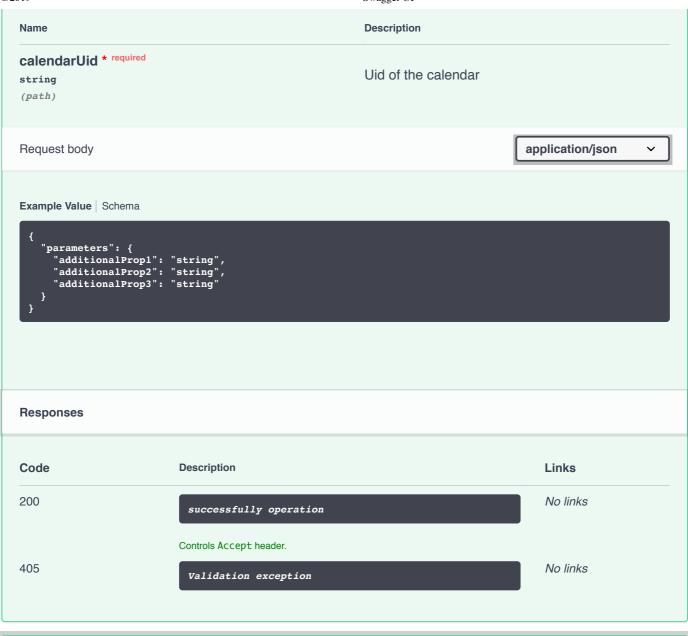


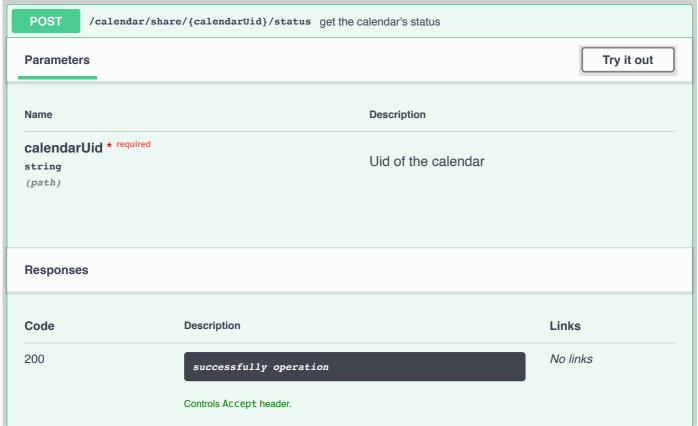
/calendar/share/{calendarUid}/change change permission level of a user



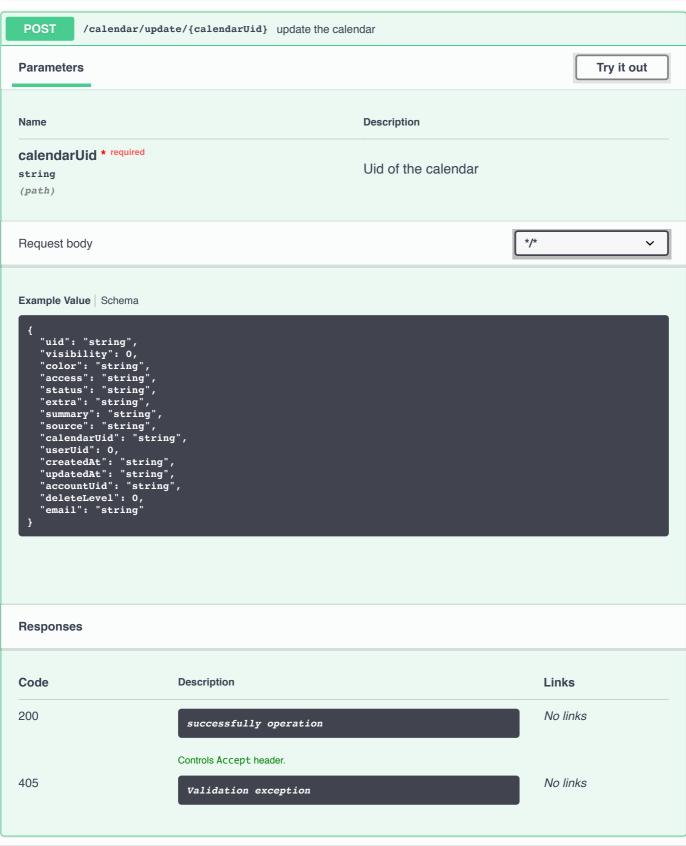


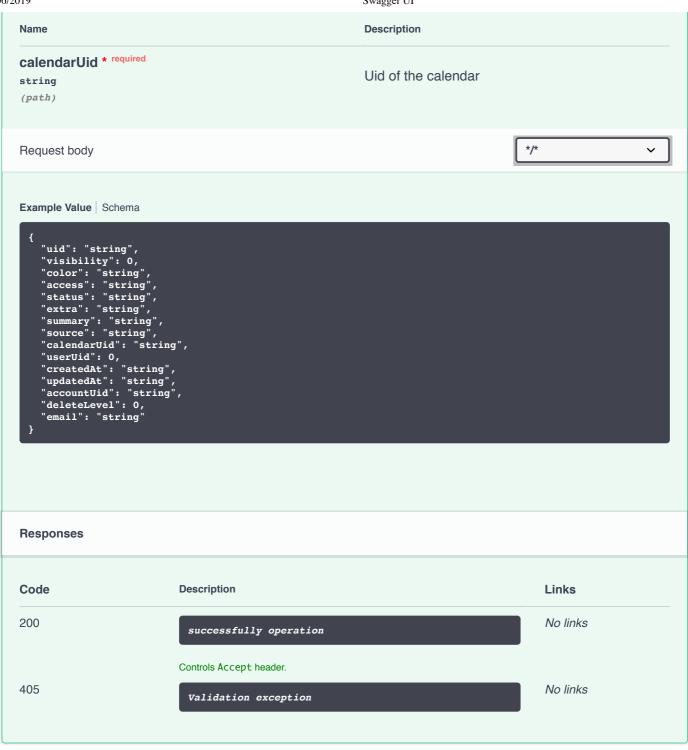


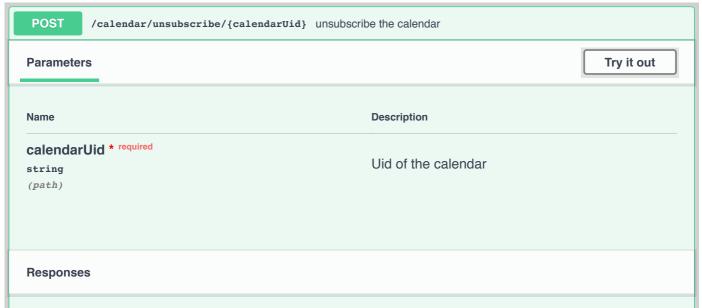






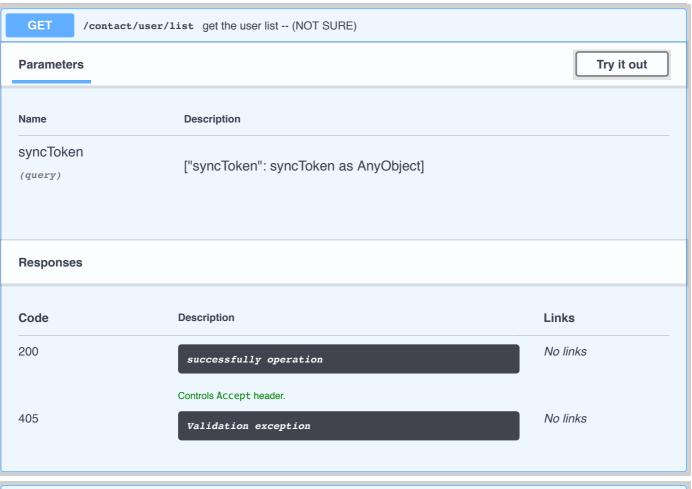


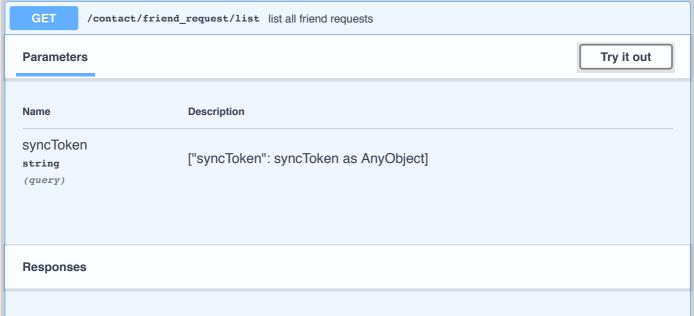




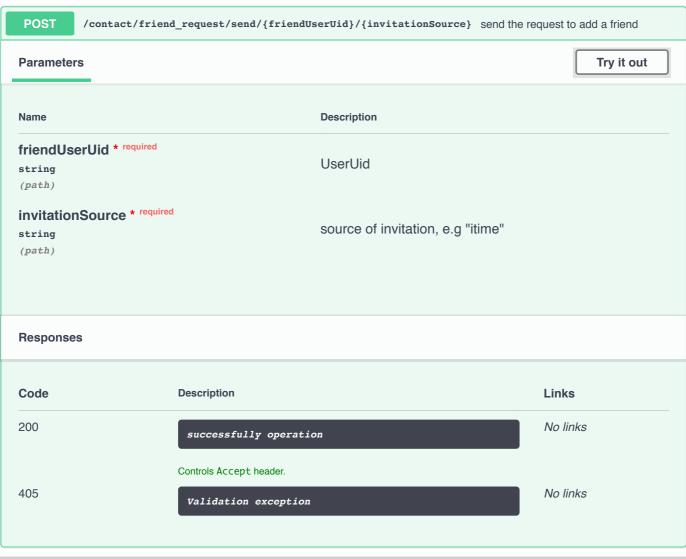
Code	Description	Links
200	successfully operation	No links
	Controls Accept header.	
405	Validation exception	No links

contact Operations about contact info



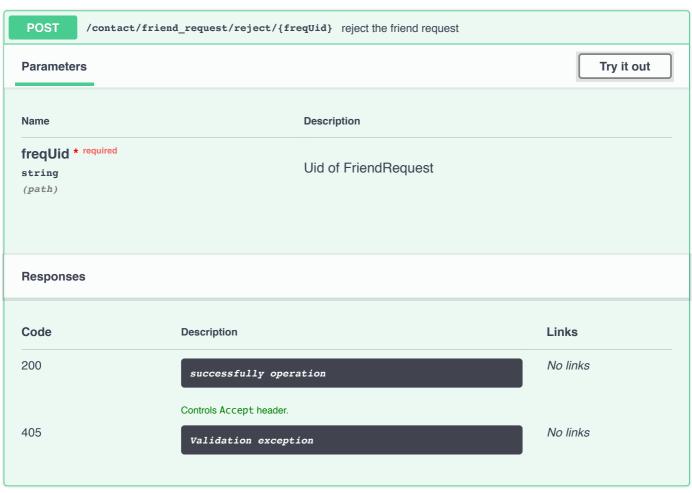


Code	Description	Links
200	successfully operation	No links
	Controls Accept header.	
405	Validation exception	No links





Code	Description	Links
200	successfully operation	No links
	Controls Accept header.	
405	Validation exception	No links

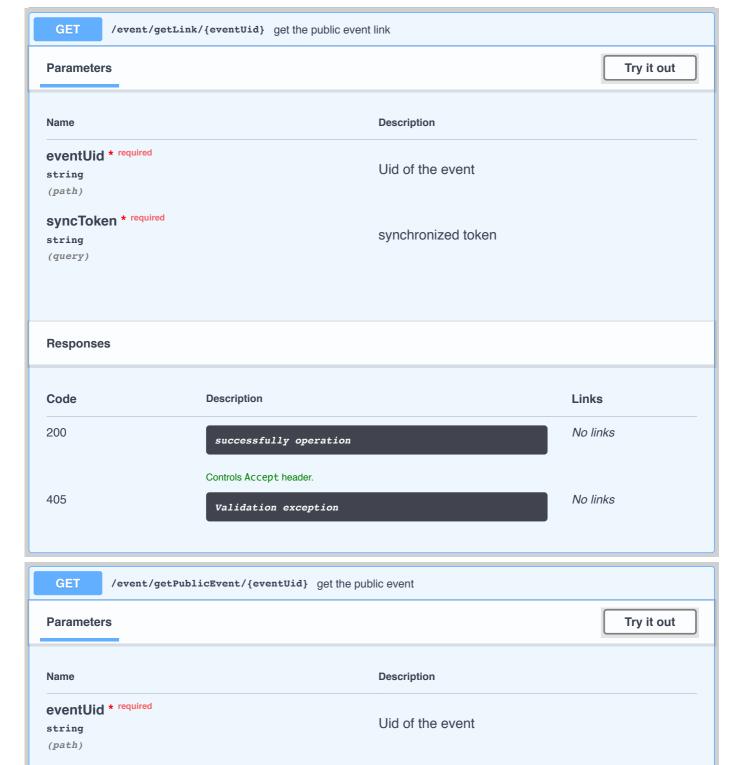


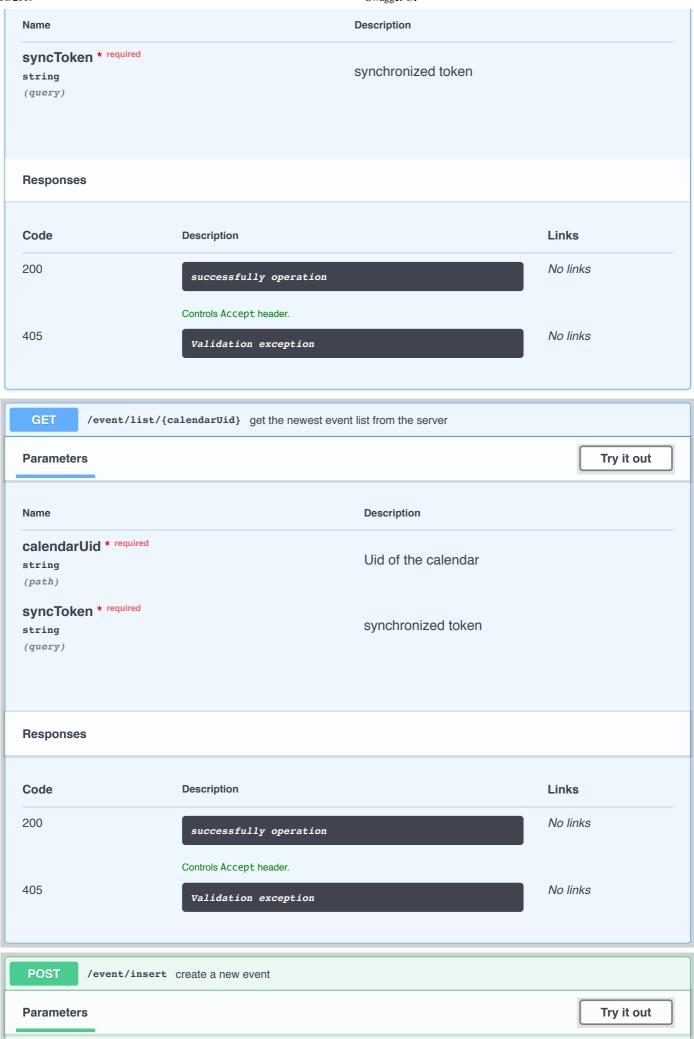
Parameters			Try it out
Name		Description	
contactUid * requirestring	red	Uid of the user in contact	
Responses			
Code	Description		Links

Code	Description	Links
200	successfully operation	No links
405	Controls Accept header. Validation exception	No links

event Operations about events







No parameters application/json Request body iTimeEvent Example Value | Schema "id": "string",
"host": "string",
"recurrence": ["string"],
"status": "string",
"summary": "string",
"reason": "string",
"start": 0,
"end": 0, "duration": 0,
"greeting": "string",
"eventDescription": "string", "note": "string",
"url": "string",
"extra": "string", "location": { "lcoationNote": "string", "locationNote: String,
"locationString1": "string",
"locationString2": "string",
"locationLatitude": "string",
"locationLongitude": "string" },
"reminder": 0,
"source": "string",
"eventUid": "string", "hostUserUid": 0, Responses Code Description Links 200 No links successfully operation Controls Accept header. 405 No links Validation exception **POST** /event/update/{previousCalendarUId}/{eventUid} create a new event Try it out **Parameters** Name Description

Uid of the previous calendar

previousCalendarUId * required

string (path)

```
Name
                                                                                                            Description
eventUid * required
                                                                                                            Uid of the event
string
(path)
Request body
                                                                                                                                                                application/json
iTimeEvent
Example Value | Schema
      "id": "string",
"host": "string",
       "recurrence": [
           "string"
      ],
"status": "string",
"summary": "string",
"reason": "string",
      "start": 0,
      "end": 0,
"duration": 0,
"greeting": "string",
"eventDescription": "string",
      "note": "string",
"url": "string",
"extra": "string",
"location": {
         "location : {
    "locationNote": "string",
    "locationString1": "string",
    "locationString2": "string",
    "locationLatitude": "string",
    "locationLongitude": "string"
      },
"reminder": 0,
"source": "string",
"eventUid": "string",
"hostUserUid": 0,
Responses
Code
                                                  Description
                                                                                                                                                                      Links
200
                                                                                                                                                                      No links
                                                     successfully operation
                                                  Controls Accept header.
405
                                                                                                                                                                      No links
                                                     Validation exception
```

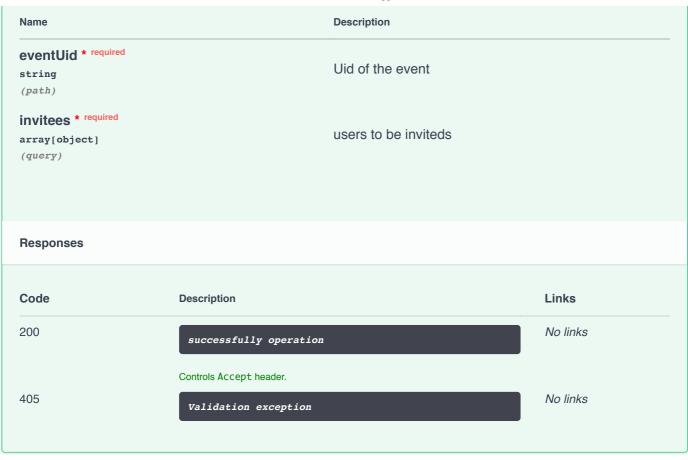
POST /event/invite/{eventUid} invite users to a public event

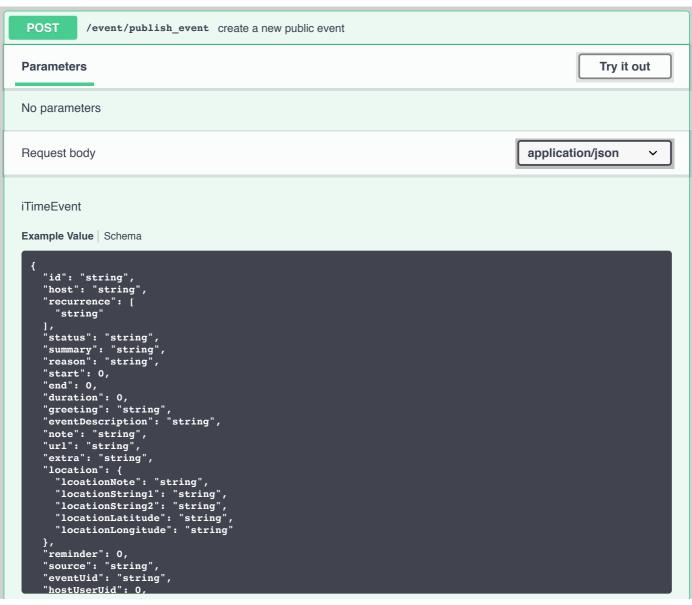
Parameters

Try it out

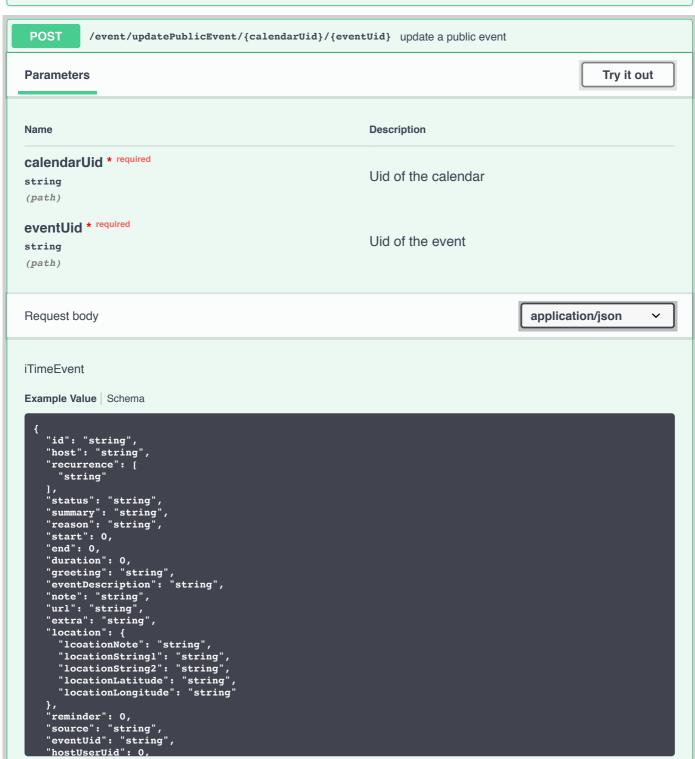
Name

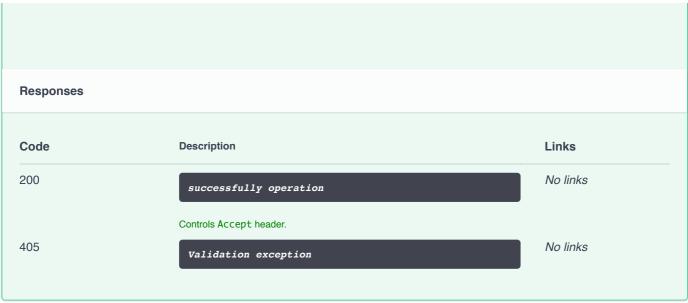
Description

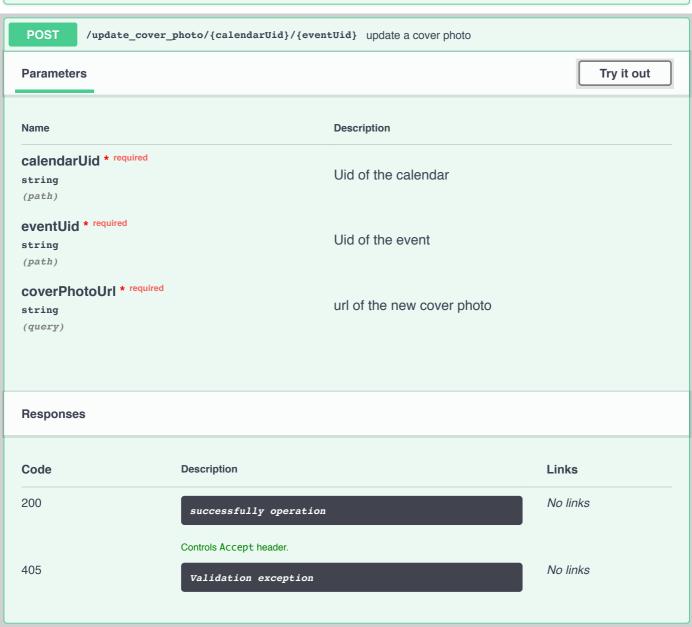










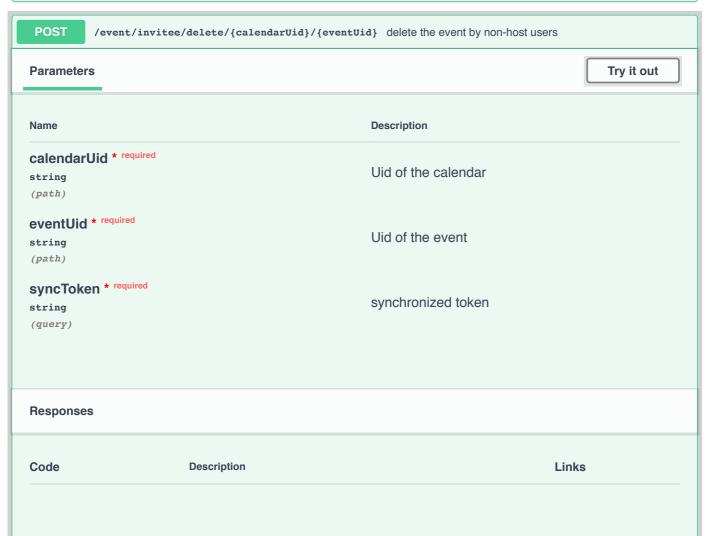


POST /event/delete/{calendarUid}/{eventUid} delete the event by host users

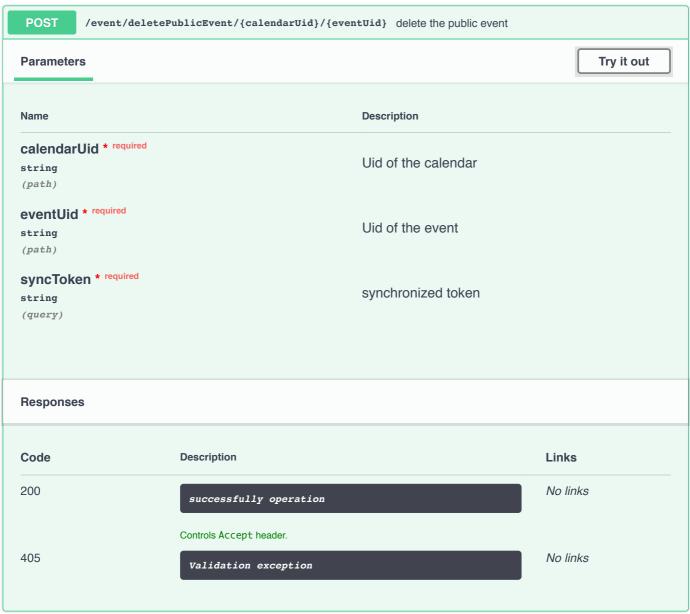
Parameters

Try it out

		Swagger UI	
Name		Description	
calendarUid * required string (path)		Uid of the calendar	
eventUid * required string (path)		Uid of the event	
syncToken * required string (query)		synchronized token	
Responses			
Code	Description		Links
200	successfully operation		No links
405	Controls Accept header. Validation exception		No links

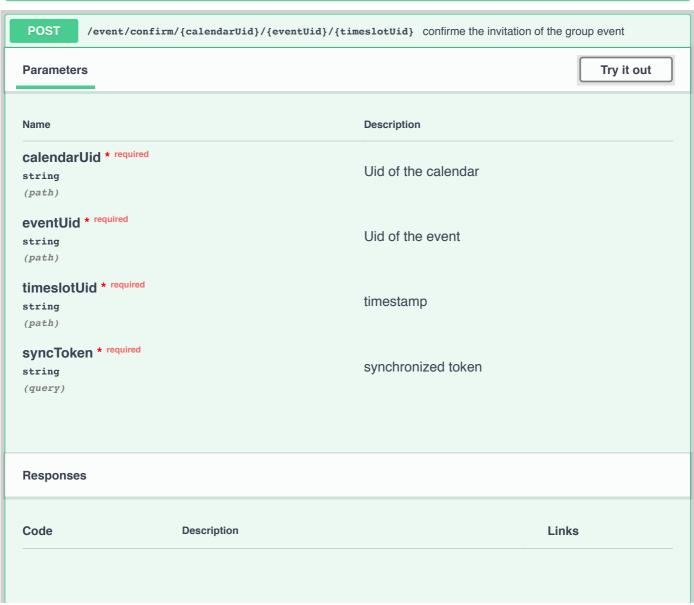


Code	Description	Links
200	successfully operation	No links
	Controls Accept header.	
405	Validation exception	No links

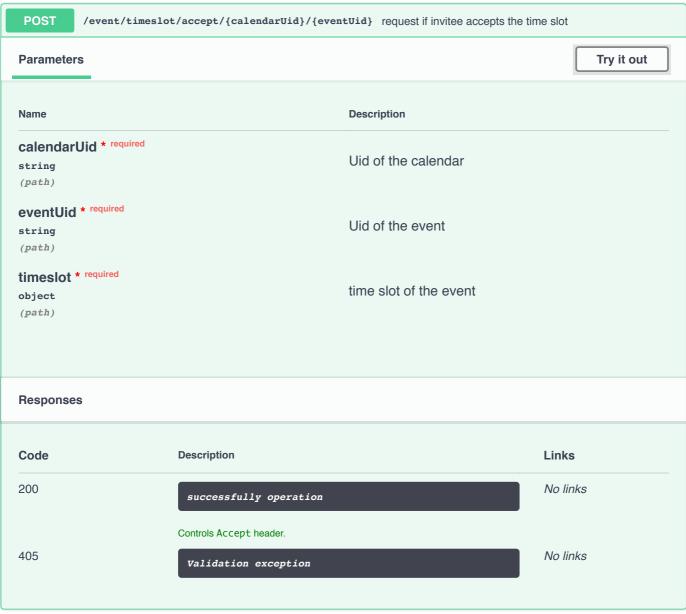


Parameters	Try is	out
Name	Description	
calendarUid * required string (path)	Uid of the calendar	

019		Swagger O1	
Name		Description	
eventUid * required string (path)		Uid of the event	
photoUid * required string (path)		Uid of the photo	
Responses			
Code	Description		Links
200	successfully operat	ion	No links
405	Controls Accept header. Validation exception	on.	No links

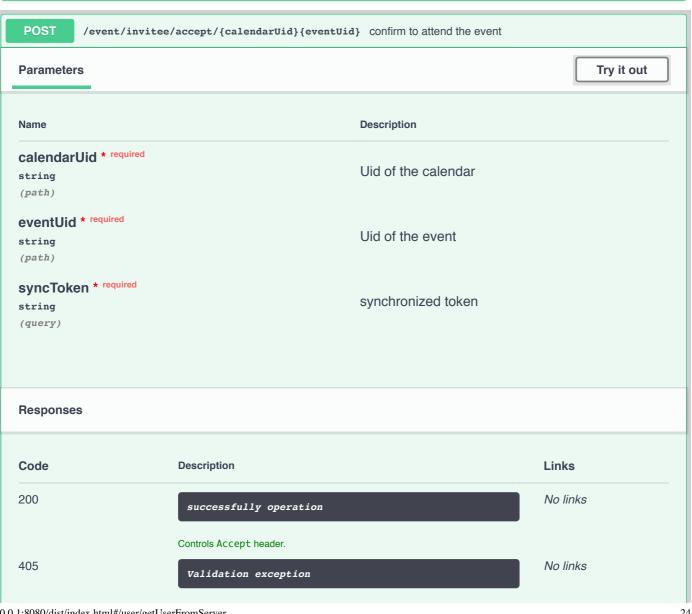


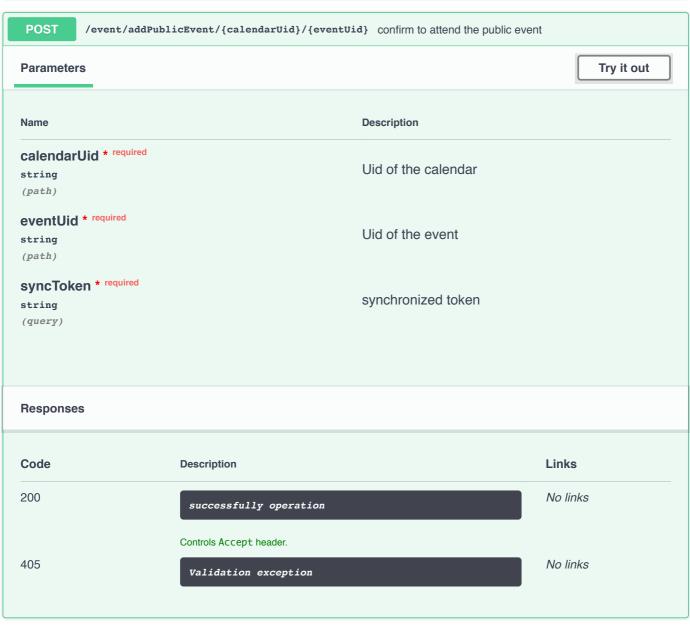
Code	Description	Links
200	successfully operation	No links
	Controls Accept header.	
405	Validation exception	No links



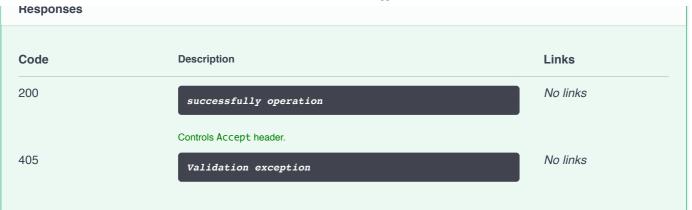
Parameters		Try it out
Name	Description	
calendarUid * required string (path)	Uid of the calendar	

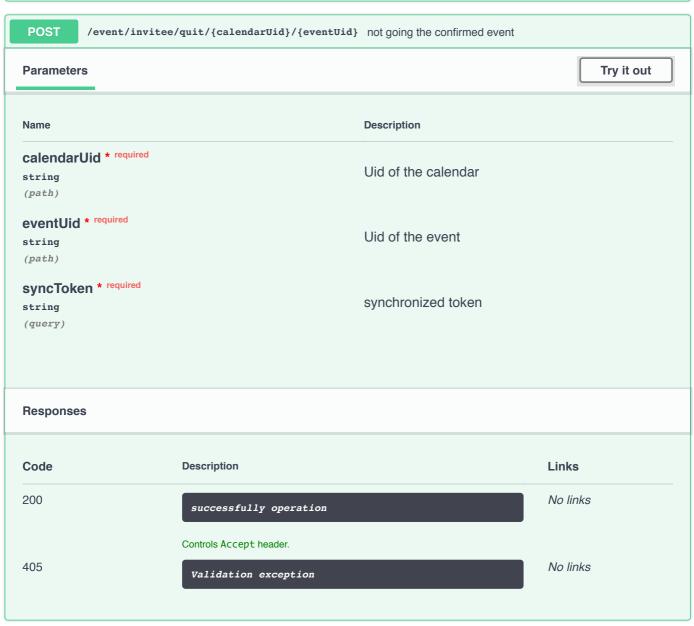
17	5 wagger of		
Name	Description		
eventUid * required string (path)	Uid of the event		
reason object (query)	reason of rejecting the timeslot		
Responses			
Code	Description	Links	
200	successfully operation	No links	
405	Controls Accept header. Validation exception	No links	



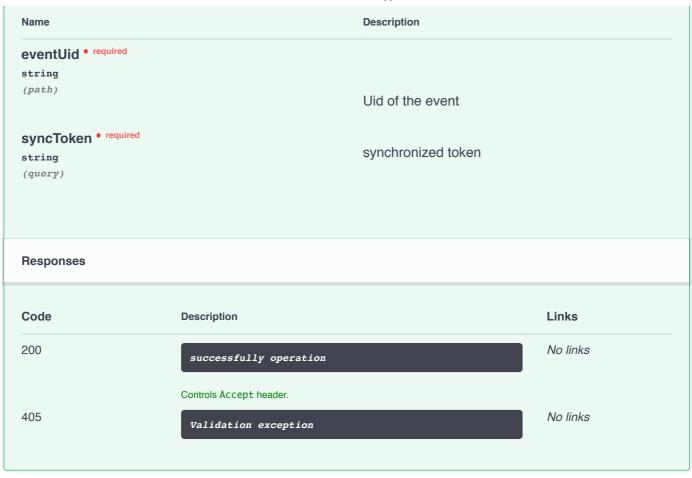


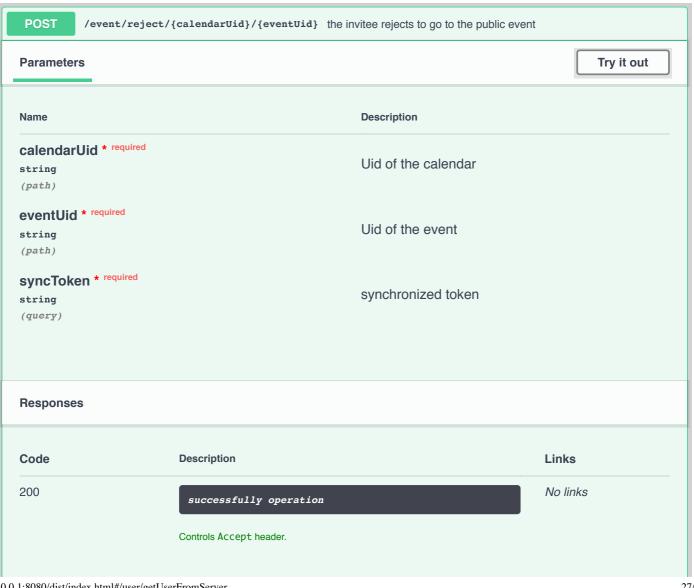
Parameters	Try it out
Name	Description
calendarUid * required string (path)	Uid of the calendar
eventUid * required string (path)	Uid of the event
syncToken * required string (query)	synchronized token



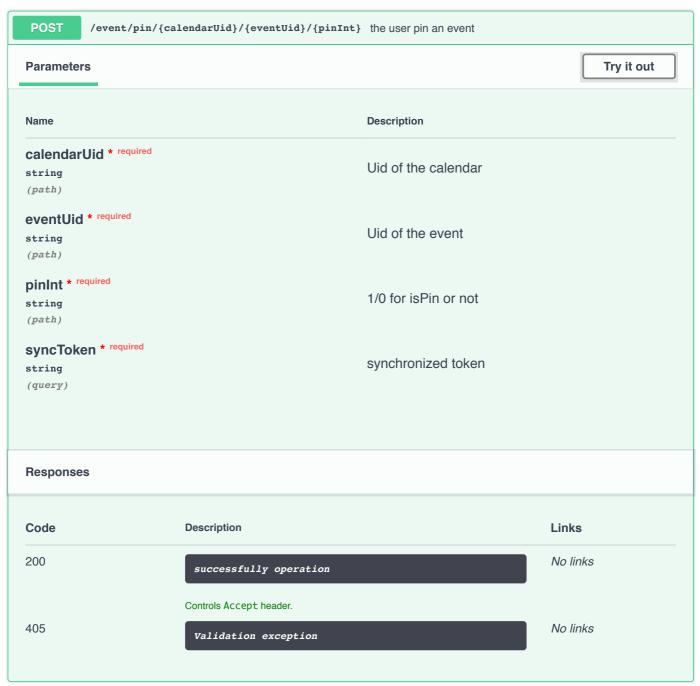


Parameters		Try it out
Name	Description	
calendarUid * required		
string	Uid of the calendar	



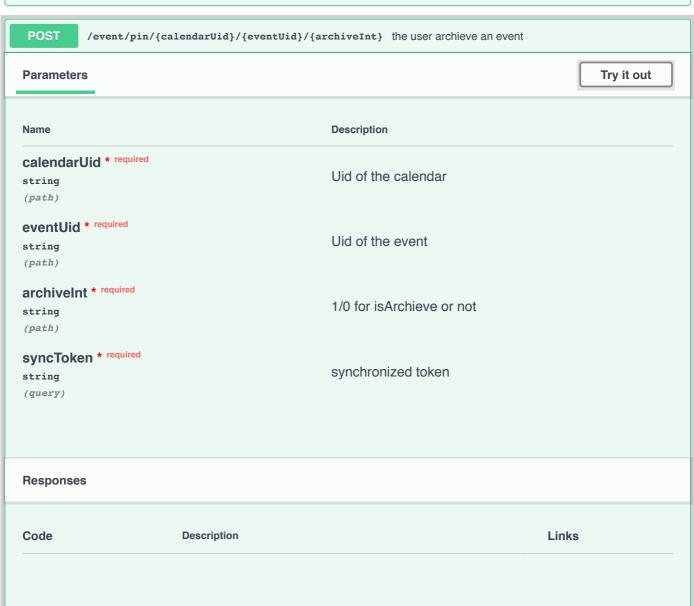


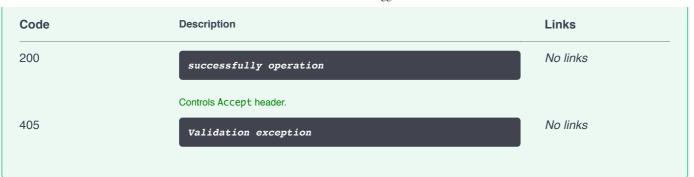


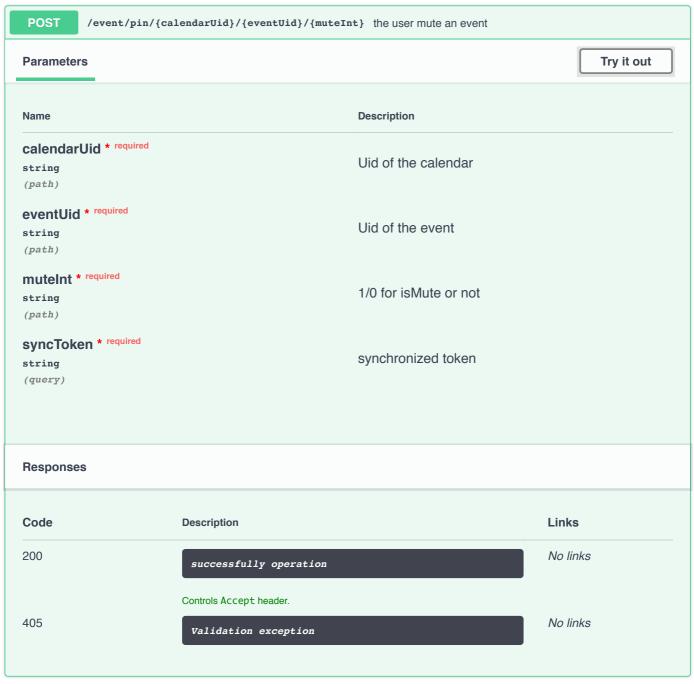


Parameters		Try it out
arameters		Try it out
Name	Description	
calendarUid * required		
string	Uid of the calendar	
(path)		

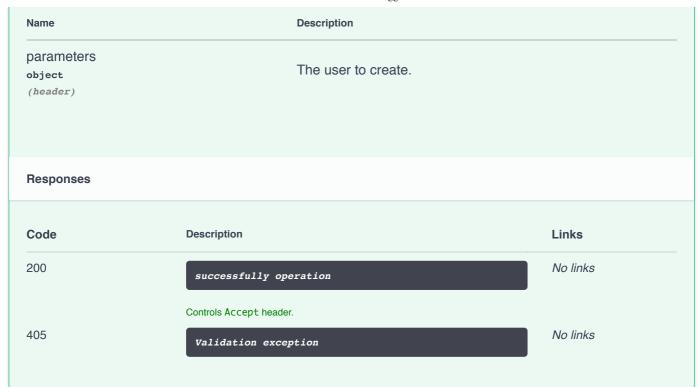
,15		5 wagger of	
Name		Description	
eventUid * required string (path)		Uid of the event	
<pre>syncToken * required string (query)</pre>		synchronized token	
Responses			
Code	Description		Links
200	successfully operati Controls Accept header.	on	No links
405	Validation exception		No links



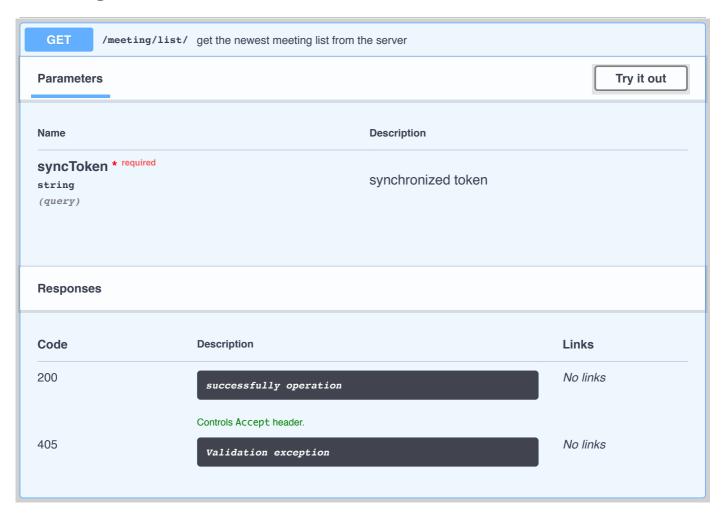




POST /event/timeslo	ot/recommend fetch rec timeslotes from server	
Parameters		Try it out
Name	Description	

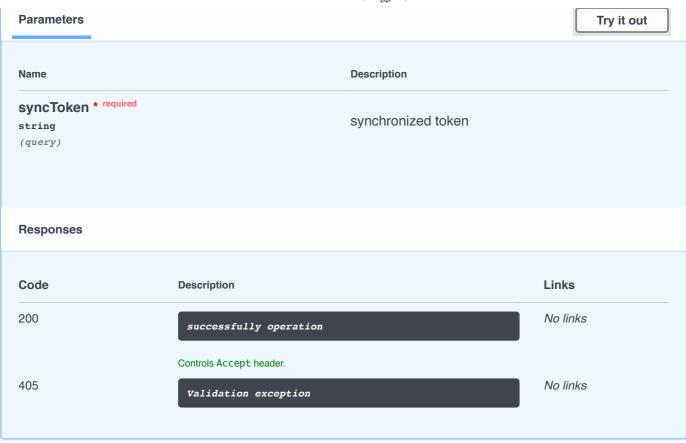


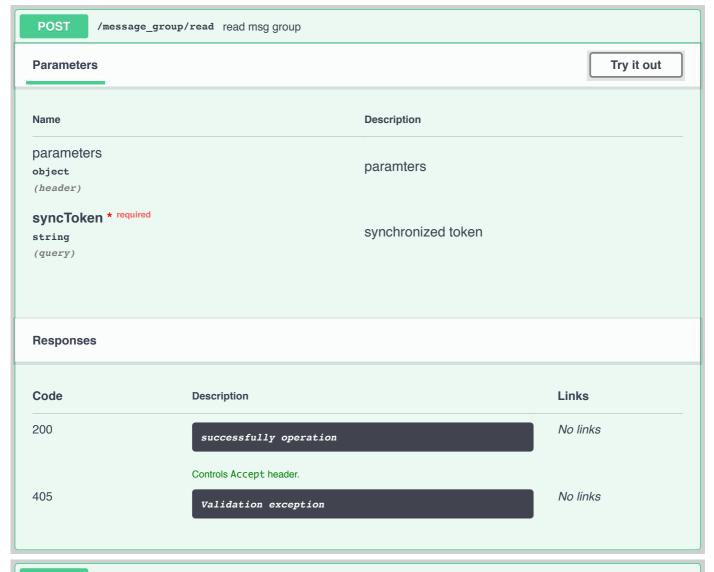
meeting Operations about meetings



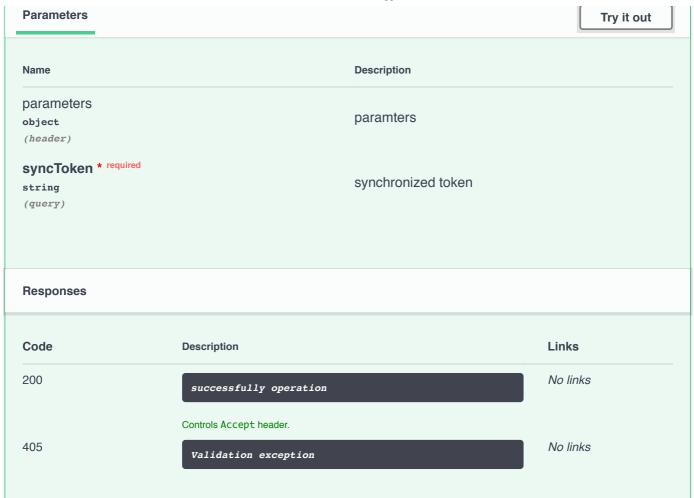
activity Operations about activity msgs

GET /message_group/list sync activities from the server

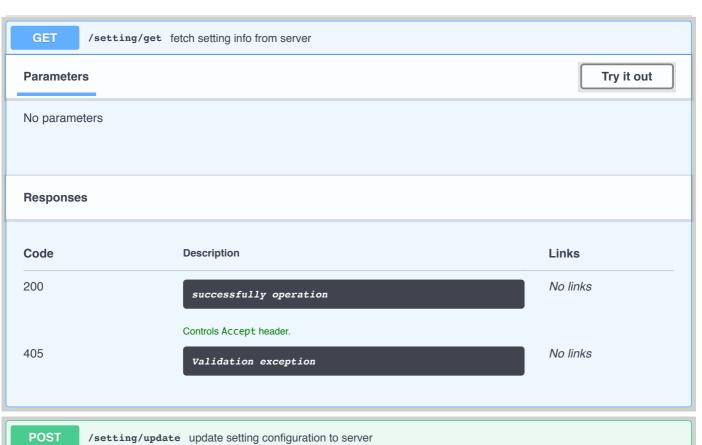




POST /message_group/read_all read all msg group

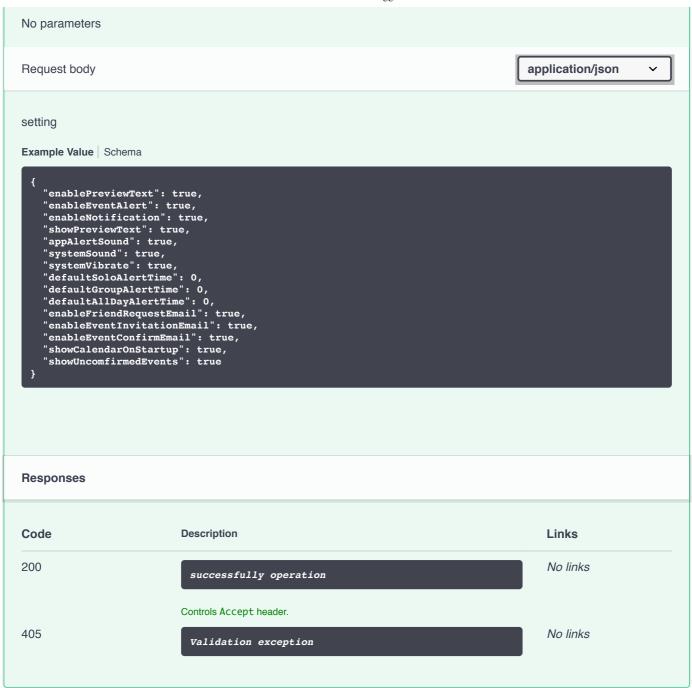


setting Operations about settings



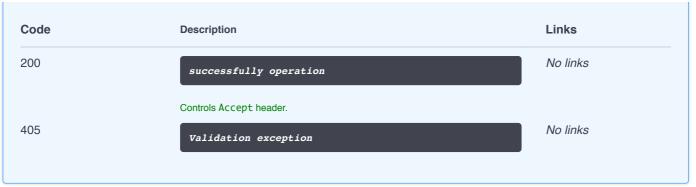
Parameters

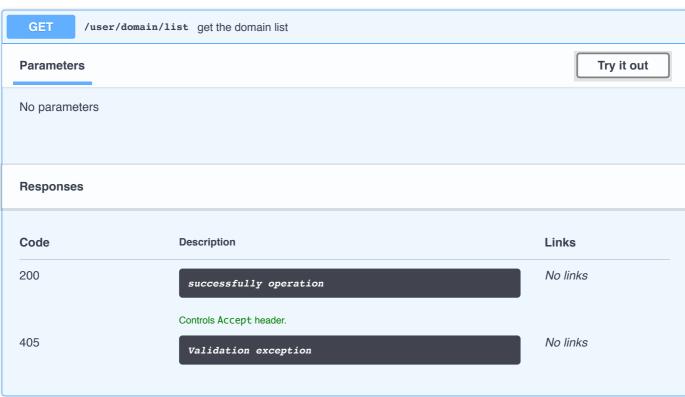
Try it out

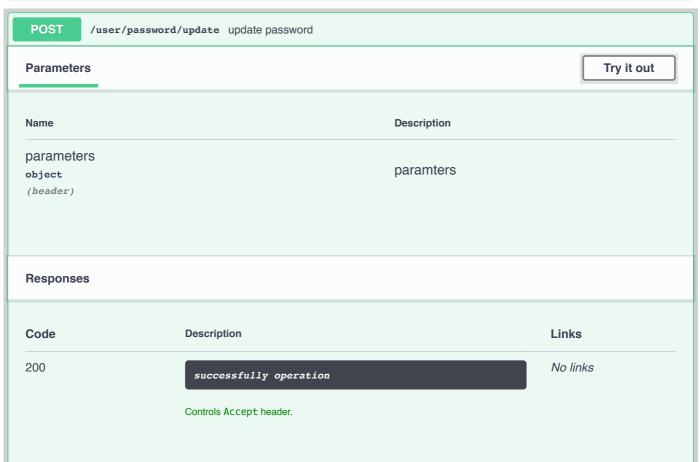


USET Operations about users

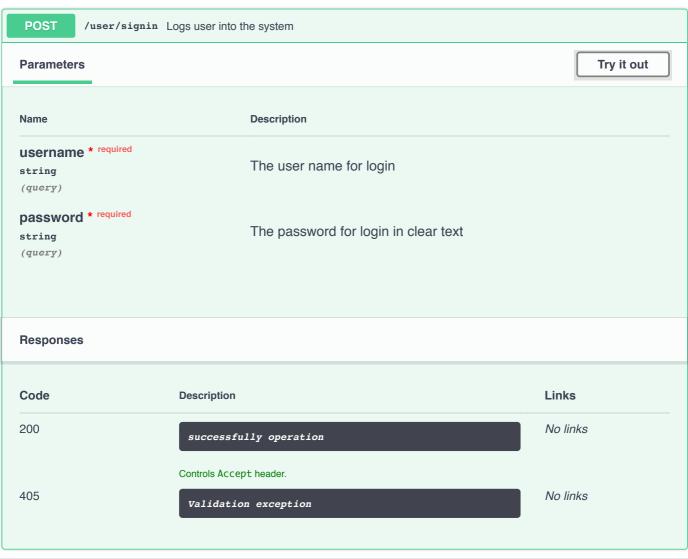


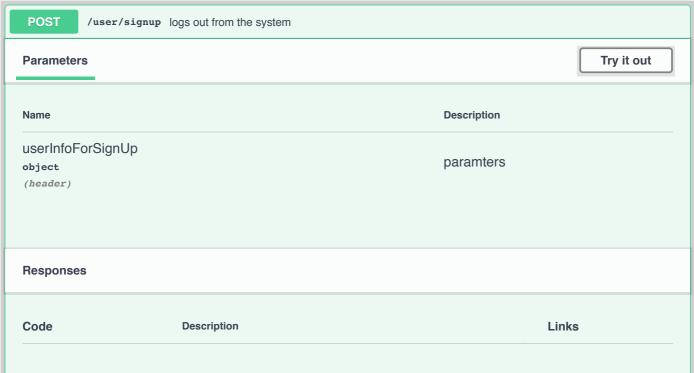


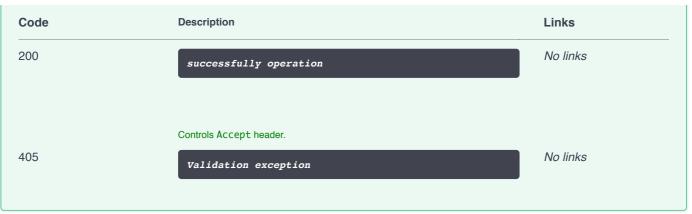


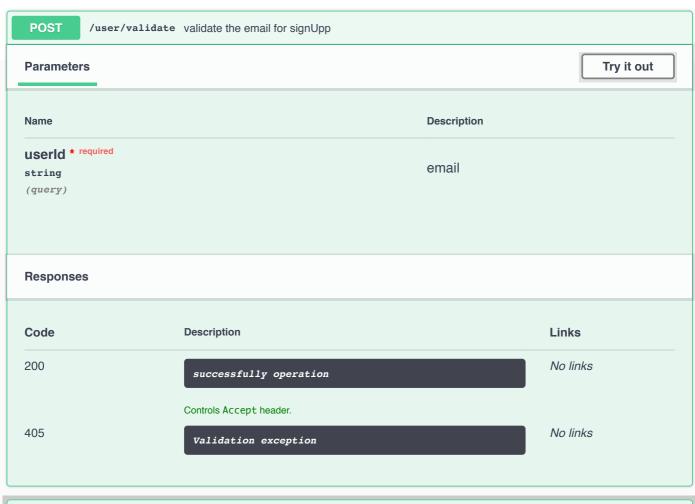


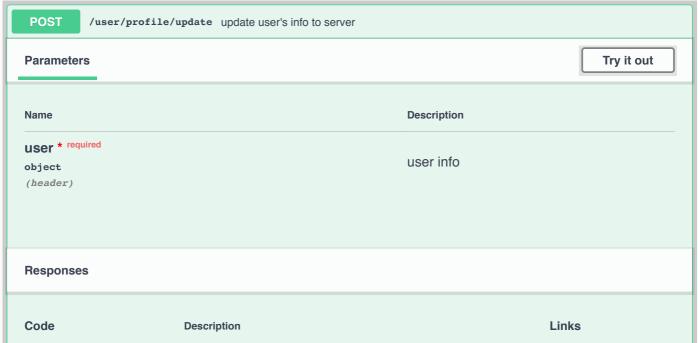


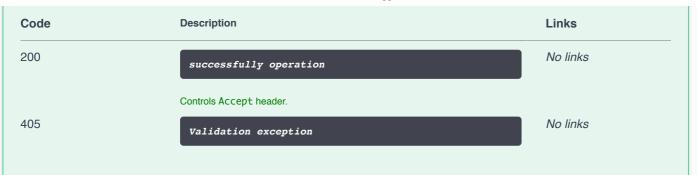


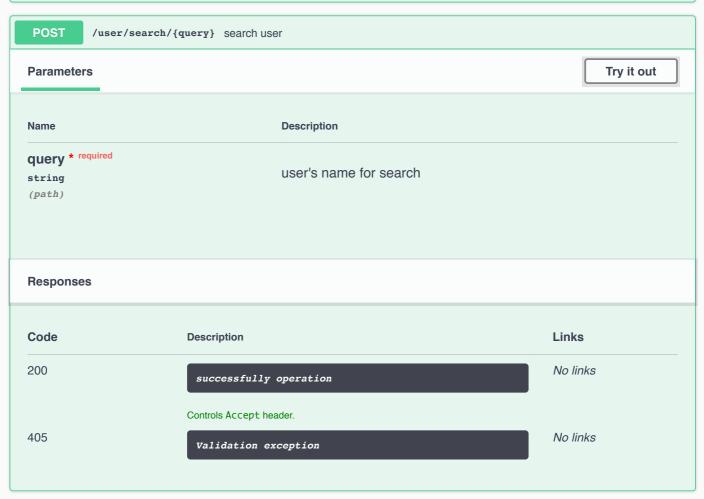


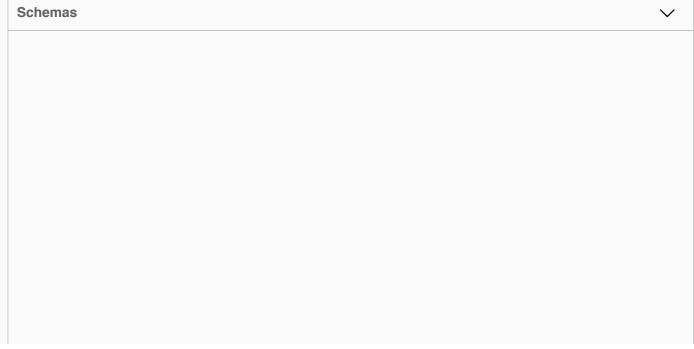












```
ITimeEvent ∨ {
   id
                        string
   host
                       string
   recurrence
                         status
                       string
                     string
string
number($date-time)
   summary
   reason
   start
                    number($date-time)
integer
   end
   end
duration
   greeting
eventDescription string
string
   url
                        string
   extra
                        string
   location
                         ITimeLocation ∨ {
                           locationNote string locationString2 string locationLatitude string locationLatitude string
                            locationLongitude string
                        integer
   reminder
   source
                       string
   eventUid
                        string
                       integer
   hostUserUid
                       integer
   userVid
   calendarUid
                        string
   recurringEventUid string
   isAllday
                        boolean
   eventType
                        string
   inviteeVisibility integer
   freebusyAccess integer integer
   deleteLevel
                        integer
   isPinned
                       boolean
                       boolean
boolean
   isMute
   isArchived
   archivedAt
                       string
   coverPhoto
                        string
   createdAt
                       string
   updatedAt
                        string
                     boolean
   is_subscribed
   is_added
                       boolean
   adminList

✓ [integer]

}
```

```
ITimeCalendar ∨ {
   uid
                       string
   visibility
                        integer($binary)
   color
                       string
   access
                       string
                       access type
                       string
   status
   extra
                        string
   summary
                       string
                       title
   source
                      string
   calendarUid
                       string
   userUid
createdAt
                      integer($int16)
                      string
string
   updatedAt
                      string
integer($int16)
   accountUid
   deleteLevel
   email
                      string
```

```
ITimeTimeslot ∨ {
   start
                      number
   end
                      number
   status
                      string
                      integer
   rate
   timeslotUid
                      string
                     string
integer
integer
   eventUid
   acceptedNum
  rejectedNum
pendingNum
                     integer
integer
   totalNum
   isConfirmed boolean
   isAllDay
                      boolean
   isSystemSuggested boolean
   inviteeUid
                      string
   userUid
                       integer
```

```
Setting ∨ {
   enablePreviewText boolean
enableEventAlert boolean
enableNotification boolean
   enableNotification
showPreviewText
                             boolean
   appAlertSound
                                boolean
   systemSound
                                boolean
   systemVibrate
                              boolean
integer
   defaultSoloAlertTime
                               integer
   defaultGroupAlertTime
   defaultAllDayAlertTime
                                 integer
   enableFriendRequestEmail boolean
   enableEventInvitationEmail boolean
   enableEventConfirmEmail boolean
   showCalendarOnStartup
                                 boolean
   showUncomfirmedEvents
                                boolean
}
```