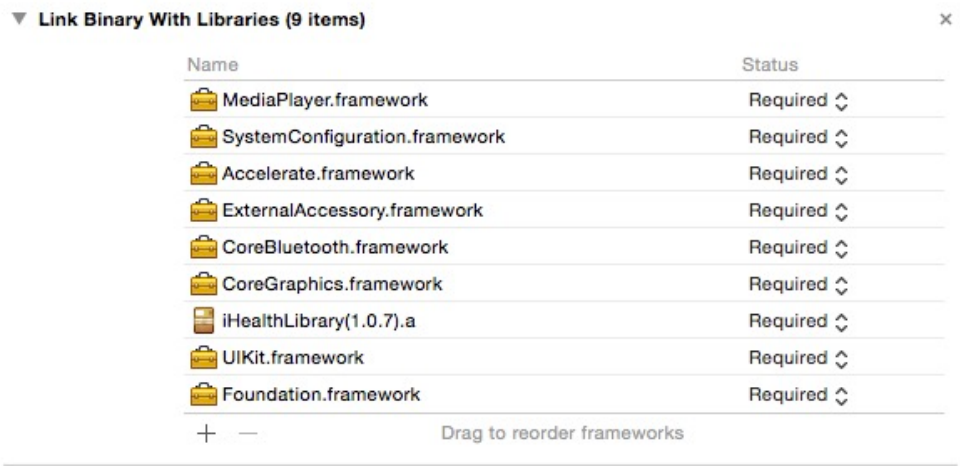
iOS HS SDK Document

1. Relevant file and Frameworks Configuration

1) Need to import HS SDK including:

HSHeader.h、HSMacroFile.h、HS3.h、HS3Controller.h、HS4.h、HS4Controller.h、HS5.h、HS5Controller.h、iHealthLibrary(x.x.x).a (Supports iOS 6.0 and above)

2) Frameworks

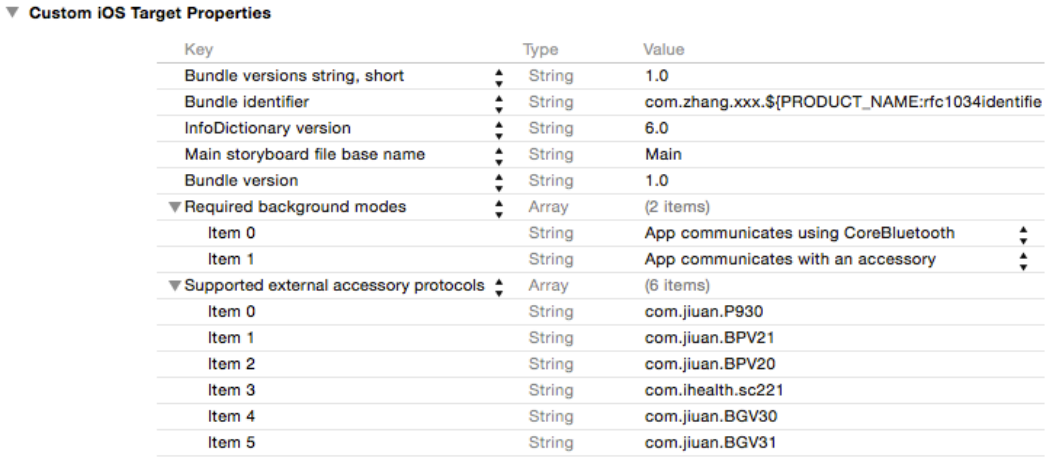


3) Configuration

Add an “item” in “Info”

Add one new item in “Supported Exernal accessory protocols”: com.ihealth.sc221

Add two new items in “Required background modes”: App communicates with an accessory, App communicates using Core Bluetooth



2. Operation Procedure

1) HS3 instructions

Register plug-in device HS3 info: HS3ConnectNoti

Initialize HS3 controller class:

```
HS3Controller*controller=[HS3Controller shareIHHs3Controller];
```

Access control class instance after receiving HS3Controller:

```
NSArray *hsDeviceArray = [controller getAllCurrentHS3Instace];
HS3 *hsInstance = [hsDeviceArray objectAtIndex:i];
```

Use hsInstance to call HS3 related communication methods.

2) HS4 process instruction

Register plug-in device HS4 info: HS4ConnectNoti

Initialize HS4 controller class:

```
HS4Controller*controller=[HS4Controller shareIHHs4Controller];
```

Access control class instance after receiving HS4Controller:

```
NSArray *hsDeviceArray = [controller getAllCurrentHS4Instace];
HS4 *hsInstance = [hsDeviceArray objectAtIndex:i];
```

Use hsInstance to call HS4 related communication methods.

3) HS5 process instruction

Register plug-in device HS5 info: HS5ConnectNoti

Initialize HS5 controller class:

```
HS5Controller*controller=[HS5Controller shareIHHs5Controller];
```

Access control class instance after receiving HS5Controller:

```
NSArray *hsDeviceArray = [controller getAllCurrentHS5Instace];
HS5 *hsInstance = [hsDeviceArray objectAtIndex:i];
```

Use hsInstance to call HS5 related communication methods.

3. HS3 Interface Instructions

1) Establish memory and measurement connection

```
-(void)commandInitWithUser:(User *)tempUser
Authentication:(BlockUserAuthentication)disposeAuthenticationBlock
TransferMemorryData:(StartHS3Transmission)startTransmission
UploadDataNum:(DisposeHS3UploadDataNum)hs3UploadDataNum
DisposeProgress:(DisposeHS3Progress)progress
MemorryData:(HS3MemorryData)memorryData
FinishTransmission:(FinishHS3Transmission)finishTransmission
StableWeight:(StableHS3Weight)stableWeight
DisposeErrorBlock:(DisposeHS3ErrorBlock)disposeHS3ErrorBlock;
```

Import Parameters:

tempUser included properties: clientID, clientSecret, userID, and height

userID: either email or mobile phone number (mobile phone number is not currently supported yet)

height: the height of a user (cm);

clientID & clientSecret: the only identification for users of the SDK, requires registration from iHealth administrator, please email: lvjincan@ihealthlabs.com.cn for more information.

Return Parameters:

disposeAuthenticationBlock: The return parameters of ''userid', 'height', 'clientID', and 'clientSecret' after verification

The interpretation for the verification:

UserAuthen_RegisterSuccess: New-user registration succeeded.

UserAuthen_LoginSuccess: User login succeeded.

UserAuthen_CombinedSuccess: The user is an iHealth user as well, measurement via SDK has been activated, and the data from the measurement belongs to the user.

UserAuthen_TrySuccess: Testing without internet connection succeeded.

UserAuthen_InvalidateUserInfo: Userid/clientID/clientSecret verification failed.

UserAuthen_SDKInvalidateRight: SDK has not been authorized.

UserAuthen_UserInvalidateRight: User has not been authorized.

UserAuthen_InternetError: Internet error, verification failed.

The measurement via SDK will be operated in the case of 1-4, and will be terminated if any of 5-8 occurs. The interface needs to be re-called after analyzing the return parameters. Notice: when a new user registers via SDK, an 'iHealth disclaimer' will pop up automatically, and will require the user to agree in order to continue. SDK applications require an Internet connection; there is 10-day trial period if the SDK cannot connect to the internet, the SDK is fully functional during tryout period, but will be terminated without a working internet connection after 10 days.

startTransmission：Start Memory transmission，Success: Yes，Fail: No.

hs3UploadDataNum：Memory Number，0～200.

progress: Memory transmission progress，0.0～1.0.

memorryData: Record data including weight(kg), measure time，coordinated key：weight、date.

finishTransmission：Finish memory transmission.

stableWeight：Stable weight (Kg)

disposeHS3ErrorBlock：Error code in measurement process

error code definition：refer to 'error' in Section 6: HS3 error instructions.

(2) Turn off Bluetooth Connection

This method can be called only for hsInstance.HS3 with FirmwareVersion>=1.0.2

-(void)commandTurnOffBTConnectAutoResult:(DisposeResult)disposeResult

DisposeErrorBlock:(DisposeHS3ErrorBlock)disposeHS3ErrorBlock;

Return parameters:

disposeResult：YES' means measurement has been terminated, 'NO' means termination failed.

disposeHS3ErrorBlock: refer "error" in Section6: HS3 error instruction.

(3) Turn on Bluetooth Connection

This method can be called only for hsInstance.HS3 with FirmwareVersion>=1.0.2

-(void)commandTurnOnBTConnectAutoResult:(DisposeResult)disposeResult

DisposeErrorBlock:(DisposeHS3ErrorBlock)disposeHS3ErrorBlock;

Return parameters:

disposeResult：YES' means measurement has been terminated, 'NO' means termination failed.

disposeHS3ErrorBlock: refer to "error" in Section 6: HS3 error instruction.

4. HS4 Interface Method Instruction

1) Establish memory and measurement connection

When using the SDK for the first time, measuring method needs to be called to finish user verification.

-(void)commandMeasureWithUint:(HSUnit)tempUnit andUser:(User *)tempUser

Authentication:(BlockUserAuthentication)disposeAuthenticationBlock

Weight:(UnStableWeight)unStableWeight StableWeight:(StableWeight)stableWeight

DisposeErrorBlock:(DisposeHS4ErrorBlock)disposeErrorBlock;

Import parameter:

tempUnit: Unit displayed on HS4: HSUnit_Kg、HSUnit_LB、HSUnit_ST。

tempUser: Properties included: clientID，clientSecret，userID，height.

userID、clientID、clientSecret, see the instruction of HS3

Return parameters:

disposeAuthenticationBlock, see the instruction of HS3

unStableWeight: Current weight, (Kg)

stableWeight: Stable weight, (Kg)

disposeErrorBlock: error code

Error code definition：

refer to "error" in Section 6: HS4 error instruction.

2) Upload memory data

If user doesn't pass the verification, HS4UserInvalidate will be returned for calling this method, user information invalid.

-(void)commandTransferMemorryWithUser:(User *)tempUser

memoryData:(StartHS4Transmission)startTransmission

DisposeProgress:(DisposeProgress)progress

MemorryData:(MemorryData)memorryData

FinishTransmission:(FinishHS4Transmission)finishTransmission

DisposeErrorBlock:(DisposeHS4ErrorBlock)disposeErrorBlock;

Import parameters：

tempUser, included properties: userID, refer to the instructions for HS3

Return parameters:

startTransmission：Start Memory transmission.

progress: Memory transmission progress，0.0～1.0.

memorryData:Record data including weight (kg), measurement time，coordinated key：weight，date.

finishTransmission：Finish memory transmission.

disposeErrorBlock: Record the error code in uploading process.

Error code definition: refer to ”error” in Section 6: HS4 error instruction.

5. HS5 Interface Method Instruction

1) Establish memory and measurement connection

-(void)commandCreateUserManageConnectWithUser:(User *)tempUser

Authentication:(BlockUserAuthentication)disposeAuthenticationBlock

currentUserSerialNub:(CurrentSerialNub)serialNub

deviceUserList:(MemorryUserListHS5Data) MemorryUserListHS5Data

Disposehs5ErrorBlock:(DisposeHS5ErrorBlock)disposeErrorBlock;

Import Parameters:

tempUser, included properties: userID、clientID、clientSecret。

userID、clientID、clientSecret、disposeAuthenticationBlock, refer to the instructions of HS3.

Return Parameters:

disposeAuthenticationBlock: `UserAuthen_TrySuccess` is invalidate for HS5.

SerialNub: The only identification of a user，should be reserved in third party apps，provide to other Apps

MemorryUserListHS5Data：Existing user info in HS5，including serialNub、Position of users. Related key: serialNumber、position

disposeErrorBlock：error codes in transmission process，refer to Section 6: Errors in HS5

2) Create new user

Use the function if the SerialNub of current user is not included in user list of HS5 and the user number is less than 20

-(void)commandCreateUser:(User *)tempUser position:(uint8_t)tempPosition

DisposeHS5Result:(DisposeHS5Result)disposeHS5Result

Disposehs5ErrorBlock:(DisposeHS5ErrorBlock)disposeErrorBlock;

Import parameters:

tempUser， included properties: serialNub、birthday、height、isAthlete、sex。

serialNub: The only identification for user

birthday: User’s birthday, NSDate

height: User’s height, (cm)

isAthlete: If user is an athelete, UserIsAthelete_No: no, UserIsAthelete_Yes: Yes

sex: User’s sex, UserSex_Female: female, UserSex_Male: male

tempPosition: Position of user, range: 0～19, pick from empty position that has never been occupied

Return Parameters：

disposeHS5Result：Success:Yes，Fail:No.

disposeErrorBlock: error codes in transmission process，refer to Section 6: Errors in HS5

3) Edit User Info

If the SerialNub of current user already exists in the user list of HS5, this will be used when user info is changed.

-(void)commandModifyUser:(User *)tempUser
DisposeHS5Result:(DisposeHS5Result)disposeHS5Result
Disposehs5ErrorBlock:(DisposeHS5ErrorBlock)disposeErrorBlock;

Import Parameters：

tempUser, included properties： serialNub、birthday、height、isAthlete、sex，instructions refer to “new user Api”.

Return Parameters：

disposeHS5Result：Success:Yes，Fail:No.
disposeErrorBlock: error codes in transmission process，refer to Section 6: Errors in HS5

4) Delete Specified User

This will be used deleting account in HS5.
-(void)commandDelteUser:(User *)tempUser
DisposeHS5Result:(DisposeHS5Result)disposeHS5Result
Disposehs5ErrorBlock:(DisposeHS5ErrorBlock)disposeErrorBlock;

Import Parameters:

tempUser, included properties: serialNub，instructions refer to “new user Api”.

Return Parameters:

disposeHS5Result：Success:Yes，Fail:No.
disposeErrorBlock：error codes in transmission process，refer to Section6: Errors in HS5

5) Establish Measurement Connection

-(void)commandCreateMeasureWithUser:(User *)tempUser
unStableWeight:(UnStableHS5Weight)unStableHS5Weight
MeasureWeight:(StableHS5Weight)stableHS5Weight
ImpedanceType:(ImpedanceWeight)impedanceWeight
BodyCompositionMeasurements:(BodyCompositionMeasurements)bodyCompositionMeasurements Disposehs5ErrorBlock:(DisposeHS5ErrorBlock)disposeErrorBlock;

Import Parameters:

tempUser, included properties: serialNub、height，instructions refer to “new user Api”.

Return Parameters:

unStableHS5Weight: Current weight, (kg)
stableHS5Weight: Stable weight, (kg)
impedanceWeight: Weight by impedence, (kg)
bodyCompositionMeasurements: body info, includes weight(kg), fat content(%), water content(%), muscle content(%), bone mass, visceral fat level, DCI(Kcal). keys: weight, weightFatValue, waterValue, muscleValue, skeletonValue, VFatLevelValue, DCIValue
disposeHS5Result: Success:Yes，Fail:No.
disposeErrorBlock: error codes in transmission process，refer to Section 6: Errors in HS5

6) create memory upload connection

-(void)commandCreateMemoryWithUser:(User *)tempUser uploadConnect:
(DisposeHS5Result)disposeHS5Result
TransferMemorryData:(StartHS5Transmission)startTransmission
DisposeProgress:(DisposeHS5Progress)progress
MemorryData:(MemorryHS5Data)memorryData
FinishTransmission:(FinishHS5Transmission)finishTransmission
Disposehs5ErrorBlock:(DisposeHS5ErrorBlock)disposeErrorBlock;

Import Parameters

tempUser, included properties： serialNub，instructions refer to “new user Api”.

Return Parameters:

disposeHS5Result: Success:Yes，Fail:No.
startTransmission: Start memory transmission.
progress: Memory transmission progress，0.0～1.0.
memorryData: Record data，More details and key refer Measure API. Additionally add time-measure property, related key: date.
finishTransmission：Finish Memory Transmission
disposeErrorBlock: error codes in transmission process，refer to Section 6: Errors in HS5

7) Acquire HS5 data from cloud

When connected to the internet, HS5 could upload measurement to cloud to be recorded. Get data in cloud using the below API.

[[HS5Controller shareIHHs5Controller] getDownloadDataFromCloud:];
-(void)getDownloadDataFromCloud:(BlockDataFromCloud)dataBlock;

Return Parameters:

dataBlock: the collection of measurement from cloud, related key refer to Measure API.

5. Related supplementary parameter instruction

Device Connection info: HS3ConnectNoti、HS4ConnectNoti、HS5ConnectNoti
Device disconnection info: HS3DisConnectNoti、HS4DisConnectNoti、HS5DisConnectNoti
When connecting to multiple devices, separate devices by deviceID

6. Error code instruction

(1)HS3:

```
typedef enum{
HS3DeviceLowPower = 1, //Low battery
HS3DeviceEr2, //Weight capacity is exceeded
HS3DeviceEr4, //The Scale calibration error
```

HS3DeviceEr7, //Movement while measuring
HS3DataZeor, //No memory
HS3DeviceDisconnect, //Device disconnect
HS3DeviceSendTimeout, //Communication error
HS3UserInvalidate = 111//User verify error
}HS3DeviceError;

(2)HS4:

typedef enum{
HS4DeviceLowPower = 1, // Battery level is low
HS4DeviceEr0, // The Scale failed to initialize
HS4DeviceEr1, // Maximum weight has been exceeded
HS4DeviceEr2, // The Scale can't capture a steady reading
HS4DeviceEr4, // Bluetooth connection error
HS4DeviceEr7, // Movement while measuring
HS4DeviceEr8, //Invalidate
HS4DeviceEr9, // Scale memory access error
HS4DataZeor, // No memory
HS4DeviceDisconnect, //Device disconnect
HS4DeviceSendTimeout, // Communication error
HS4DeviceRecWeightError, //
HS4UserInvalidate = 111//User verify error
}HS4DeviceError;

(3)HS5:

typedef enum{
IHSCOverTimeError = 0, // Communication error
IHSCUserInScale=5, // Communication Error
IHSCLowPower=6, // Make sure batteries are installed correctly, if the problem persists, replace with a new set of batteries.
IHSCScaleEr0=7, // Remove the batteries, wait 1 minute and then replace with a new set of batteries.
IHSCScaleEr1=8, // The current weight may be beyond the measurement range of 330 lbs/150 kg.
IHSCScaleEr2=9, // Stand still on all four electrodes with bare feet.
IHSCScaleEr7=10, // Communication Error
IHSCScaleEr8=11, // Communication Error
IHSCScaleEr9=12, // Communication Error
IHScaleBusy=13,// Scale is busy
HS5DataZeor=14,// No memory
IHSCScaleCreateUserTestError,
HS5Disconnect, //Device disconnect
HS5UserInvalidate = 111//User verify error
}HS5DeviceError;

7. Demo