Web SDK for User-Controlled Wallets

This topic contains the Programmable Wallets SDK reference for web app development.[Suggest Edits](#)

The User Wallet offers Web SDK so that customers can integrate our services seamlessly into their web applications. The Web SDK secures the process through the iFrame element when users input their secret data, such as PIN and security answers. Also, the SDK ensures additional security by encrypting the request body with the encryption key.

At Circle, we understand the importance of end-to-end security for your application and also the need to create a tailored and seamless user experience for your end-users. Hence, our SDK also exposes functionality for you to customize the description and layout:

- UI Title and Subtitle Customization:
- Modify the title and subtitle to reflect your brand identity or provide specific instructions.
- Custom PIN Code Input Layout:
- Adjust the layout and styling of the PIN code input field to align with your application's design guidelines.
- Question List Configuration:
- Set the list of security questions displayed in the User Wallet UI, allowing users to choose from a predefined set.
- SDK Initialization:
- Initialize the Web SDK by setting the endpoint server, ensuring seamless communication between your application and our services.
- Predefined Error Messages:
- Customize the error messages displayed to users, providing a more personalized experience and guidance.
- ChallengeID Acceptance and Operation Retrieval:
- Easily accept the challengeID and retrieve any relevant operations within the SDK.

Tip:

To use the SDK in the most flexible way, combine this SDK reference with the[Web SDK UI Customization API](#) article.

SDK Installation

Shell npm install @circle-fin/w3s-pw-web-sdk

Enums

The Web SDK supports the enums listed in the following sections.

ChallengeType

Enumerates the types of challenges supported.

JavaScript enum ChallengeType { RESTORE_PIN, SET_SECURITY_QUESTIONS, CREATE_WALLET, CREATE_TRANSACTION, ACCELERATE_TRANSACTION, CANCEL_TRANSACTION, CONTRACT_EXECUTION, SIGN_MESSAGE, SIGN_TYPEDDATA, UNKNOWN, }

ChallengeStatus

Enumerates the possible statuses for a challenge.

JavaScript enum ChallengeStatus { COMPLETE, EXPIRED, FAILED, IN_PROGRESS, PENDING, }

QuestionType

Enumerates the types of security questions.

JavaScript enum QuestionType { DATE, TEXT, }

ErrorCode

Enumerates the types of error code.

JavaScript enum ErrorCode { unknown = -1, success = 0, apiParameterMissing = 1, apiParameterInvalid = 2, forbidden = 3, unauthorized = 4, retry = 9, customerSuspended = 10, pending = 11, invalidSession = 12, invalidPartnerId = 13, invalidMessage = 14, invalidPhone = 15, userAlreadyExisted = 155101, userNotFound =

155102, userTokenNotFound = 155103, userTokenExpired = 155104, invalidUserToken = 155105, userWasInitialized = 155106, userHasSetPin = 155107, userHasSetSecurityQuestion = 155108, userWasDisabled = 155109, userDoesNotSetPinYet = 155110, userDoesNotSetSecurityQuestionYet = 155111, incorrectUserPin = 155112, incorrectDeviceId = 155113, incorrectAppId = 155114, incorrectSecurityAnswers = 155115, invalidChallengeId = 155116, invalidApproveContent = 155117, invalidEncryptionKey = 155118, userPinLocked = 155119, securityAnswersLocked = 155120, notEnoughFunds = 155201, notEnoughBalance = 155202, exceedWithdrawLimit = 155203, minimumFundsRequired = 155204, invalidTransactionFee = 155205, rejectedOnAmlScreening = 155206, tagRequired = 155207, gasLimitTooLow = 155208, transactionDataNotEncodedProperly = 155209, fullNodeReturnedError = 155210, walletSetupRequired = 155211, lowerThenMinimumAccountBalance = 155212, rejectedByBlockchain = 155213, droppedAsPartOfReorg = 155214, operationNotSupport = 155215, amountBelowMinimum = 155216, wrongNftTokenIdNumber = 155217, invalidDestinationAddress = 155218, tokenWalletChainMismatch = 155219, wrongAmountsNumber = 155220, walletIsFrozen = 155501, maxWalletLimitReached = 155502, walletSetIdMutuallyExclusive = 155503, metadataUnmatched = 155504, userCanceled = 155701, launchUiFailed = 155702, pinCodeNotMatched = 155703, insecurePinCode = 155704, hintsMatchAnswers = 155705, networkError = 155706, biometricsSettingNotEnabled = 155708, deviceNotSupportBiometrics = 155709, biometricsKeyPermanentlyInvalidated = 155710, biometricsUserSkip = 155711, biometricsUserDisableForPin = 155712, biometricsUserLockout = 155713, biometricsUserLockoutPermanent = 155714, biometricsUserNotAllowPermission = 155715, biometricsInternalError = 155716, walletIdNotFound = 156001, tokenIdNotFound = 156002, transactionIdNotFound = 156003, entityCredentialNotFound = 156004, walletSetIdNotFound = 156005, }

Interfaces

The Web SDK supports the interfaces listed in the following sections.

AppSettings

Holds application settings.

- appId
-
- Application ID, retrieved from Circle Web3 Services Console

Authentication

Holds authentication information.

- userToken
-
- User token
- encryptionKey
-
- Encryption key

Challenge

Holds information about a challenge.

- challengeId
-
- Challenge Id

SignMessageResult

Holds the result of a sign message or sign typed-data challenge.

- signature
-
- Signature result after signing

ChallengeResult

Holds the result of a challenge.

- type
-
- Challenge type
- status

-
- Challenge status
- data
-
- Sign message response

SecurityQuestion

Holds information about a custom security question.

- question
-
- Custom security question
- type
-
- Type of the question

Error

Holds error information.

- code
-
- Internal error code
- message
-
- Error message

Localizations

Holds localization settings.

- common
-
- The settings for common texts.
- confirmInitPincode
-
- The settings for
- ConfirmInitPincode
- screen.
- confirmNewPincode
-
- The settings for
- ConfirmNewPincode
- screen.
- enterPincode
-
- The settings for
- EnterPincode
- screen.
- initPincode
-
- The settings for
- InitPincode
- screen.
- newPincode
-
- The settings for
- NewPincode
- screen.
- recoverPincode
-
- The settings for
- RecoverPincode
- screen.
- securityConfirm
-
- The settings for
- SecurityConfirm

- screen.
- securityIntros
-
- The settings for
- SecurityIntros
- screen.
- securityQuestions
-
- The settings for
- SecurityQuestions
- screen.
- securitySummary
-
- The settings for
- SecuritySummary
- screen.

Common

Holds localization settings for common texts.

- continue
-
- Continue text
- showPin
-
- Show pin text
- hidePin
-
- Hide pin text

ConfirmPincode

Holds localization settings for ConfirmInitPincode or ConfirmNewPincode screen.

- headline
-
- Headline text
- headline2
-
- Headline text 2
- subhead
-
- Subhead text

EnterPincode

Holds localization settings for EnterPincode screen.

- headline
-
- Headline text
- headline2
-
- Headline text 2
- subhead
-
- Subhead text
- forgotPin
-
- Forgot pin text

NewPincode

Holds localization settings for InitPincode or NewPincode screen.

- headline
-
- Headline text

- headline2
-
- Headline text 2
- subhead
-
- Subhead text

RecoverPincode

Holds localization settings for RecoverPincode screen.

- headline
-
- Headline text
- headline2
-
- Headline text 2
- subhead
-
- Subhead text
- answerInputHeader
-
- Answer input header text
- answerInputPlaceholder
-
- Answer input placeholder text

SecurityConfirm

Holds localization settings for SecurityConfirm screen.

- title
-
- Title text
- headline
-
- Headline text
- inputHeadline
-
- Input headline text
- inputPlaceholder
-
- Input placeholder text
- inputMatch
-
- Input match text

SecurityIntros

Holds localization settings for SecurityIntros screen.

- headline
-
- Headline text
- headline2
-
- Headline text 2
- description
-
- Description text
- link
-
- Link text

SecurityQuestions

Holds localization settings for SecurityQuestions screen.

- title

-
- Title text
- questionHeader
-
- Question header text
- questionPlaceholder
-
- Question placeholder text
- requiredMark
-
- Required mark text
- answerHeader
-
- Answer header text
- answerPlaceholder
-
- Answer placeholder text
- answerHintHeader
-
- Answer hint header text
- answerHintPlaceholder
-
- Answer hint placeholder text

SecuritySummary

Holds localization settings for SecuritySummary screen.

- title
-
- Title text
- question
-
- Question text

ThemeColor

Holds customization color settings.

- backdrop
-
- Backdrop color, e.g.
- '#000000'
- .
- backdropOpacity
-
- Backdrop opacity, e.g.
- 0.5
- .
- divider
-
- Divider color, e.g.
- '#808080'
- or
- 'grey'
- .
- bg
-
- Background color e.g.
- '#FFFFFF'
- or
- 'white'
- .
- success
-
- Success color, e.g.
- '#008000'
- or
- 'green'

- .
- error
-
- Error color, e.g.
- '#FF0000'
- or
- 'red'
- .
- textMain
-
- Main text color, e.g.
- '#000000'
- or
- 'black'
- .
- textMain2
-
- Main text color 2, e.g.
- '#000000'
- or
- 'black'
- .
- textAuxiliary
-
- Auxiliary text color, e.g.
- '#000000'
- or
- 'black'
- .
- textAuxiliary2
-
- Auxiliary text color 2, e.g.
- '#000000'
- or
- 'black'
- .
- textSummary
-
- Summary text color, e.g.
- '#000000'
- or
- 'black'
- .
- textSummaryHighlight
-
- Summary highlight text color, e.g.
- '#000000'
- or
- 'black'
- .
- textPlaceholder
-
- Placeholder text color, e.g.
- '#808080'
- or
- 'grey'
- .
- pinDotBase
-
- Fill color for pincode input dot, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- pinDotBaseBorder
-
- Stroke color for pincode input dot, e.g.
- '#000000'

- or
- 'black'
- .
- pinDotActivated
-
- Fill color for inputted pincode input dot, e.g.
- '#0000ff'
- or
- 'blue'
- .
- inputBorderFocused
-
- Outline color for text input on focused, e.g.
- '#0000ff'
- or
- 'blue'
- .
- inputBorderFocusedError
-
- Outline color for text input when error, e.g.
- '#FF0000'
- or
- 'red'
- .
- inputBg
-
- Background color for text input, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- inputBgDisabled
-
- Background color for disabled text input, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- dropdownBg
-
- Background color for dropdown, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- dropdownBorderIsOpen
-
- Outline color for dropdown is open, e.g.
- '#0000ff'
- or
- 'blue'
- .
- dropdownBorderError
-
- Outline color for dropdown when error, e.g.
- '#FF0000'
- or
- 'red'
- .
- mainBtnText
-
- Text color for primary button, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- mainBtnTextDisabled
-

- Text color for disabled primary button, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- mainBtnTextOnHover
-
- Text color for primary button on hover, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- mainBtnBg
-
- Background color for primary button, e.g.
- '#000000'
- or
- 'black'
- .
- mainBtnBgOnHover
-
- Background color for primary button on hover, e.g.
- '#000000'
- or
- 'black'
- .
- mainBtnBgDisabled
-
- Background color for disabled primary button, e.g.
- '#000000'
- or
- 'black'
- .
- secondBtnText
-
- Text color for secondary button, e.g.
- '#000000'
- or
- 'black'
- .
- secondBtnTextDisabled
-
- Text color for disabled secondary button, e.g.
- '#000000'
- or
- 'black'
- .
- secondBtnTextOnHover
-
- Text color for secondary button on hover, e.g.
- '#000000'
- or
- 'black'
- .
- secondBtnBorder
-
- Outline color for secondary button, e.g.
- '#000000'
- or
- 'black'
- .
- secondBtnBorderOnHover
-
- Outline color for secondary button on hover, e.g.
- '#000000'
- or
- 'black'
- .

- secondBtnBgOnHover
-
- Background color for secondary button on hover, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- secondBtnBorderDisabled
-
- Outline color for disabled secondary button, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- plainBtnText
-
- Text color for plain text button, e.g.
- '#000000'
- or
- 'black'
- .
- plainBtnTextDisabled
-
- Text color for disabled plain text button, e.g.
- '#000000'
- or
- 'black'
- .
- plainBtnTextOnHover
-
- Text color for plain text button on hover, e.g.
- '#000000'
- or
- 'black'
- .
- plainBtnBg
-
- Background color for plain text button, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- plainBtnBgOnHover
-
- Background color for plain text button on hover, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- recoverPinHintTitle
-
- Text color for recover pincode hint title, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- recoverPinHintTitleBg
-
- Background color for recover pincode hint title, e.g.
- '#FFFFFF'
- or
- 'white'
- .
- recoverPinHint
-
- Text color for recover pincode hint, e.g.
- '#FFFFFF'
- or

- 'white'
- .
- titleGradients
-
- Background color for linear-gradient text, e.g.
- ['#B090F5', '#1AA3FF']
- .

Resources

Holds resource urls and properties, such as images or font-family settings. These resource properties should be hosted on a public server. SDK will load these resources from the urls provided.

- naviClose
-
- Close icon
- naviBack
-
- Back icon
- securityIntroMain
-
- Security intro main image
- dropdownArrow
-
- Dropdown arrow icon
- selectCheckMark
-
- Select check mark icon
- securityConfirmMain
-
- Security confirm main image
- errorInfo
-
- Error info icon
- fontFamily
- <{ name?: string, url?: string } | undefined>
- Font family settings

CustomLinks

Holds custom links.

- learnMoreUrl
-
- Learn more link

Class Definition

The WEB SDK supports the class definitions listed in the following sections.

W3SSdk

Constructor

Initializes a new instance of W3SSdk .

Methods

execute

Executes a challenge.

- challengeId
-
- Challenge ID
- onCompleted
-
- Callback function

-
  - error
-
  -
-
  - Presents if error occurs
-
  - result
-
  -
-
  - Presents when success

setAppSettings

Sets the application settings.

- appSettings
-
- Application settings object

setAuthentication

Sets the authentication information.

- auth
-
- Authentication object

setCustomSecurityQuestions

Sets custom security questions.

- questions
-
- Array of
- SecurityQuestion
- requiredCount
-
- Required count of
- SecurityQuestion
- . The value is 2 by default.
- securityConfirmItems
-
- Array of customized disclaimers on
- SecurityConfirm
- screen. The value is
- undefined
- by default.

setLocalizations

Sets custom localizations

- localizations
-
- Settings of
- Localizations

setResources

Sets custom resources

- resources
-
- Settings of
- Resources

setThemeColor

Sets custom theme colors

- themeColor
-
- Settings of
- ThemeColor

setCustomLinks

Sets custom links

- customLinks
-
- Settings of
- CustomLinks

setOnForgotPin

Sets callback function for ForgotPin button click event

- onForgotPin
-
- Callback function
- shouldCloseModalOnForgotPin
-
- Should close modal on forgot pin click event

Sample code

React.js

JavaScript import React, { useCallback, useEffect, useState } from 'react' import { ToastContainer, toast } from 'react-toastify' import TextField from '@mui/material/TextField' import Button from '@mui/material/Button' import { W3SSdk } from '@circle-fin/w3s-pw-web-sdk'

let sdk: W3SSdk

function App() {   useEffect(() => {   sdk = new W3SSdk()   }, [])

const [appId, setAppId] = useState(localStorage.getItem('appId') || 'someAppId') const [userToken, setUserToken] = useState(localStorage.getItem('userToken') || 'someUserToken') const [encryptionKey, setEncryptionKey] = useState(localStorage.getItem('encryptionKey') || 'someEncryptionKey') const [challengeId, setChallengeId] = useState(localStorage.getItem('challengeId') || 'someChallengeId')

const onChangeHandler = useCallback((setState, key) => (e) => {   const value = e.target.value   setState(value)   localStorage.setItem(key, value)   ,   [])

const onSubmit = useCallback(() => {   sdk.setAppSettings({ appId })   sdk.setAuthentication({ userToken, encryptionKey })

sdk.execute(challengeId, (error, result) => {   if (error) {   toast.error(Error: {error?.message ?? 'Error!'})   return   }   toast.success(Challenge: {result?.type}, Status: {result?.status})   })   }, [appId, userToken, encryptionKey, challengeId])

return (

| Verify Challenge |

) }

Vanilla Javascript

JavaScript // Assume W3SSdk is globally available let sdk = new W3SSdk()

// Initialize settings const initSettings = () => { sdk.setAppSettings({   appId: 'someAppId', }) sdk.setAuthentication({   userToken: 'someUserToken',   encryptionKey: 'someEncryptionKey', }) }

// Handle form submission const handleSubmit = () => { const challengeId = document.getElementById('challengeId').value

```
sdk.execute(challengeId, (error, result) => {    if (error) {       console.error(Error: {error?.message ?? 'Error!'})       return    }
    console.log(Challenge: {result?.type}, Status: {result?.status})    }) }
```

// Initialization initSettings()

// Listen for button click event document.getElementById('submitBtn').addEventListener('click', handleSubmit) Updated16
days ago *