Aptos Unity SDK

The Aptos Unity SDK is a .NET implementation of the Aptos SDK, compatible with .NET Standard 2.0 and .NET 4.x for Unity. The goal of this SDK is to provide a set of tools for developers to build multi-platform applications (mobile, desktop, web, VR) using the Unity game engine and the Aptos blockchain infrastructure. An implementation of a desktop wallet application is provided as an example.

Getting Started

To get started, you may check our Quick Start Guide. A set of examples is also provided in the `SDK-Examples` directory. A local version of Doxygen-generated documentation for the classes can be found in `Documentation/html/index.html`. A hosted version of the latter documentation can found in here.

This accompanying README file provides further details on the SDK and integration.

Installation

1. Download the latest `aptos-unity-sdk-xx.unitypackage` file from Release
2. Inside Unity, Click on `Assets` → `Import Packages` → `Custom Package.` and select the downloaded file.

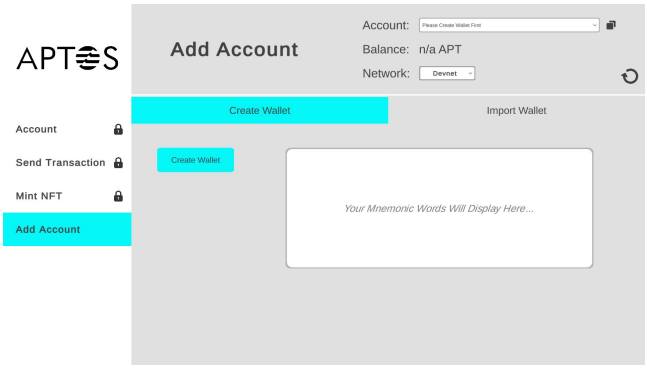
NOTE: As of Unity 2021.x.x, Newtonsoft Json is a common dependency. Prior versions of Unity require installing Newtonsoft.

Quick Start Video

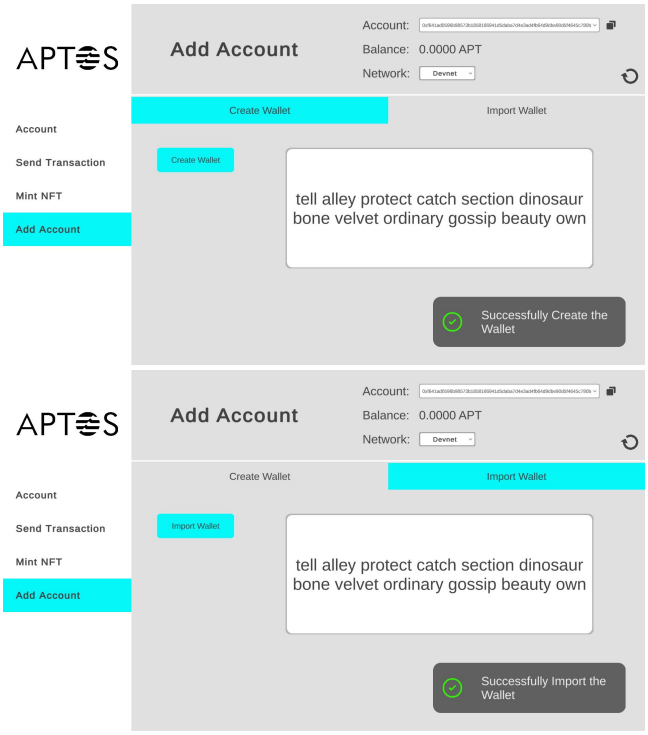
https://user-images.githubusercontent.com/25370590/219819120-92cb2aa0-e685-4eac-bcb9-942a0cc4157f.mp4

Wallet Example Walthrough

You can find a set of examples under `SDK-Examples/SDK Demo` and `SDK-Examples/UI Demo` directory. We will use the scene under `UI Demo` for this walkthrough.



Once you open the demo scene, you will see all tab are locked except `Add Account`, you have the choice to create or import a wallet.



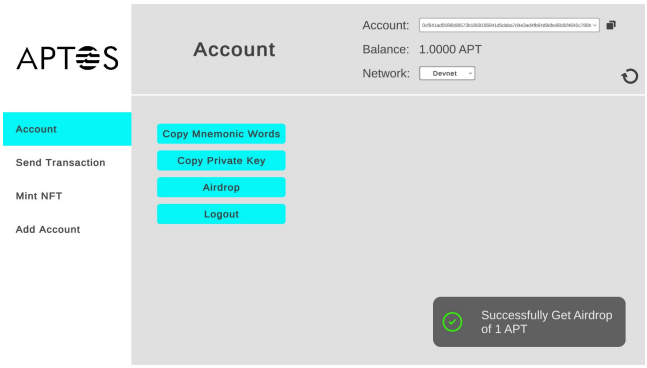
Note that we currently store the mnemonics words in `PlayerPrefs`.

In code, you can create a wallet as follows:

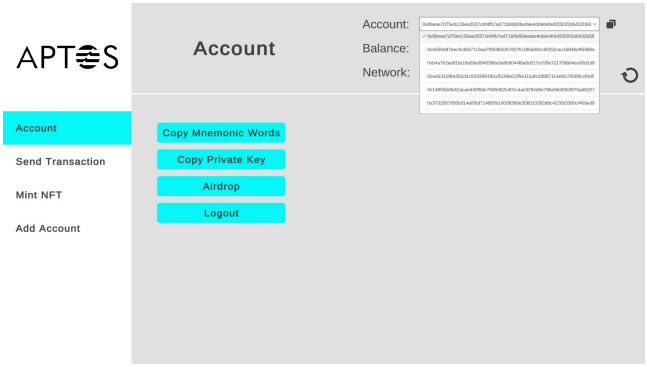
```
// Create Wallet

Mnemonic mnemo = new Mnemonic(Wordlist.English, WordCount.Twelve);
wallet = new Wallet(mnemo);

PlayerPrefs.SetString(mnemonicsKey, mnemo.ToString());
```

This wallet object can be used to derive multiple accounts which show in code further down.

Account



Once you create the wallet, you will be able to unlock rest of the panel, on `Account` Panel.



Deriviving Accounts from HD Wallet

In code, you can derive accounts from the HD Wallet by selecting an account index as follows:

```
// Create sub-wallets

Mnemonic mnemo = new Mnemonic(Wordlist.English, WordCount.Twelve);
wallet = new Wallet(mnemo);

for (int i = 0; i < accountNumLimit; i++)
{
    var account = wallet.GetAccount(i);
    var addr = account.AccountAddress.ToString();

    addressList.Add(addr);
}
```

You can also generate an account from a random seed / private key as follows:

```
// Create new account

Account alice = new Account();
AccountAddress aliceAddress = alice.AccountAddress;
```

Airdrop

When using Devent , you can airdrop 1 APT to your account address as follows:

```
// Airdrop

bool success = false;
ResponseInfo responseInfo = new ResponseInfo();

Coroutine fundAliceAccountCor = StartCoroutine(
    FaucetClient.Instance.FundAccount((_success, _responseInfo) =>
    {
        success = _success;
        responseInfo = _responseInfo;
    }, aliceAddress.ToString(), 100000000, faucetEndpoint));

yield return fundAliceAccountCor;

// Check if funding the account was succesful
if(responseInfo.status != ResponseInfo.Status.Success)
{
    Debug.LogError("Faucet funding for Alice failed: " + responseInfo.message);
    yield break;
}
```

NFT Minter

On the `Mint NFT` tab, You can mint a NFT of your own. In order to do that, you need to `Create Collection` first, then `Create NFT` .

Note that you must confirm that the creation of the collection was sucessful before creating the token, you can use the `WaitForTransaction` corouting for this.

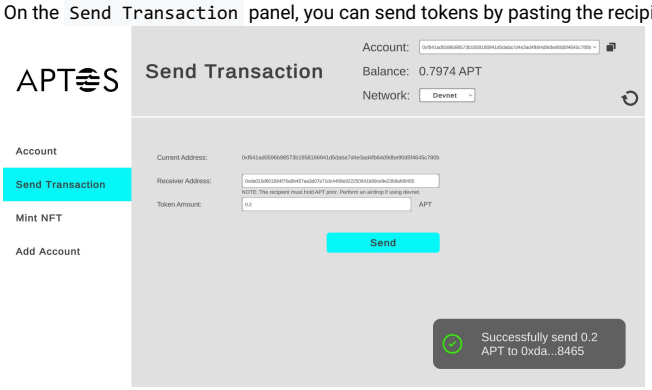
```
// Create Collection

string collectionName = "Alice's";
string collectionDescription = "Alice's simple collection";
string collectionUri = "https://aptos.dev";

Transaction createCollectionTxn = new Transaction();

Coroutine createCollectionCor = StartCoroutine(
    RestClient.Instance.CreateCollection((_createCollectionTxn, _responseInfo) =>
    {
        createCollectionTxn = _createCollectionTxn;
        responseInfo = _responseInfo;
    }, alice, collectionName, collectionDescription, collectionUri));
yield return createCollectionCor;

// Check if collection creation was successful
if(responseInfo.status != ResponseInfo.Status.Success)
{
    Debug.LogError("Cannot create collection. " + responseInfo.message);
}

// Check response and transaction hash
Debug.Log("Create Collection Response: " + responseInfo.message);
string transactionHash = createCollectionTxn.Hash;
Debug.Log("Create Collection Hash: " + createCollectionTxn.Hash);
```

```
// Wait for Transaction
bool waitForTxnSuccess = false;
Coroutine waitForTransactionCor = StartCoroutine(
    RestClient.Instance.WaitForTransaction((_pending, _responseInfo) =>
    {
        waitForTxnSuccess = _pending;
        responseInfo = _responseInfo;
    }, transactionHash)
);
yield return waitForTransactionCor;

if(!waitForTxnSuccess)
{
    Debug.LogWarning("Transaction was not found.");
}
```

```
// Create NFT

string tokenName = "Alice's first token";
string tokenDescription = "Alice's simple token";
string tokenUri = "https://aptos.dev/img/nyan.jpeg";

Transaction createTokenTxn = new Transaction();
Coroutine createTokenCor = StartCoroutine(
    RestClient.Instance.CreateToken((_createTokenTxn, _responseInfo) =>
    {
        createTokenTxn = _createTokenTxn;
        responseInfo = _responseInfo;
    }, alice, collectionName, tokenName, tokenDescription, 1, 1, tokenUri, 0)
);
yield return createTokenCor;

if(responseInfo.status != ResponseInfo.Status.Success)
{
    Debug.LogError("Error creating token. " + responseInfo.message);
}

Debug.Log("Create Token Response: " + responseInfo.message);
string createTokenTxnHash = createTokenTxn.Hash;
Debug.Log("Create Token Hash: " + createTokenTxn.Hash);
```

Transaction Executer

On the `Send Transaction` panel, you can send tokens by pasting the recipient address and token amount.



Below we demonstrate how to send APT to another account.

```
Account alice = new Account();
Account bob = new Account();

Transaction transferTxn = new Transaction();
Coroutine transferCor = StartCoroutine(
    RestClient.Instance.Transfer((_transaction, _responseInfo) => {
        transferTxn = _transaction;
        responseInfo = _responseInfo;
    }, alice, bob.AccountAddress.ToString(), 1000));

yield return transferCor;

if(responseInfo.status != ResponseInfo.Status.Success)
{
    Debug.LogWarning("Transfer failed: " + responseInfo.message);
    yield break;
}

Debug.Log("Transfer Response: " + responseInfo.message);
string transactionHash = transferTxn.Hash;
Debug.Log("Transfer Response Hash: " + transferTxn.Hash);
```

Technical Details

Core Features

- HD Wallet Creation & Recovery
- Account Management
  - Account Recovery
  - Message Signing
  - Message Verification
  - Transaction Management
  - Single / Multi-signer Authentication
  - Authentication Key Rotation
- Native BCS Support
- Faucet Client for Devnet

Unity Support

Supported Version:	Tested
2021.3.x	✓
2022.2.x	✓

Windows	Mac	iOS	Android	WebGL
✓	✓	✓	✓	✓

Dependencies

- Chaos.NaCl.Standard
- Microsoft.Extensions.Logging.Abstractions.1.0.0 — required by NBitcoin.7.0.22
- Newtonsoft.Json
- NBitcoin.7.0.22
- Portable.BouncyCastle

Support

For additional support, please join our community Discord Server, and ask questions in the `#dev-discussion` channel.