

# Complex Cross Contract Call

This example presents 3 instances of complex cross-contract calls. Particularly, it shows:

1. How to batch multiple function calls to a same contract.
2. How to call multiple contracts in parallel, each returning a different type.
3. Different ways of handling the responses in the callback.

Simple Cross-Contract Calls Check the tutorial on how to use [simple cross-contract calls](#)

## Obtaining the Cross Contract Call Example

You have two options to start the Donation Example:

1. You can use the app through [Github Codespaces](#)
2. , which will open a web-based interactive environment.
3. Clone the repository locally and use it from your computer.

[Codespaces](#) [Clone locally](#)

<https://github.com/near-examples/cross-contract-calls>

## Structure of the Example

The smart contract is available in two flavors: Rust and JavaScript

- [JavaScript](#)
- [Rust](#)

```
├── sandbox-ts # sandbox testing | ├── external-contracts | | ├── counter.wasm | | ├── guest-book.wasm | | └── hello-near.wasm | └── main.ava.ts ├── src # contract's code | ├── internal | | ├── batch_actions.ts | | ├── constants.ts | | ├── multiple_contracts.ts | | ├── similar_contracts.ts | | ├── utils.ts | └── contract.ts ├── package.json ├── README.md ├── tsconfig.json ├── tests # sandbox testing | ├── external-contracts | | ├── counter.wasm | | ├── guest-book.wasm | | ├── hello-near.wasm | | ├── main.ava.ts | ├── src # contract's code | ├── batch_actions.rs | ├── lib.rs | ├── multiple_contracts.rs | ├── similar_contracts.rs ├── Cargo.toml # package manager ├── README.md └── rust-toolchain.toml
```

## Smart Contract

### Batch Actions

You can aggregate multiple actions directed towards one same contract into a batched transaction. Methods called this way are executed sequentially, with the added benefit that, if one fails then they all get reverted .

- [JavaScript](#)
- [Rust](#)
- [contract.ts](#)
- [batch\\_actions.ts](#)

[contract-advanced-ts/src/contract.ts](#) loading ... [See full example on GitHub](#) [contract-advanced-ts/src/internal/batch\\_actions.ts](#) loading ... [See full example on GitHub](#) [contract-advanced-rs/src/batch\\_actions.rs](#) loading ... [See full example on GitHub](#)

### Getting the Last Response

In this case, the callback has access to the value returned by the last action from the chain.

- [JavaScript](#)
- [Rust](#)
- [contract.ts](#)
- [batch\\_actions.ts](#)
- [utils.ts](#)

[contract-advanced-ts/src/contract.ts](#) loading ... [See full example on GitHub](#) [contract-advanced-ts/src/internal/batch\\_actions.ts](#) loading ... [See full example on GitHub](#) [contract-advanced-rs/src/batch\\_actions.rs](#) loading ... [See full example on GitHub](#)

### Calling Multiple Contracts

A contract can call multiple other contracts. This creates multiple transactions that execute all in parallel. If one of them fails the rest ARE NOT REVERTED .

- [JavaScript](#)
- [Rust](#)

- contract.ts
- multiple\_contracts.ts

contract-advanced-ts/src/contract.ts loading ... [See full example on GitHub](#) contract-advanced-ts/src/internal/multiple\_contracts.ts loading ... [See full example on GitHub](#) contract-advanced-rs/src/multiple\_contracts.rs loading ... [See full example on GitHub](#)

## Getting All Responses

In this case, the callback has access to an array of responses, which have either the value returned by each call, or an error message.

- JavaScript
- Rust
- contract.ts
- multiple\_contracts.ts
- utils.ts

contract-advanced-ts/src/contract.ts loading ... [See full example on GitHub](#) contract-advanced-ts/src/internal/multiple\_contracts.ts loading ... [See full example on GitHub](#) contract-advanced-ts/src/internal/utils.ts loading ... [See full example on GitHub](#) contract-advanced-rs/src/multiple\_contracts.rs loading ... [See full example on GitHub](#)

## Multiple Calls - Same Result Type

This example is a particular case of the previous one ([Calling Multiple Contracts](#)). It simply showcases a different way to check the results by directly accessing the `promise_result` array.

In this case, we call multiple contracts that will return the same type:

- JavaScript
- Rust
- contract.ts
- similar\_contracts.ts

contract-advanced-ts/src/contract.ts loading ... [See full example on GitHub](#) contract-advanced-ts/src/internal/similar\_contracts.ts loading ... [See full example on GitHub](#) contract-advanced-rs/src/similar\_contracts.rs loading ... [See full example on GitHub](#)

## Getting All Responses

In this case, the callback again has access to an array of responses, which we can iterate checking the results.

- JavaScript
- Rust
- contract.ts
- similar\_contracts.ts
- utils.ts

contract-advanced-ts/src/contract.ts loading ... [See full example on GitHub](#) contract-advanced-ts/src/internal/similar\_contracts.ts loading ... [See full example on GitHub](#) contract-advanced-ts/src/internal/utils.ts loading ... [See full example on GitHub](#) contract-advanced-rs/src/similar\_contracts.rs loading ... [See full example on GitHub](#)

## Testing the Contract

The contract readily includes a set of unit and sandbox testing to validate its functionality. To execute the tests, run the following commands:

- JavaScript
- Rust

`cd contract-advanced-ts yarn yarn test cd contract-advanced-rs cargo test` tip The integration tests use a sandbox to create NEAR users and simulate interactions with the contract.

## Deploying the Contract to the NEAR network

In order to deploy the contract you will need to [create a NEAR account](#).

- JavaScript
- Rust

## Optional - create an account

`near create-account --useFaucet`

## Deploy the contract

```
cd contract-advanced-ts yarn build near deploy ./build/cross_contract.wasm --initFunction init --initArgs '{"hello_account":"hello.near-example.testnet","guestbook_account":"guestbook_account.near-example.testnet","counter_account":"counter_account.near-example.testnet"}
```

## Optional - create an account

```
near create-account --useFaucet
```

## Deploy the contract

```
cd contract-advanced-rs cargo near build
```

**During deploying pass `{"hello_account":"hello.near-example.testnet","guestbook_account":"guestbook_account.near-example.testnet","counter_account":"counter_account.near-example.testnet"}` as init arguments**

```
cargo near deploy
```

### CLI: Interacting with the Contract

To interact with the contract through the console, you can use the following commands:

## Execute contracts sequentially

## Replace with your account ID

```
near call batch_actions --accountId --gas 300000000000000
```

## Execute contracts in parallel

## Replace with your account ID

```
near call multiple_contracts --accountId --gas 300000000000000
```

## Execute multiple instances of the same contract in parallel

## Replace with your account ID

`near call similar_contracts --accountId --gas 300000000000000` Note If the contract exceeds the execution time, additional gas must be provided. For further details[click here](#) . [Edit this page](#) Last updated on Mar 15, 2024 by garikbesson Was this page helpful? Yes No

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