



Sending Ether (transfer, send, call)

How to send Ether?

You can send Ether to other contracts by

- `transfer` (2300 gas, throws error)
- `send` (2300 gas, returns bool)
- `call` (forward all gas or set gas, returns bool)

How to receive Ether?

A contract receiving Ether must have at least one of the functions below

- `receive()` external payable
- `fallback()` external payable

`receive()` is called if `msg.data` is empty, otherwise `fallback()` is called.

Which method should you use?

`call` in combination with re-entrancy guard is the recommended method to use after December 2019.

Guard against re-entrancy by

- making all state changes before calling other contracts
- using re-entrancy guard modifier



```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.3;

contract ReceiveEther {
    /*
        Which function is called, fallback() or receive()?

        send Ether
        |
        msg.data is empty?
        / \
        yes  no
        /    \
        receive() exists? fallback()
        /      \
        yes      no
        /        \
        receive() fallback()
    */
}
```

```

// Function to receive Ether. msg.data must be empty
receive() external payable {}

// Fallback function is called when msg.data is not empty
fallback() external payable {}

function getBalance() public view returns (uint) {
    return address(this).balance;
}
}

contract SendEther {
    function sendViaTransfer(address payable _to) public payable {
        // This function is no longer recommended for sending Ether.
        _to.transfer(msg.value);
    }

    function sendViaSend(address payable _to) public payable {
        // Send returns a boolean value indicating success or failure.
        // This function is not recommended for sending Ether.
        bool sent = _to.send(msg.value);
        require(sent, "Failed to send Ether");
    }

    function sendViaCall(address payable _to) public payable {
        // Call returns a boolean value indicating success or failure.
        // This is the current recommended method to use.
        (bool sent, bytes memory data) = _to.call{value: msg.value}("");
        require(sent, "Failed to send Ether");
    }
}

```

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