

# Hardhat Project Setup

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## Creating a Hardhat Project

```
npm init
npm install --save-dev hardhat
npx hardhat
```

```
npm install --save-dev @nomicfoundation/hardhat-toolbox
npm install @openzeppelin/contracts dotenv
```

**@nomicfoundation/hardhat-toolbox is the only install we need! => no need to install any of the following: @nomicfoundation/hardhat-chai-matchers, @nomicfoundation/hardhat-network-helpers, @nomiclabs/hardhat-ethers, chai, ethers**

### Hardhat.config.js:

```
require("@nomicfoundation/hardhat-toolbox")
require("dotenv").config()

const { API_URL, PRIVATE_KEY } = process.env

//use optimizer to avoid warning: Contract code size exceeds 24576
//bytes (a limit introduced in Spurious Dragon)...
module.exports = {
  solidity: {
    version: "0.8.9",
    settings: {
      optimizer: { enabled: true, runs: 200 },
    },
  },
  defaultNetwork: "localhost",
  networks: {
    goerli: {
      url: API_URL,
      accounts: [`0x${PRIVATE_KEY}`],
    },
  },
}
```

localhost is used for Ganache (if Ganache is running)

## Testing a specific hardhat file:

```
npx hardhat test test/tests.js --network hardhat
```

## Basic deployment script

No "require" statements are necessary on top of this file => because we are using `require("@nomicfoundation/hardhat-toolbox")` on top of `hardhat.config.js`

```
async function main() {  
  const MyToken = await ethers.getContractFactory("MyToken")  
  const myToken = await MyToken.deploy()  
  await myToken.deployed()  
  
  console.log("MyToken deployed to:", myToken.address)  
}  
  
main().catch((error) => {  
  console.error(error)  
  process.exitCode = 1  
})
```

## Hardhat test environments:

### Ganache:

Install Ganache - switch to a specific workspace (in order to keep the same addresses, alternatively use the following mnemonic: gesture field devote disease hungry pioneer family verb weekend jewel enforce report) --- setup a Ganache network in MM, add the first Ganache account to MM (import PK)

### Hardhat:

Launch a HH node from a cmd (select a directory that has HH installed) --- setup a HH network in MM, add the first HH account to MM (import PK)

Open either HH or Ganache and deploy the smart contract: `npx hardhat run scripts/deploy.js` - -- make a note of the SC address and add it to your test code

### Potential problems:

Reset nonce in MM: Settings => Advanced => Reset Account

Errors on transactions: Refresh network - switch to a different network and baack