

DA51 Lab Session 3 : Smart Contract

Description :

Lab session on Solidity and Truffle Suite for smart contract development. We learn Solidity, compile contracts, write test cases, and automate deployment processes.

Question 4:

The purpose of NPM is to manage all dependencies of a node project.

Question 7:

One the command is executed I get a package.json that hold all information I entered during the command process

```
{
  "name": "lab3",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "",
  "license": "ISC",
  "description": ""
}
```

```
PS C:\dev\DA53\TP3\Lab3> npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (lab3)
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to C:\dev\DA53\TP3\Lab3\package.json:

{
  "name": "lab3",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "",
  "license": "ISC",
  "description": ""
}

Is this OK? (yes) yes
```

Lab Session 3

Question 8:

It contains all information of my project

```
{
  "name": "lab3",
  "version": "1.0.0",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "",
  "license": "ISC",
  "description": ""
}
```

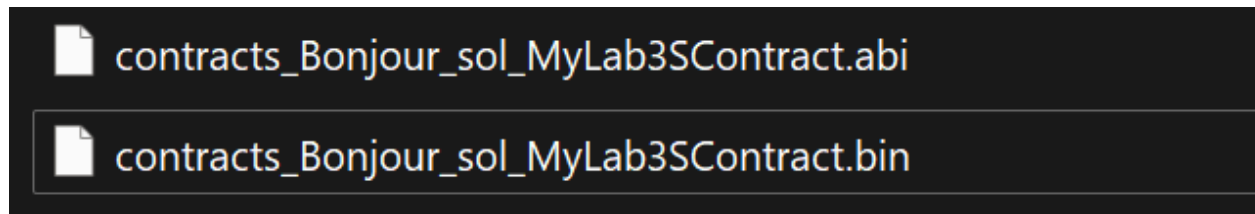
Question 14:

Npm is used to install dependencies. Option -g means that this package is installed for all projects.

After this question, all answer will be from WSL.

Question 19:

The command make two different files, one for with the .abi extension and another for the .bin extension.



Question 20:

```
jules@TABLET-TQGU8LI5:/mnt/c/dev/DA51_TP/Lab session 3$ ls
combined.json  contracts_Bonjour_sol_MyLab3SContract.abi  package.json
contracts      contracts_Bonjour_sol_MyLab3SContract.bin
```

```
jules@TABLET-TQGU8LI5:/mnt/c/dev/DA51_TP/Lab session 3$ cat combined.json
```

[illegible]

It includes the three different output formats, which we had specified. It includes the following fields: abi, bin, and metadata

There is the abi output which is a descriptor of the functions and the data within a contract which will allow us to interact with it.

Then there is the binary byte code for the contract.

And finally, there is a metadata field which includes various details about the contract itself.

```
{
  "contracts": {
    "contracts/Bonjour.sol:MyLab3SContract": {
      "abi": [
        "bin": "608060405234801561000f575f5ffd5b50604051610af8380380610af883398181016040528101906100319190",
        "metadata": "{\n  \"compiler\": {\n    \"version\": \"0.8.28+commit.7893614a\"\n  },\n  \"language\": \"Solidity\",\n  \"out\"
      },
      "version": "0.8.28+commit.7893614a.Linux.g++"
    }
  }
}
```

Question 34:

```
{  
  "name": "lab-session-3",  
  "version": "1.0.0",  
  "main": "index.js",  
  "scripts": {  
    "test": "echo \"Error: no test specified\" && exit 1"  
  },  
  "author": "",  
  "license": "ISC",  
  "description": "",  
  "dependencies": {  
    "ganache-cli": "^6.12.2",  
    "mocha": "^10.8.2",  
    "solc": "^0.8.28",  
    "web3": "^4.14.0"  
  }  
}
```

Question 35:

In the package-lock.json, there are all the dependencies required for the dependencies added with the command.

Lab Session 3

Question 40:

```
{
  "contracts": {
    "MyLab3SContract": {
      "MyLab3SContract": {
        "abi": [
          ],
          "evm": {
            "bytecode": {
              "functionDebugData": {
                },
                "generatedSources": [
                  ],
                  "linkReferences": {
                    },
                    "object": "608060405234801561000f575f5ffd5b50604051610af8380380610af883398181016040528101906100319190610193565b805f908161003f91906103ea565b50506104b9565b5f604051905090565b",
                    "opcodes": "PUSH1 0x80 PUSH1 0x40 MSTORE CALLVALUE DUP1 ISZERO PUSH2 0xf JUMP1 PUSH0 PUSH0 REVERT JUMPDEST POP PUSH1 0x40 MLOAD PUSH2 0xaf8 CODESIZE SUB DUP1 PUSH2 0xaf8",
                    "sourceMap": "35:361;0:-:0;;;92:86;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;156:14;146:7;;24;;;;;;;;;;;;;;;;1;-----;92:86;35:361;;7:75;-1;40:6;73:2;67:9;57:19;;7:75;:::o;88:117;-:"
                  }
                }
              }
            }
          },
          "errors": [
            {
              }
            ],
            "sources": {
              "MyLab3SContract": {
                "id": 0
              }
            }
          }
        }
      }
    }
  }
}
```

Question 44:

There is no output in the terminal because we comment the line that print in the terminal.

Question 50:

```
PS C:\dev\DA51_TP\Lab session 3> npm test

> lab-session-3@1.0.0 test
> mocha

MyLab3SContract
[
  '0x358bC94DeF0f9C34355ce926930F8028fbB2CC47',
  '0x4FAD93Ded19D225920610A1407083F7844930B01',
  '0x6Cea4457c61E943907908feDb57852D54b4CC5bd',
  '0x6BBF361CdeB695913Cf8133553FB204996e321B7',
  '0x7f4a0054221b7334B2C07AbDCfd37ABBe594564C',
  '0xf88Ee7967F40347Bf1Dd11e88a081ef51c204812',
  '0xeA522a0FC2e5CcA9e7914cb683113bd89b97C41e',
  '0x2cF965731a09F7D4dc4A61B2947A97cbeFcd23e6',
  '0x530E971718Df725D753d8fa7680264fd3737Bd2f',
  '0xbd11F71Ad494Ba9B9d3346f368430DD1Ca81B6D6'
]

✔Deploy a contract

1 passing (232ms)
```