Guide

Visual Studio Code

The guide uses Visual Studio Code to write code files.
1. Download Visual code on https://code.visualstudio.com/
2. Install visual code on your computer

Extension:

The extensions must be download on Visual Studio Code
- Download **solidity** extension by Juan Blanco

Extra:

This is extra, setting and preferences the guide is using.
- Set spaces and tab to 4, this do by click on bar to down of Visual Studio Code window.
- Open Preferences->setting, then open setting.json and put this code in:

```
{
    "editor.dragAndDrop": false,
    "editor.fontSize": 12,
    "editor.formatOnSave": true,
    "editor.formatOnType": true,
    "editor.formatOnPaste": true,
    "editor.wordWrap": "on",
    "editor.quickSuggestions": {
        "other": true,
        "comments": true,
        "strings": true
    },
    "explorer.confirmDragAndDrop": false,
    "explorer.confirmDelete": false,
    "files.autoSave": "onFocusChange",
    "workbench.colorTheme": "Default Light+",
    "solidity.enabledAsYouTypeCompilationErrorCheck": true,
    "solidity.linter": "solium",
    "solidity.packageDefaultDependenciesContractsDirectory": "",
    "solidity.packageDefaultDependenciesDirectory": "",
    "solidity.validationDelay": 1500
}
```

Go

First requirement to run Go-ethereum is to download Go.

1. Download Go version go1.12 on https://golang.org/dl/
2. Run download package

For Windows:

1. Create GOPATH in environment variables to your go working directory, for example set **GOPATH=c:\Users\%USERNAME%\go** in command (i.e cmd) window or direct in environment variables window
2. Then create GOPATH\bin by set **PATH=%PATH%;%GOPATH%\bin** in cmd window or direct in environment variables window, if bin folders is not in go working directory, create one
3. Create other necessary folders in your go working directory, pkg and src.
4. Structure for your go directory should look like:
   - C:\GOPATH\bin
   - C:\GOPATH\pkg
   - C:`GOPATH\src

For Mac OS X:

1. Set GOPATH in environment variables to your go working directory, for example set **export GOPATH=$HOME/go** in cmd window
2. Then create GOPATH\bin by set **export PATH=$PATH:$GOPATH/bin** in cmd window, if bin folders is not in go working directory, create one
3. Create other necessary folders in your go working directory, pkg and src.
4. Structure for your go directory should look like:
   a. C:\GOPATH\bin
   b. C:\GOPATH\pkg
   c. C:`GOPATH\src

Testing go workings correct:

- First test if version is correct, write **go version** in cmd window and output should be package you download, for example go version go1.12 windows/amd64 for windows
- In src folder, create hello.go with the following code:

```
package main

import "fmt"

func main() {
        fmt.Printf("hello, world\n")
}
```

after creating the file, build with go tool by writing **go build** in cmd window while being in the path to GOPATH\src. It will build hello.exe in src folder which to run write simply **hello** in cmd window and output should be: **hello, world**

Go's own tutorial for install: https://nats.io/documentation/tutorials/go-install/

Geth

Download Go Ethereum (i.e geth):
- Download geth version 1.8.23 on https://geth.ethereum.org/downloads/
- Then run package

For Mac OS X:

The easiest way and one describe in this guide, is to use Homebrew to install geth
- First download Hombrew by https://brew.sh/ and paste **-e "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install)"** in cmd window
- Then write these to lines for install geth:
  - **brew tap ethereum/ethereum**
  - **brew install ethereum**

Testing go workings correct:

- First test if version is correct, write **geth version** in cmd window and output should be package you download, for example windows should get:
  > Geth
  > Version: 1.8.23-stable
  > Git Commit: c942700427557e3ff6de3aaf6b916e2f056c1ec2
  > Architecture: amd64
  > Protocol Versions: [63 62]
  > Network Id: 1
  > Go Version: go1.11.5
  > Operating System: windows
  > GOPATH=C:\Users\%USERNAME%\go
  > GOROOT=C:\Go\

Geth's own tutorial for Mac OS x:
https://github.com/ethereum/go-ethereum/wiki/Installation-Instructions-for-Mac

Node.Js

Node.Js is need to download other programs the guide uses.

- Download Node.Js on https://nodejs.org/en/
- Run the install

For windows:

- Write **npm install -g windows-build-tools** in cmd window for download the tools

Package:

This packages must be download
- Solidity is code smart contract uses. Download solidity on Node.js by writing **npm install -g solc** in cmd window
- Truffle runs the code for programs in the geth network. Download Truffle by writing **npm install -g truffle** in cmd window