HANBACK ELECTRONICS Since 1984


# Block chain

It provides a wide range of experience from basic concept of blockchain to P2P network system, network security, block data analysis, and cryptocurrency development using Java. It explains high-level technology in easy way. You can use Java to train on various operating systems.

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V2.0.1

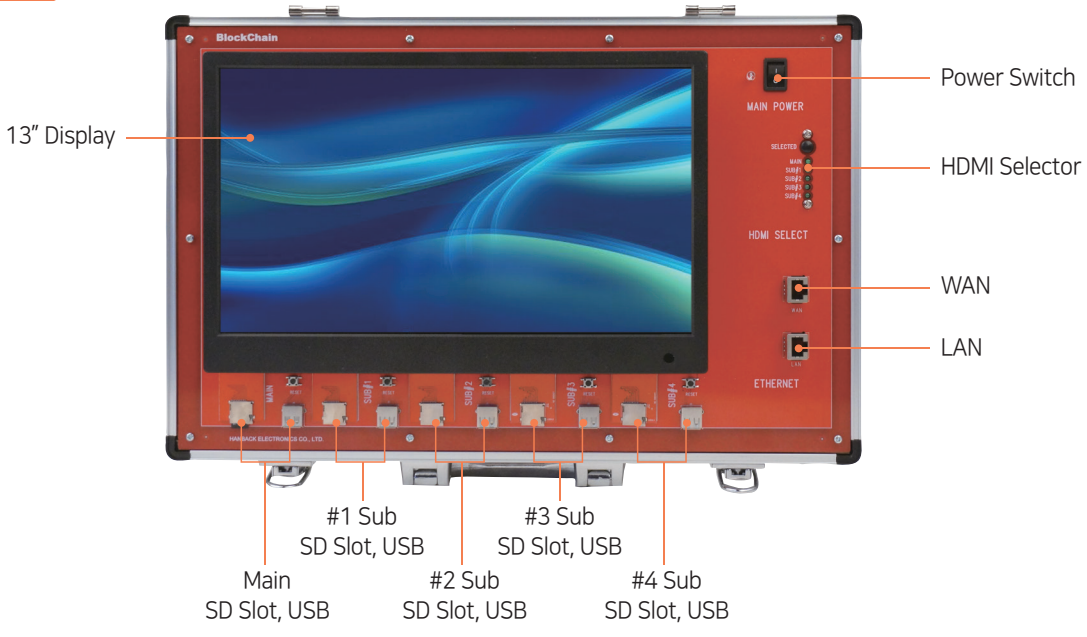

# Blockchain

This product has been developed to provide wide and deep knowledge and experience from the basic theory of Blockchain to the development practice. Blockchain is the new technology that will change the root of existing database system as well as the future financial market. This product is based on Java to enable learning in various operating system environments. You can develop your own cryptocurrency through P2P network, network security, SHA-256 hash, RSA encryption algorithm, and block data analysis.

## Product Features

- Learn basic concept and theory about blockchain
- Able to train on various OS such as Linux, Windows, and Mac, etc.
- Provides experiences of Socket programming and TCP/IP communication
- Provides training about SHA-256 hash, RSA cryptographic Algorithm, and other cryptographic
- Provides theory and practice about P2P Network System
- Provides theory and practice about network security
- Provides theory and practice about data analysis
- Provides development process of cryptocurrency using Blockchain
- Able to train about various networks and security theories.
- Able to train specific structures and theories of commercial cryptocurrency
- Five embedded systems are available for distributed processing

## Layout



## Hardware Specification

| Module | Category | Specification |
|---|---|---|
| Main Node | CPU | 1.2 GHz Quad-Core ARM Cortex A53 64-Bit Processor-A64 |
| | GPU | Mali-400 MP2 500MHz |
| | Memory | 2GB DDR3 SDRAM |
| | Storage | eMMC 8GB, MicroSD Slot (up to 64GB) |
| | Ethernet | 10/100/1000Mbps Realek RTL8211E/D |
| | Wi-Fi | 802.11 b/g/n AP6212 |
| | Bluetooth | BT 4.0 AP6212 |
| | Others | 2.0 USB-A x2, USB OTG x1, HDMI x1, 3.5 Audio x1, 5V 2A DC Power Port x1 |

| Module | Category | Specification |
|---|---|---|
| 4 Sub Nodes | CPU | 1.6GHz Quad-Core ARM Cortex-A7 |
| | GPU | Mali-400 MP2 600MHz |
| | Memory | 1GB DDR3 |
| | Storage | eMMC 8GB, TF slot (up to 32GB) |
| | Ethernet | 10/100Mbps RJ45 |
| | Others | 2.0 USB-A x3, USB OTG x1, HDMI x1, 3.5 Audio x1 |
| Router | 802.11 b/g/n | |
| LCD | 13" Display | |

## Software Specification

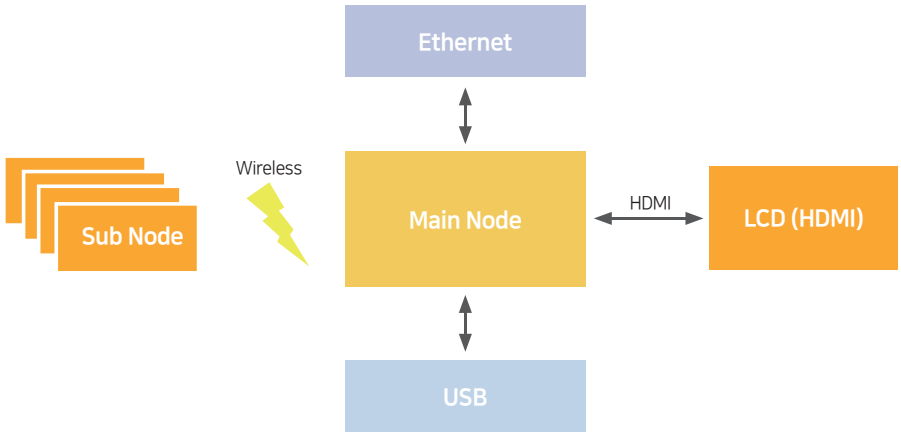
| Module | Category | Specification |
|---|---|---|
| Main Node | OS | Ubuntu MATE 16.04 |
| | Kernel | 4.4 |
| | Java | JDK 1.8.0_172<br>Java 10.0.1 |
| Sub Node | OS | Debian 8 |
| | Kernel | 3.4.112 |
| | Java | JDK 1.8.0_172<br>Java 10.0.1 |
| Development Software | Java | JDK 1.8.0_172<br>Java 10.0.1 |
| | IDE | Eclipse Photon 4.8.0 |
| | Library | HBE-Crypto Chain 1.0.7<br>HBE-Base58lib 1.0.1<br>HBE-P2PNET 1.1.2<br>HBE-Protectors 1.0.2<br>HBE-Dataset 1.0.0<br>HBE-Miner 1.1.0 |

## Textbook Chapter

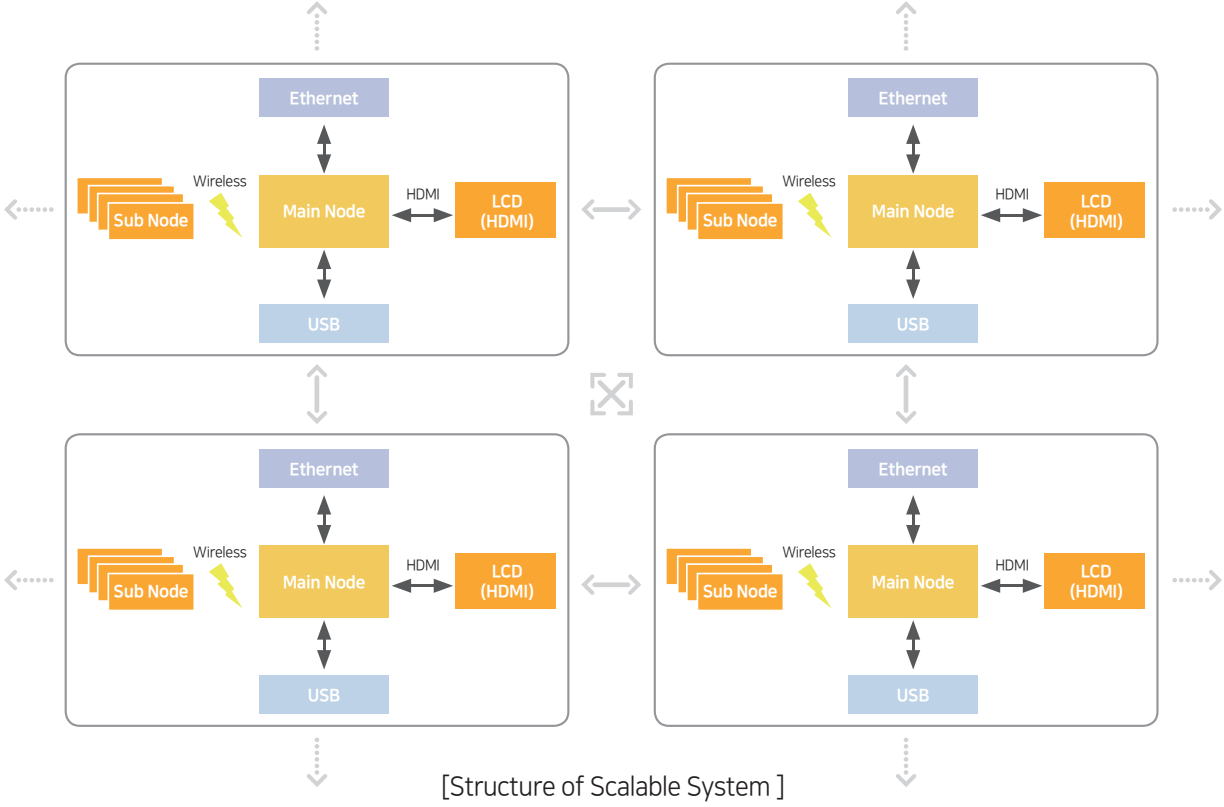
- Blockchain Overview
- P2P Network
- Secured Communication
- Block Data & Mining
- The Mechanism and Structure of Cryptocurrency
- Cryptocurrency Development

## Block Diagram

### [ Hardware ]

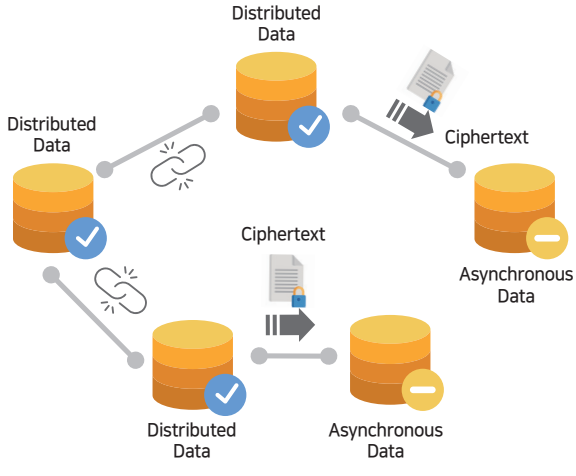



[ Structure of Main System ]

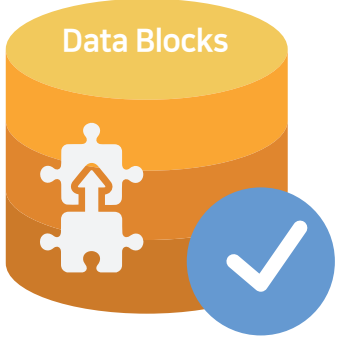



[Structure of Scalable System ]

### [ Software ]




[ Secure Connection P2P Network ]




[ Permanently Linked Data Blocks ]