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| **Hardware environments** | **Developed hardware environment:**  quad-core Intel Core i5 CPU, 256G SSD, 10Mbps network bandwidth | | |
| **Running hardware environment:**  server 2C2G or more, network bandwidth of not less than 5Mbps, 30G hard disk storage | | |
| **Software environments** | **Software Development Environment/Development Tools:**  Environment: Windows 10 operating system, Java Jdk8+, Maven3.5+, Linux ubuntu20.04TLS, nodejs  Tools: IntelliJ IDEA, Visual Studio Code, navicat , Hyperledger fabric | | |
| **Software operating environment / running tools:**  Environment: Linux ubuntu16.04+ , Java Jdk8+ , nodejs , go1.19  Tools: Tomcat9.0.37 | | |
| **Programming languages** | Java，sql,go,JavaScript | source program volume | rows |