**System Architecture and System Design**

#### Architectural Styles：

SIAS-RENTAL-PLATFORM uses a Three-tier architecture，this is a is a client-server software architecture pattern :

* The Presentation tier is responsible for presenting information directly to

the user.

* The Middle tier controls website’s functionality by performing detailed processing.
* The data layer includes website operation data, product data, and user personal data.

#### Using Three-tier architecture has the following advantages :

* The processing of the data is completely completed on the server, which greatly reduces the processing load of the user equipment.
* Since the data is stored on the server and the security is improved, the user only needs to receive the processing result, which reduces the occurrence of data leakage.
* Easy background service upgrade, based on the website interface, avoids

the user experience of frequently upgrading software.

**Mapping Subsystems to Hardware**

During the operation of the SIAS-RENTAL-PLATFORM, all collected data will be stored in the database on the server. The server will be hosted on the cloud host platform, when the user accesses the server using the client, the client opens a TCP/UDP socket to access and communicate the server.

**Persistent Data Storage**

The system needs to save website operation data, product data, and user personal data

during continuous operation. Because these data will occupy a large amount of volume, they will be analyzed and indexed in the server, after use only need to send the results to the client.

**Network Protocol**

HTTP protocol must be used in order to make " SIAS-RENTAL-PLATFORM " interact with server and client. At the same time, we will introduce the "Alipay" API access to third-party payment systems for payment functions. We will open the IPC socket connection so that the server can interact with the database.

**Global Control Flow**

Execution orderness: In the " SIAS-RENTAL-PLATFORM ", only the user interface is event-driven, and everything else is program-driven.

Time dependency: The SIAS-RENTAL-PLATFORM is a real-time program.

When the user initiates a request, the system will begin processing user-initiated requests. When the user stops responding, the system will respond to the Timer and every half hour collect and parse data after waking up.

Concurrency: We will use single thread in the user interface and data.

**Hardware Requirements**

Display Super VGA (1024\*768) or higher resolution display (color setting is 32- bit true color)

Browser based on IE 6.0 or Chrome kernel

The user's minimum bandwidth is 56 Kbps At least 2GB of storage