Pardis Sadatian Moghaddam

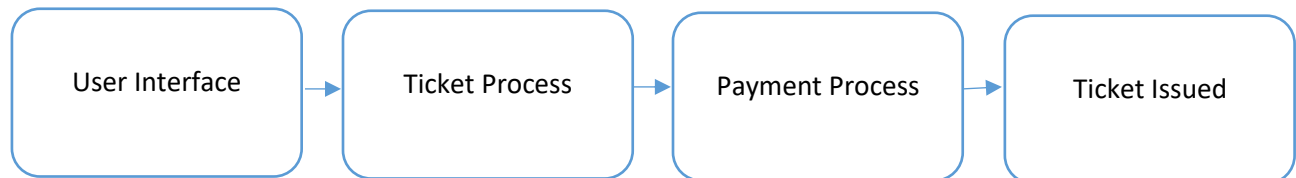Panther ID: 002722641

Questions:

6.1 When describing a system, explain why you may have to start the design of the system architecture before the requirements specification is complete.

Architectural design is concerned with understanding how software should be organized and designing the overall structure of that system. It is a critical link between design and requirements engineering.
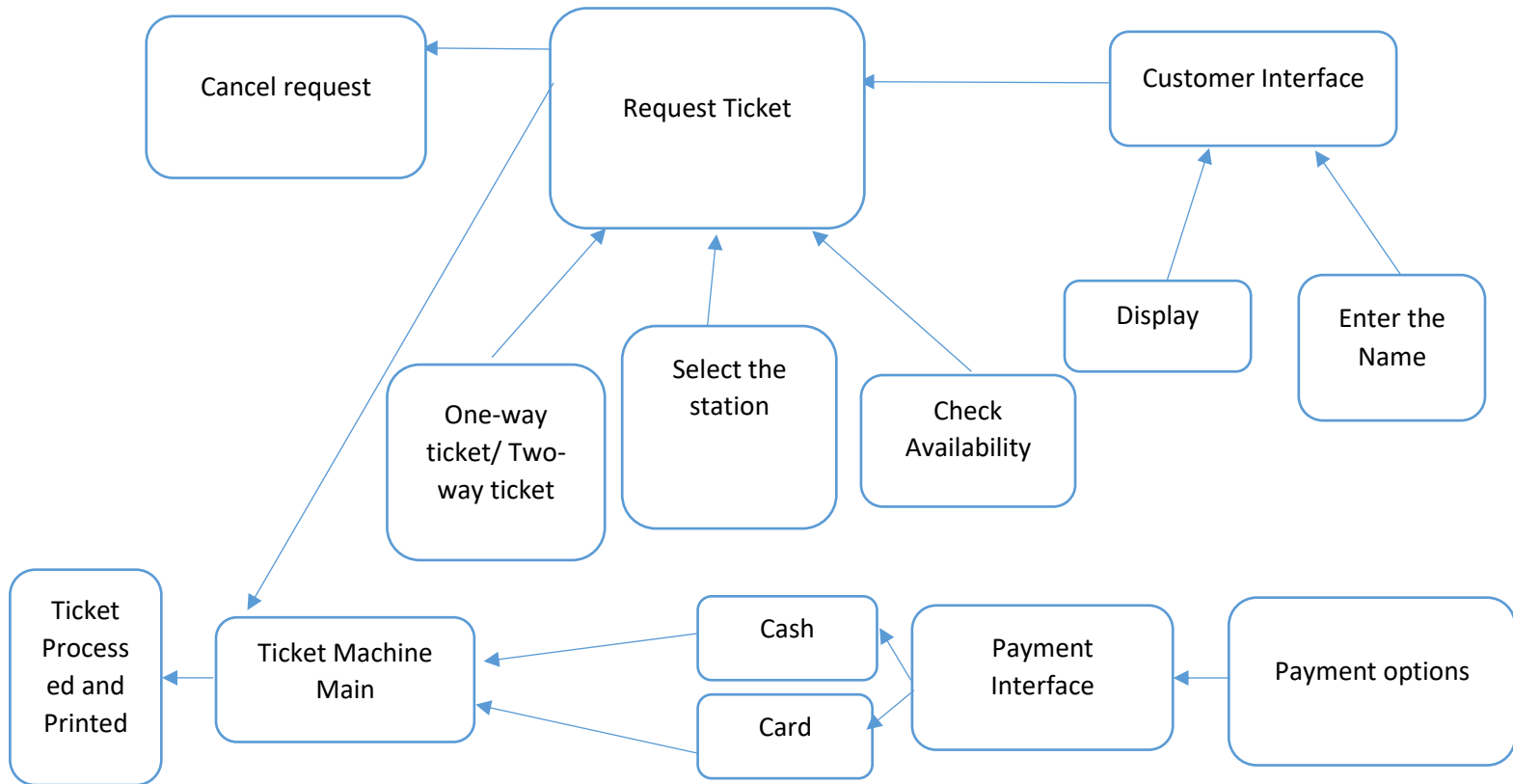The output of the architectural design process is an architectural model that describes how the system is organized as a set of communicating components.

6.4 Draw diagrams showing a conceptual view and a process view of the architectures of the following systems: A ticket machine used by passengers at a railway station.
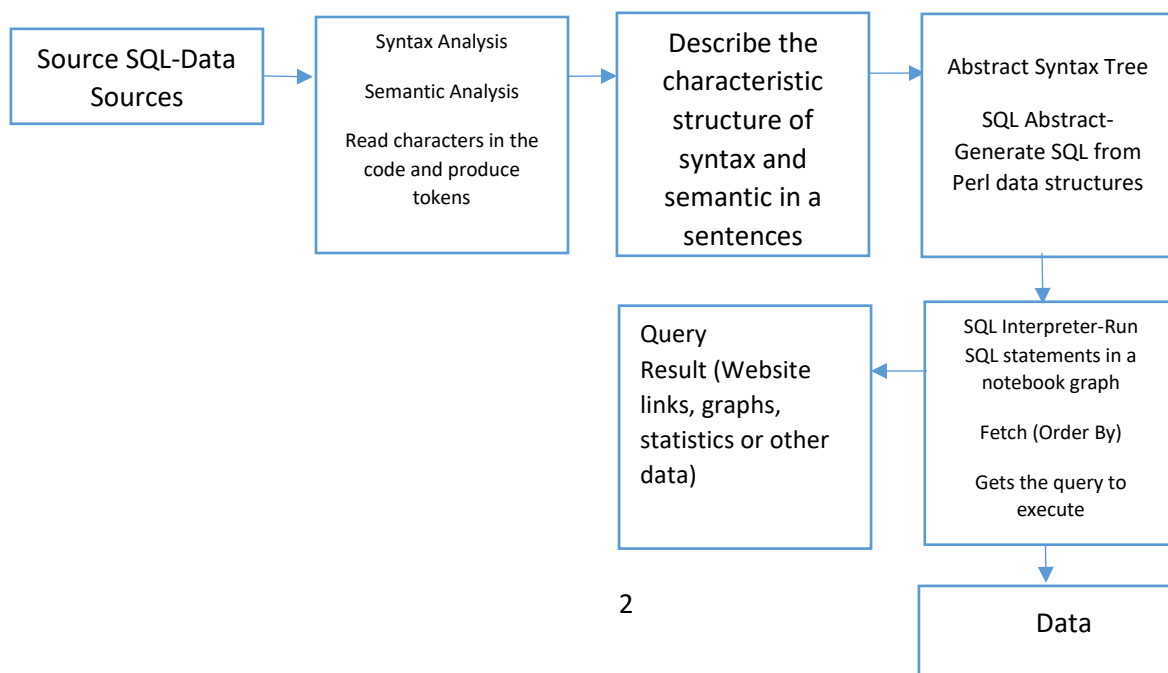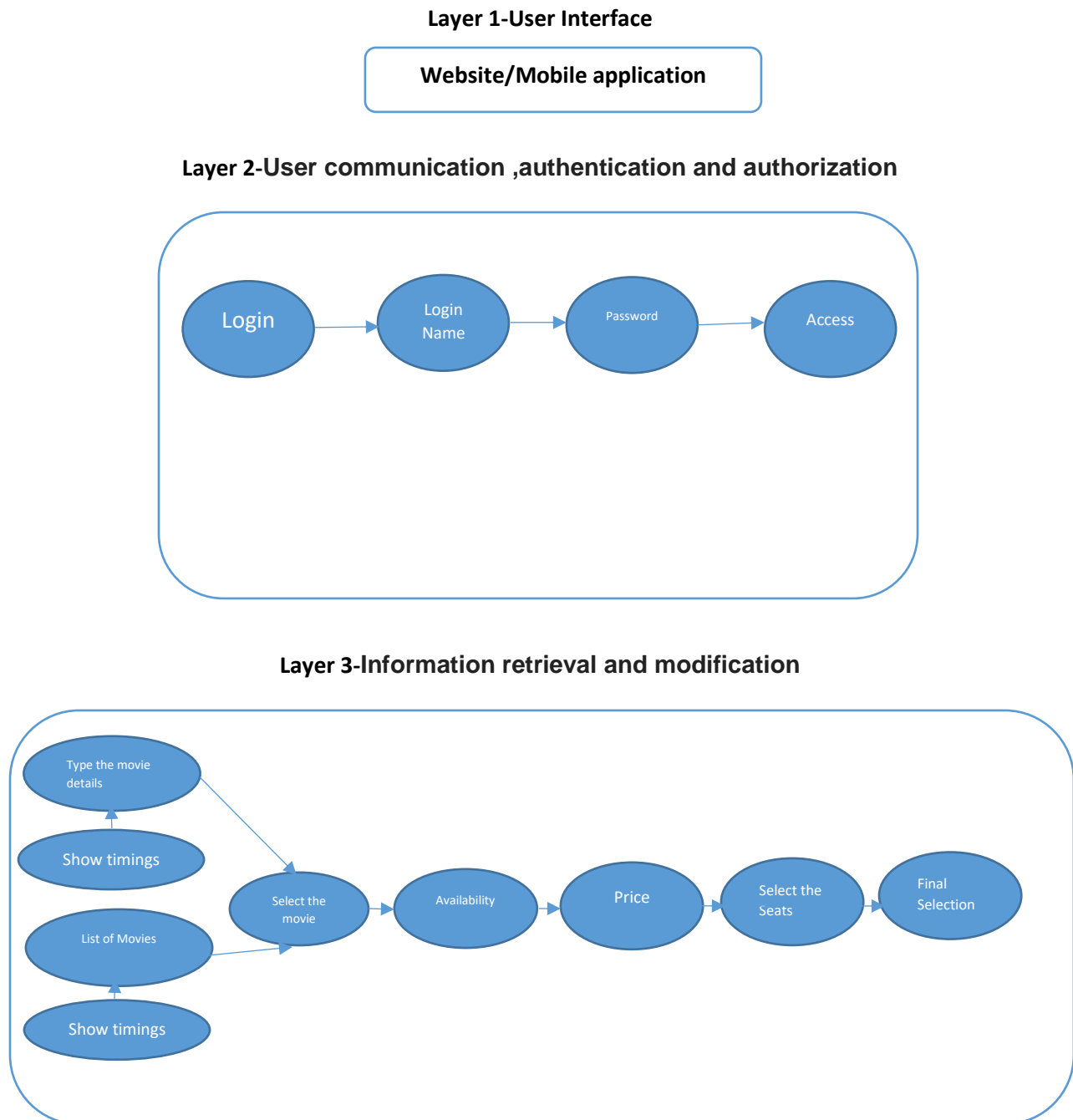
Conceptual view:

User Interface → Ticket Process → Payment Process → Ticket Issued

Process View:

```
[Cancel request] ← [Request Ticket] ← [Customer Interface]
                         ↑  ↑  ↑              ↑        ↑
                         |  |  |          [Display]  [Enter the Name]
         [One-way ticket/ Two-way ticket]
                    [Select the station]
                         [Check Availability]

[Ticket Processed and Printed] ← [Ticket Machine Main] ← [Cash] ← [Payment Interface] ← [Payment options]
                                                        ← [Card] ←
```

6.8 Using the generic model of a language processing system presented here, design the architecture of a system that accepts natural language commands and translates these into database queries in a language such as SQL.

```
[Source SQL-Data Sources]
        →
[Syntax Analysis
 Semantic Analysis
 Read characters in the code and produce tokens]
        →
[Describe the characteristic structure of syntax and semantic in a sentences]
        →
[Abstract Syntax Tree
 SQL Abstract-Generate SQL from Perl data structures]
        ↓
[SQL Interpreter-Run SQL statements in a notebook graph
 Fetch (Order By)
 Gets the query to execute]
        ↓
[Data]

[SQL Interpreter...] → [Query Result (Website links, graphs, statistics or other data)]
```

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6.9 Using the basic model of an information system, as presented in Figure 6.18 (pg 187), suggest the components that might be part of an information system that allows users to view box office events, available tickets and prices, and to eventually buy tickets.

Layer 1-User Interface

Website/Mobile application

Layer 2-User communication ,authentication and authorization

Login → Login Name → Password → Access

Layer 3-Information retrieval and modification

Type the movie details

Show timings

List of Movies

Show timings

Select the movie → Availability → Price → Select the Seats → Final Selection

Layer 4-Transaction management and Database

Booking request → Server → Query

Booking request ↕ User Information ↕ Name, phone number, address, zip code, payments