Sabaragamuwa University
of Sri Lanka

SOFTWARE REQUIREMENTS SPECIFICATION

(SRS) for the Computerized Bus Season System

Subject name – System Analysis and Design

Subject Code-IS2106

Group name-Quick Pass

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1. Introduction

1.1 Purpose

The purpose of this system is to develop a system where students and regular workers who are using bus service for movement can buy or renew their season passes online. The system aims to facilitate passengers easily purchasing or renewing their bus season passes online, and each passenger will receive unique QR code that can be easily validated by conductors when passengers are boarding the bus.

1.2 Intended Audience

- System developers
- Passengers
- Conductors
- SLTB

1.3 Scope

The scope of this project includes the development of a **web application** that allows for the following functionalities:

- An e-commerce website that enables customers to buy and renew their BUS SEASON passes.
- Automatic creation of a QR code for each pass.
- QR code scanning system for validation by bus conductors.

2. Overall Description

2.1 Product Perspective

The system will be developed as a comprehensive solution that will smoothly connect with the current transportation infrastructure. The primary goal is to optimize the administration of bus season passes and to simplify and improve the efficiency of the entire process.

2.2 Product Features

The following features are essential for the success of the Computerized Bus Season System:

- **User Account Creation and Management:** Passengers can register, manage their accounts, and track their pass status.
- **Online Payment System:** A secure payment gateway for pass purchases and renewals.
- **Automatic QR Code Generation:** Each pass is associated with a unique QR code for easy validation.

- **QR Code Scanning Functionality:** Bus conductors can quickly validate season passes using QR codes.

2.3 User Characteristics

There are two primary user groups for this system

Passengers: These are individuals who frequently use bus services and prefer the convenience of online transactions.

Bus Conductors: Bus Conductors who wish to have a fast and reliable way of verifying season passes during boarding time.

2.4 Assumptions and Dependencies

- Users have access to any computer or mobile device, as well as the internet.
- The system depends on the reliability of payment gateways as well as QR codes technologies
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3. System Features and Requirements

3.1 Functional Requirements

1. Secure User Registration and Login Process:

Account creation must be safe to the user.

Logging into the system must be strong enough to protect user details.

2. Online Payment Processing:

Passengers can purchase and renew bus season passes through online platforms.

It is important to incorporate a dependable payment gateway.

3. Automated QR Code Generation:

The pass of each user must be characterized by an individual unique QR code.

QR codes must be generated automatically when a pass is purchase or renewed.

4. QR Code Scanning System:

Quick verifications are possible from the conductor's quarters using this scanning system, which reads these images fast enough during boarding.

3.2 Non-Functional Requirements

1. **Security**: The security must be High level in order to protect personal and payment data.

2. **Performance**: The system should respond user requests promptly and efficiently.

3. **Usability**: User-friendly interface. Once can accessible it easily on different devices such as desktops and mobile phones

4. **Availability**: The system must be available during operational hours for both users and bus drivers.

5. **Reliability**: Minimal downtime, the system will have to work consistently all the time.

3.3 System Interfaces

1. **Payment Gateway Integration**:

   Integration with a reliable payment gateway. Any payments made through financial transaction will go through a reliable payment gateway.

2. **Email Services Integration**:

   There might be need for messages like notification or updates for users on email that can get relayed directly via some communication platforms.

3.4 User Interfaces

1. **Passenger Web Interface**:

   A place where passengers can manage their account details, purchase and view pass details, and make transactions without any difficulties.

2. **Conductor Interface**:

   This interface allows bus conductors to scan and validate QR codes upon boarding.

3.5 Software Interface

1. **Database Management System**:

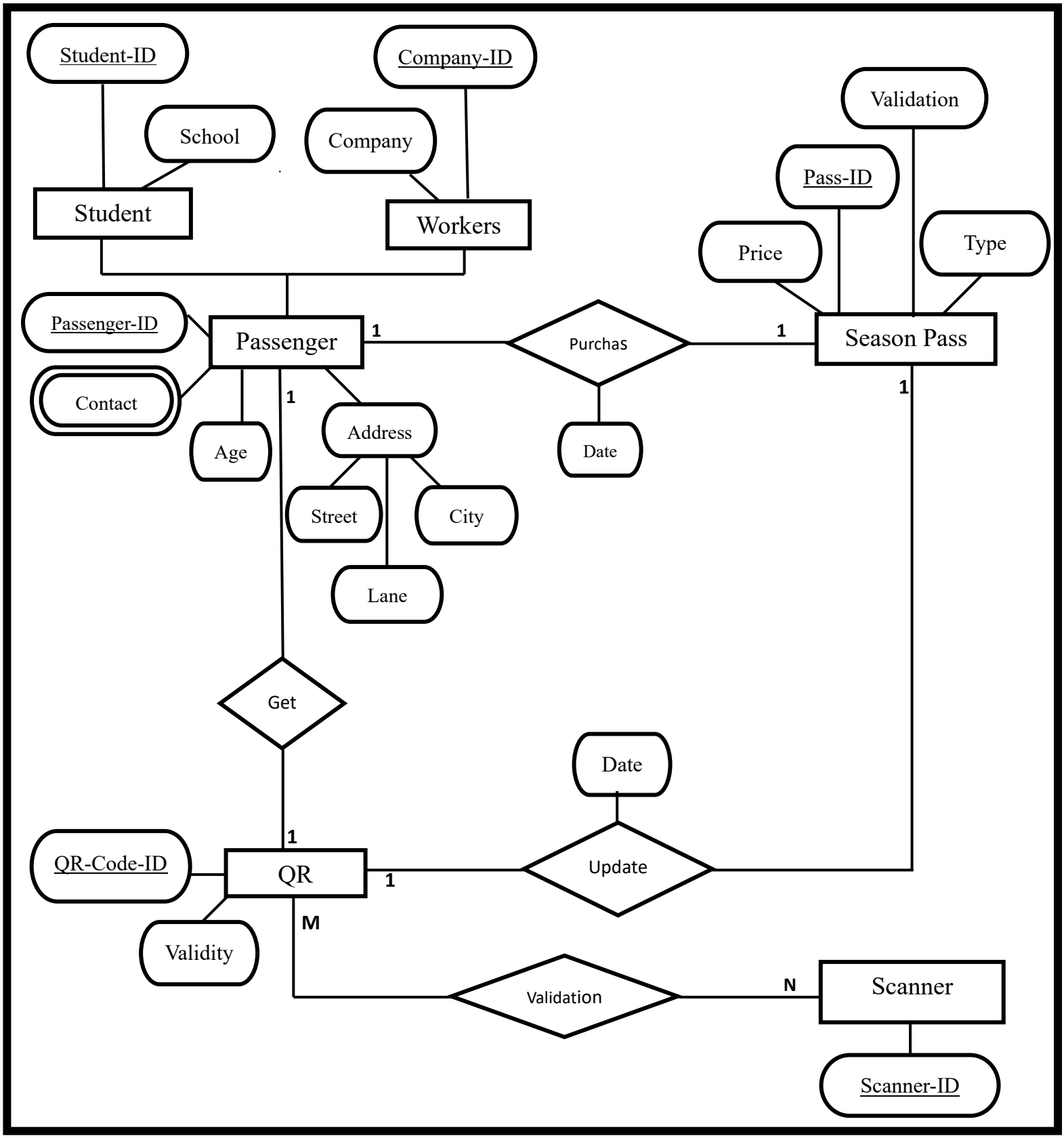
   It stores the profiles of users, handles the transaction data and pass information.

2. **QR Code Generation and Scanning Services**:

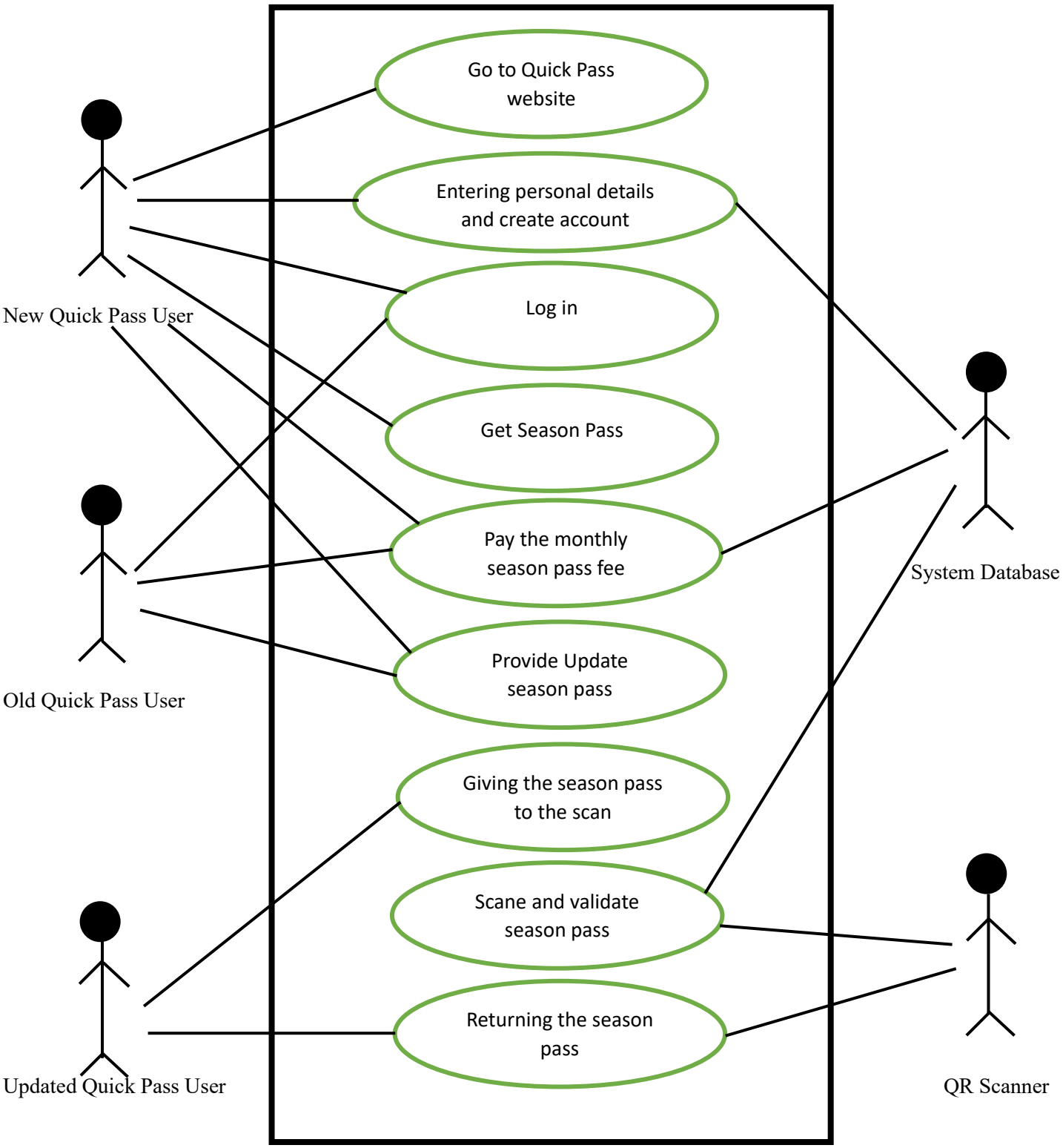
   Responsible for creating and validating QR codes.

4.System Features

4.1 Er Diagram

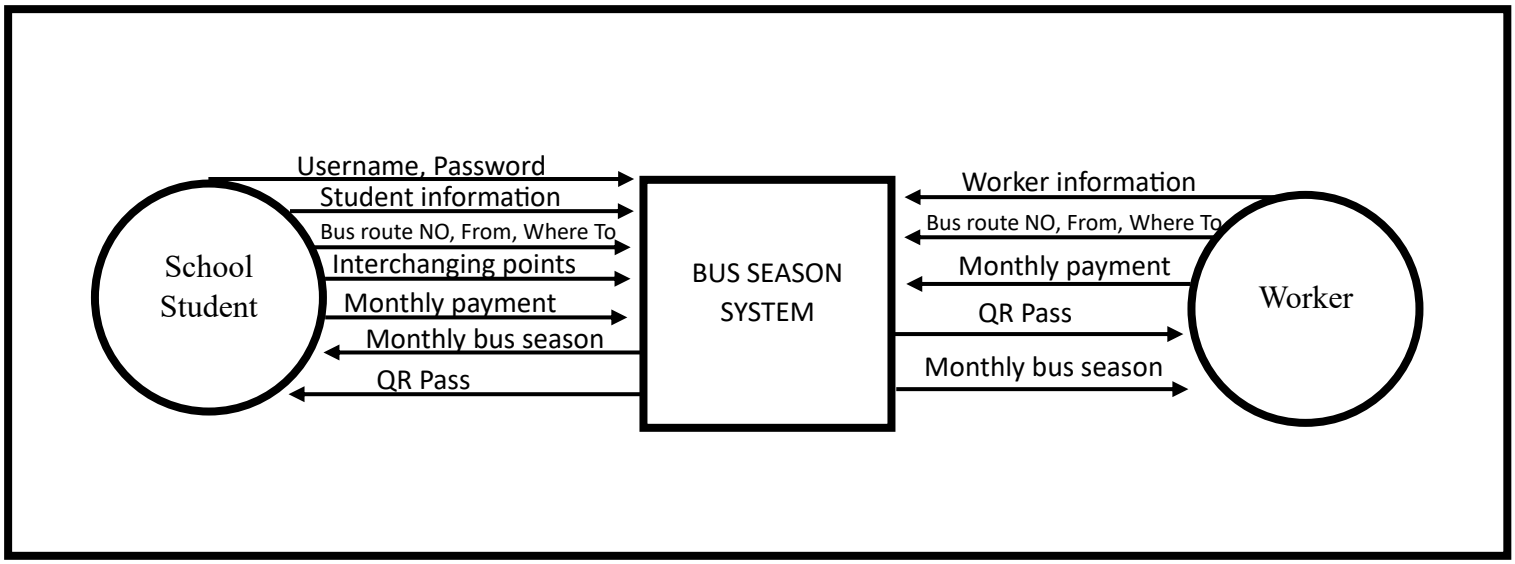


4.2 User Case diagram

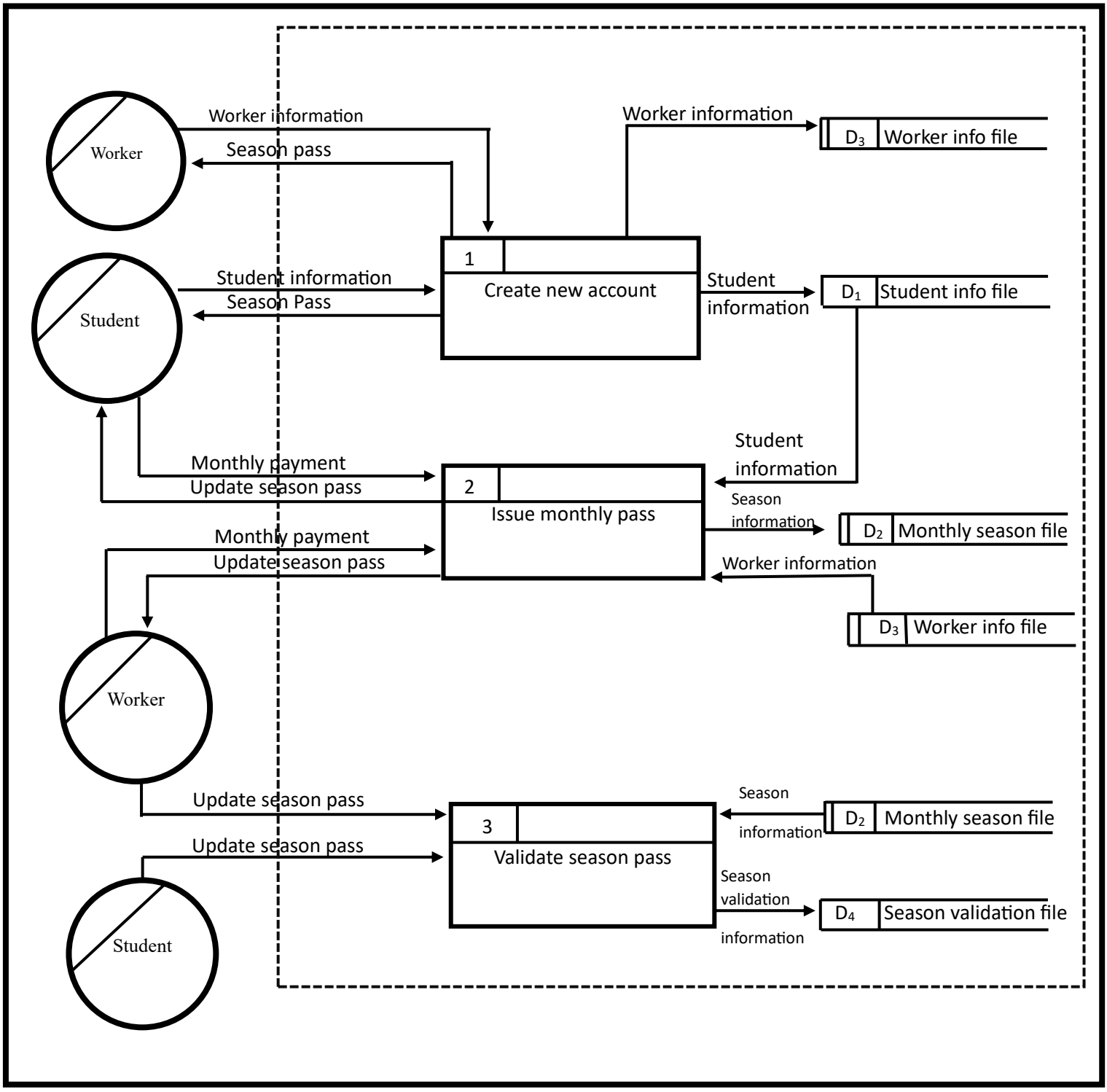


4.3 DFD Diagram

4.3.1 Level 0



4.3.2 Level 1


Worker
Worker information
Season pass
Worker information
D3 Worker info file
Student
Student information
Season Pass
1
Create new account
Student information
D1 Student info file
Monthly payment
Update season pass
Student information
2
Issue monthly pass
Season information
D2 Monthly season file
Monthly payment
Update season pass
Worker information
D3 Worker info file
Worker
Update season pass
Season information
D2 Monthly season file
Update season pass
3
Validate season pass
Season validation information
D4 Season validation file
Student

4.4 Database Diagram