Installation Instructions

0. Prerequisites

This installation guide assumes you have **Rust and Cargo already installed** on your system. If you need to install Rust, visit https://www.rust-lang.org/tools/install.

You can verify Rust and Cargo are installed by running:

```
$ rustc --version
$ cargo --version
```

0.5 SQLite

Make sure sqlite is installed in order to run the application.
Visit, https://sqlite.org/download.html.

1. Download the Project

Download or clone the casino application project files to your computer.
Move the files to your desired location.

2. Navigate to Project Directory

Open a terminal or command prompt and navigate to the project root directory:

```
$ cd path/to/slot-machine
```

3. Build and Run the Application

Run the following command to build and start the application:

```
$ cargo run
```

This command will:
- Automatically download and compile all required dependencies
- Build the application executable
- Launch the casino application

Note: The first run may take a while as Cargo downloads and compiles all dependencies.

4. Verify Installation

If installation was successful, you should see the Casino Login menu with three options:

```
═══ 🎰 Casino Login 🎰 ═══
Register
Sign In
Exit
```

Note: On first run, the application will automatically create the necessary database, .env, and logs files in the project directory.

User Manual

Welcome to the Triple 7 Systems!
This guide will help you navigate the system and enjoy playing various games.

Getting Started

When you launch the application, you'll see the Login Page with three options:

- Register - Create a new account
- Sign In - Log into an existing account
- Exit - Close the application

  1. **Registration**

     Select Register to create a new account. You'll be asked to provide:
     Username
     Password
     Once registered, you will be signed in immediately.
  2. **Sign In**

     You'll be asked to provide your credentials

     Once signed in you will be able to access the User Menu

User Menu

After signing in as a User, you'll see the main menu:
- **Play** - Start playing games
- **Account** - Manage your account
- **Logout** - Return to the login page

Play

Games Menu
Select **Play** from the User Menu to see available games:
- **Normal** - Classic slot machine game
- **Multi** - Multi-line slot game
- **Holding** - Hold and spin variant
- **Wheel of Fortune** - Spin the wheel game
- **Back** - Return to User Menu

Upon selecting one of the options you'll be presented with your betting options.

Placing Your Bet
After selecting a game, choose your bet amount:
- **$1**
- **$5**
- **$10**
- **$20**

Note: Make sure you have sufficient funds in your account before placing a bet.

Game Results

After placing your bet, the game will run automatically and display your results:
- **Payout** (if you won)
- **Updated balance**

After Playing

After seeing your results, you'll have three options:
- **Spin Again** - Play the same game with the same bet
- **Change Bet** - Return to the betting menu to select a different amount
- **Exit** - Return to the Games Menu to choose a different game

Account

Account Menu

Select **Account** from the User Menu to manage your funds and view statistics:

Upon entering the Account Menu you should see the following
- **Id**
- **Username**
- **Balance**

You will also have the following options
- **Deposit** - Add funds to your account
- **Withdraw** - Remove funds from your account
- **Statistics** - View your gaming performance
- **Exit** - Return to User Menu

Making a Deposit
1. Select **Deposit**
2. Enter the amount you wish to add
3. Confirm the transaction
4. Your new balance will be displayed

Making a Withdrawal
1. Select **Withdraw**
2. Enter the amount you wish to remove
3. Confirm the transaction (must have sufficient balance)
4. Your new balance will be displayed

Viewing Statistics

Select **Statistics** to view:
- Total amount wagered
- Total amount won
- Win/loss ratio
- Game history

Technician Manual

Getting Started

Get technician credentials from an authorized figure and sign in from the same point as the users

Upon logging in with a technician account you will see four options
- Games
- Statistics
- Security Logs
- Logout

1. **Games**
    - Manage which casino games are available to users.
2. **Statistics**
    - View performance data across all casino games.
3. **Security** Logs
    - Access and review security-related events and user activity.

Games

What you'll see:

Current status (Active/Inactive) for each game
List of all games in the system

Currently the games included in the application are:

> **Normal**
> **Multi**
> **Holding**
> **Wheel of Fortune**

How to toggle game availability:

1. Choose the game you want to enable or disable
2. The game's status will toggle between active and inactive
3. Active games are available to users; inactive games are hidden

Statistics

What you'll see:

Win/loss statistics for each game

Security Logs

Upon entering security logs you will have access to the following options:

- View Recent Security Events
- Check Login Attempts by Username
- View User Transactions
- Back

1. **View Recent Security Events**
   Shows all logs within a certain time input
2. **Check Login Attempts by Username**
   Show login attempts logs by an input username
3. **View User Transactions**
   Show transaction logs for an input Id

Commissioner Manual

Getting Started

Get commissioner credentials from an authorized figure and sign in from the same point as the users

Upon logging in with a commissioner account you will see four options

- Run fairness test
- View game probabilities
- Adjust symbol weights
- Adjust symbol payouts
- Logout

1. Run fairness test
    - Run simulations of each game and get statistics
2. View game probabilities
    - Shows weight, probability, and statistics of each symbol for each game
3. Adjust symbol weights
    - Allows commissioner to adjust the symbol weights/probability
4. Adjust symbol payouts
    - Allows the commissioner to adjust the symbol payout

Run Fairness Test

The main games provided by the application

 normal

 multi

 holding

Selecting a game, you will be prompted for a seed and number of rounds.

Then you will be shown statistics for that round of testing

```
══ Testing NORMAL Game ══

Enter seed for testing (leave empty for random):

Using random seed

Enter number of rounds to test:

Running 100 rounds for normal game...

🏛 Test Results 🏛
Game: normal
Total rounds: 100
Wins (3 match): 4
Two-symbol matches: 48
Losses: 48
Total Bet: $100.00
Total Payout: $78.25
RTP (Return To Player): 78.25%

Symbol Probabilities:
  🍒 - 29.4% chance, 2.0x payout
  🍊 - 23.5% chance, 2.5x payout
  🍌 - 21.2% chance, 3.0x payout
  🍇 - 14.1% chance, 4.0x payout
  💎 - 9.4% chance, 8.0x payout
  7️ - 2.4% chance, 15.0x payout

✓ Test results stored in commissioner_log table.

Press Enter to continue...
```

View Game probabilities

Will show the weight, probability, and payout of each symbol for each game in the application.

```
══ NORMAL ══
Symbol    Weight    Probability    Payout
------------------------------------------------
🍒          25          29.41         % 2.0      x
🍊          20          23.53         % 2.5      x
🍌          18          21.18         % 3.0      x
🍇          12          14.12         % 4.0      x
💎           8           9.41         % 8.0      x
7️           2           2.35         % 15.0     x

══ MULTI ══
Symbol    Weight    Probability    Payout
------------------------------------------------
🍒          22          28.95         % 3.6      x
🍊          20          26.32         % 4.0      x
🍌          15          19.74         % 5.0      x
🍇          10          13.16         % 8.0      x
💎           6           7.89         % 14.0     x
7️           3           3.95         % 24.0     x

══ HOLDING ══
Symbol    Weight    Probability    Payout
------------------------------------------------
🍒          28          28.00         % 1.1      x
🍊          24          24.00         % 1.2      x
🍌          20          20.00         % 1.5      x
🍇          15          15.00         % 2.2      x
💎          10          10.00         % 3.0      x
7️           3           3.00         % 5.0      x

Press Enter to continue...
```

Adjust Symbol Weight/Payout

Will allow you to adjust the weight and payout of the symbols as needed to ensure fair play and engagement.