

ENSF 480 Term Project, Fall 2021

# Design Document

Group 14

**Lecture Section:** L02

**Instructor:** M. Moshirpour

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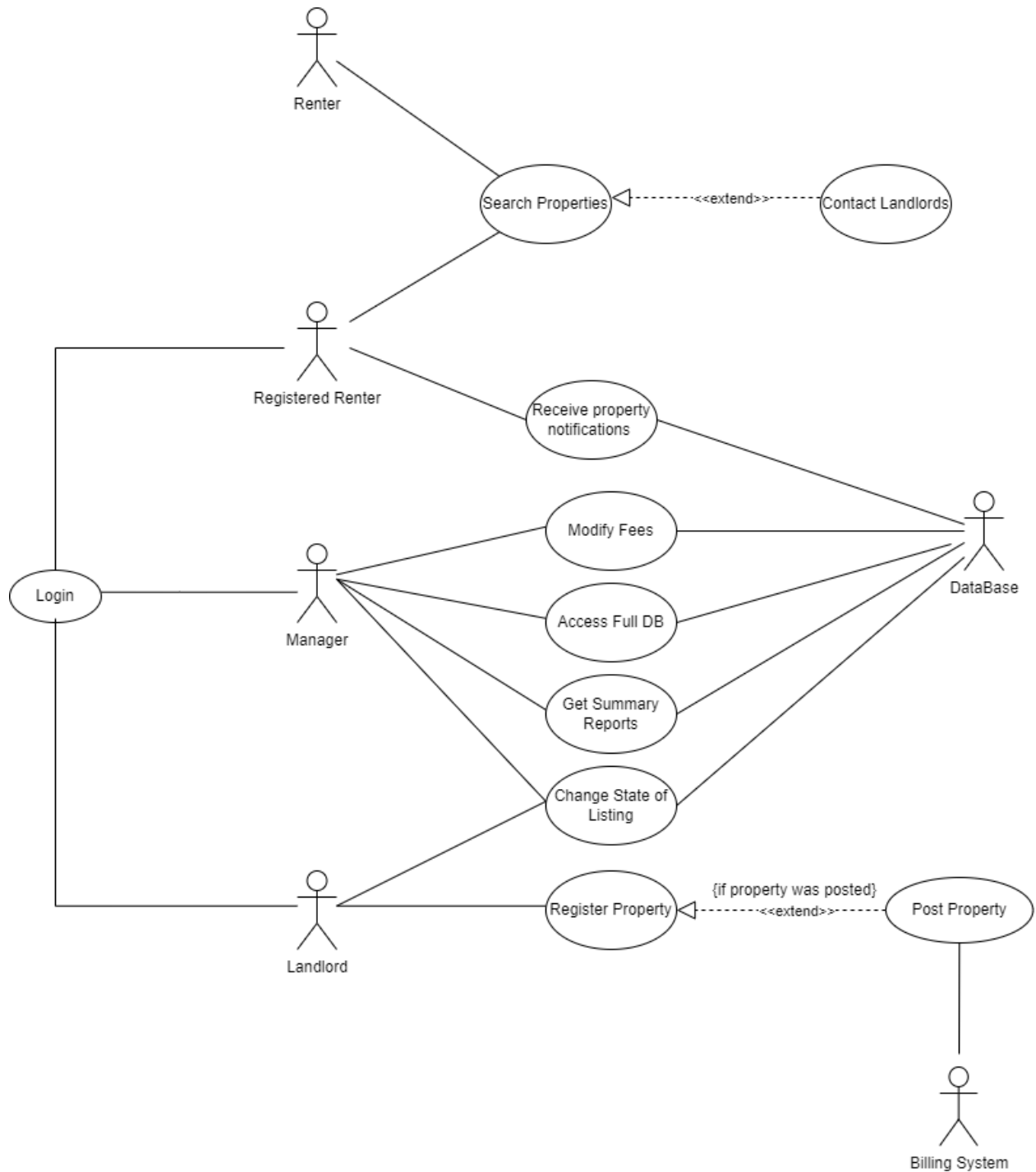
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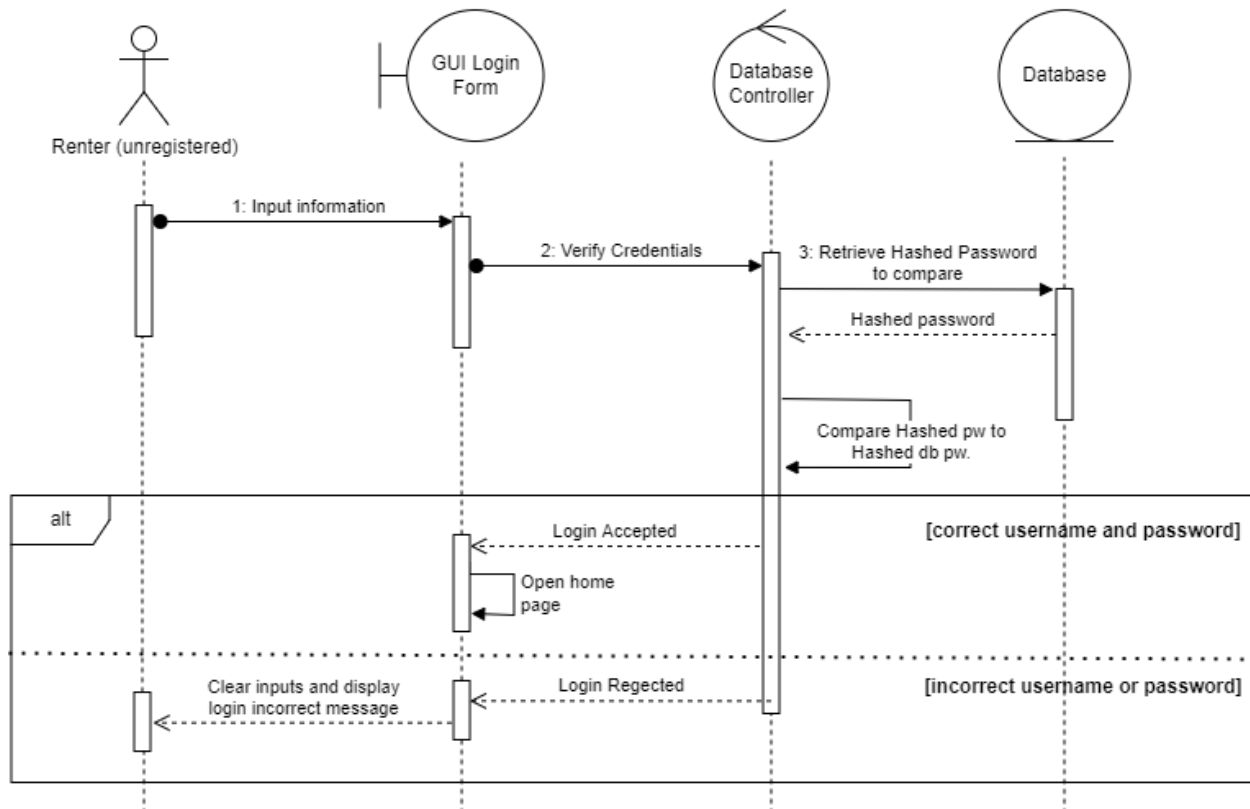
# Systems Use Case Diagram



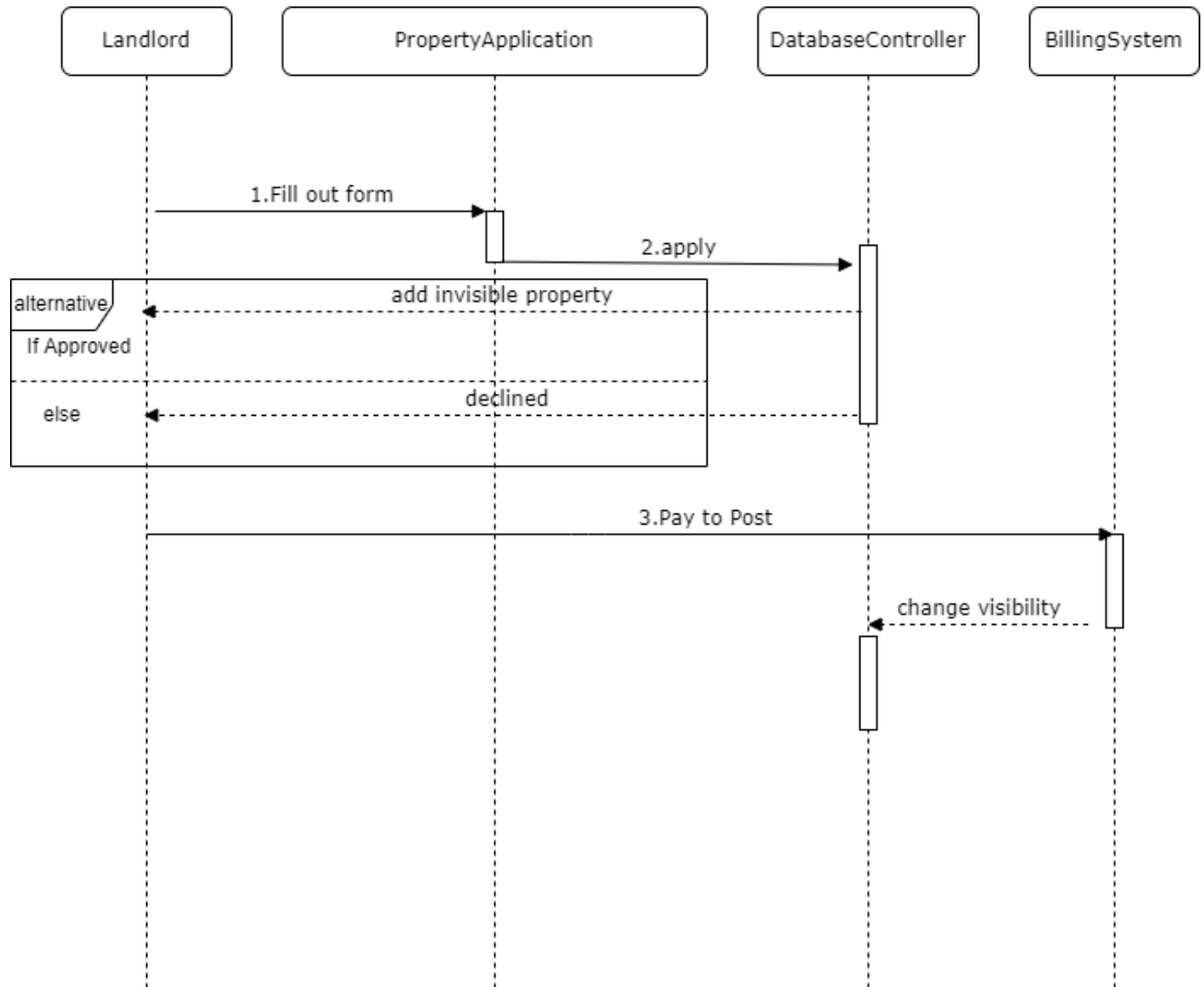
# Sequence Diagrams

## Login Sequence

**Login Sequence Diagram**

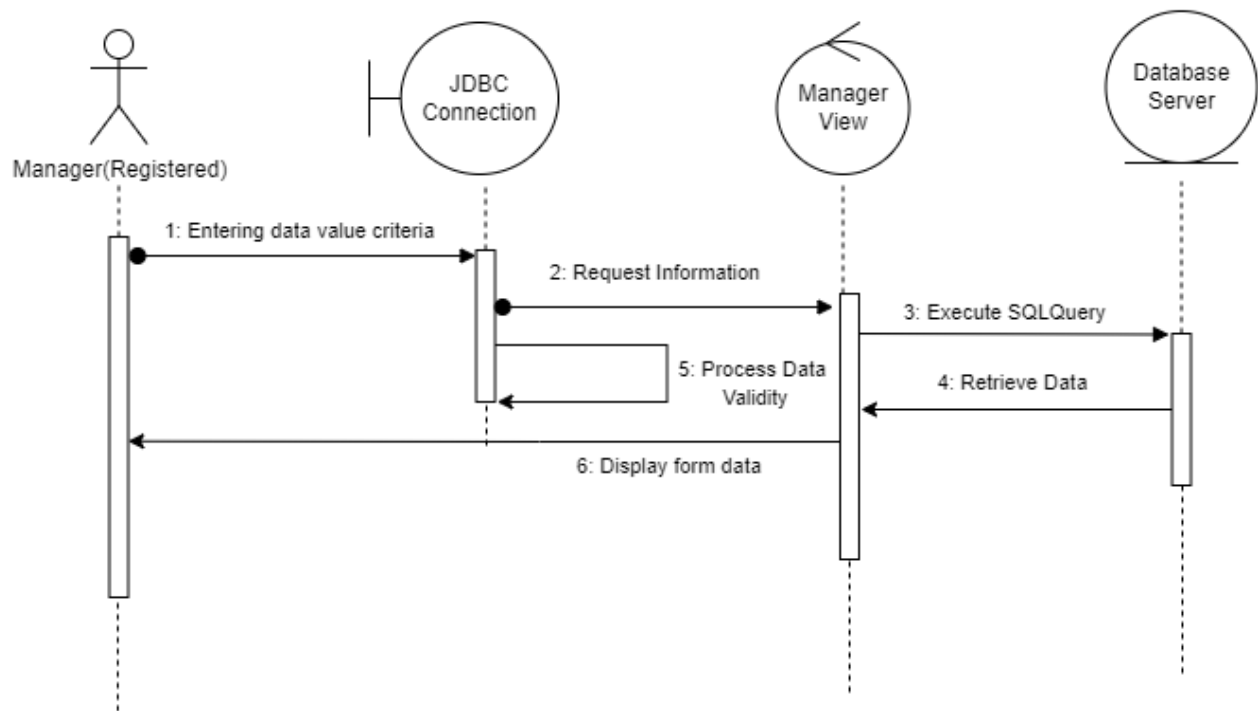


## Landlord Posting Property Sequence

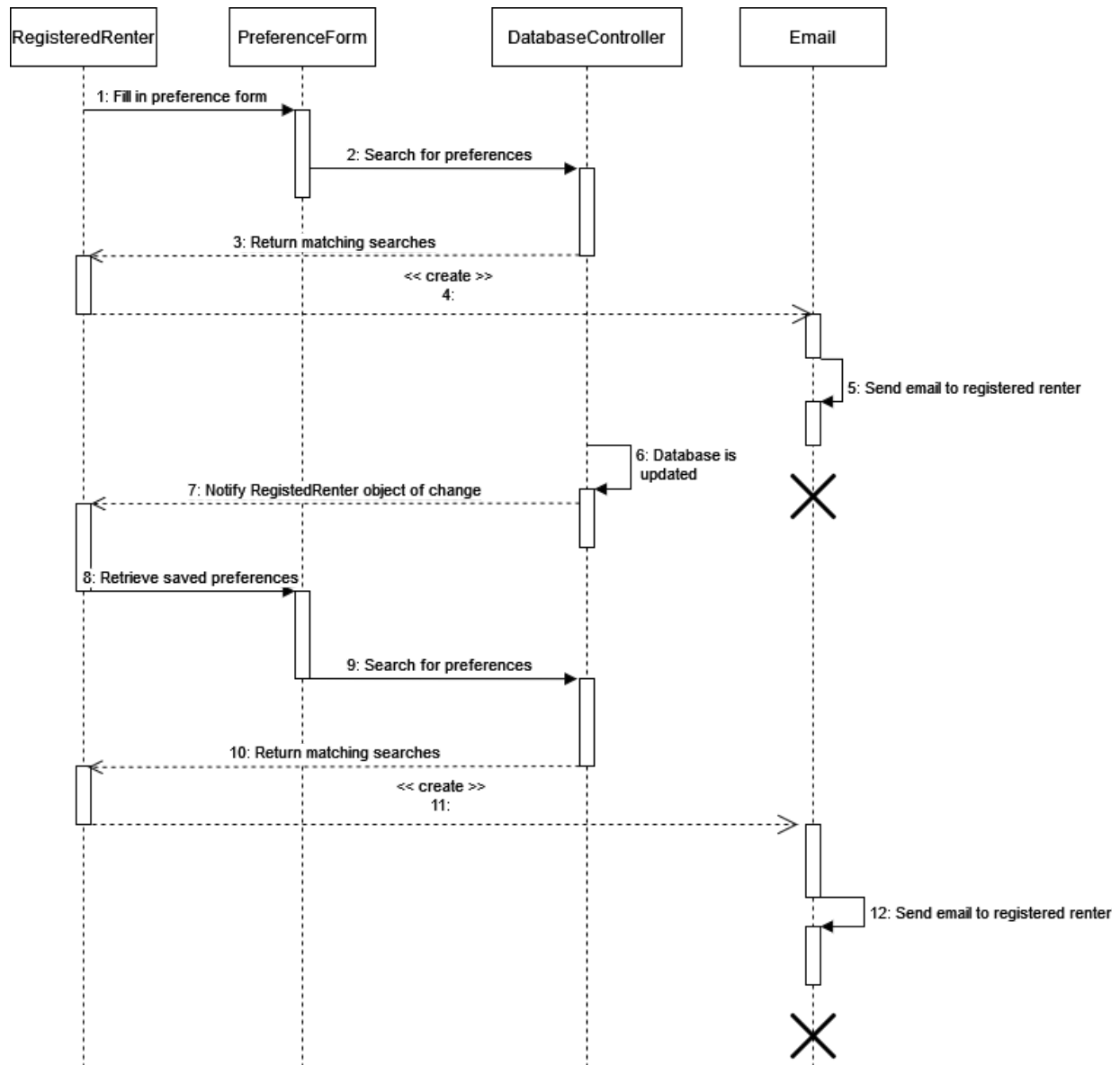


## Database Access Sequence

### Database Access Sequence Diagram



## Preference Setup and Notification Sequence



```

classDiagram
    class Property {
        -ID: int
        -address: String
        -numBedrooms: int
        -numBathrooms: double
        -furnished: bool
        -cityQuad: String
        -price: double
        -visibleToRenters: bool
        -rentalState: String
        -landlordID: int
        -landlordName: String
        -dateLastListed: Calendar
        -dateRented: Calendar
    }

    class Email {
        -recipient: String
        -subject: String
        -body: String
        -sender: String
        +sendEmail(): void
    }

    class RegisteredRenter {
        -emailAddr: String
        -renterID: int
        -dbController: DatabaseController
        -savedPreferences: ArrayList<PreferenceForm>
        -lastMatchedProperties: ArrayList<Property>
        +RegisteredRenter(emailAddress: String, dbController: DatabaseController)
        +contactLandlordAbout(propertyID: int): void
        +contactLandlordAbout(property: Property): void
        +compareAndUpdateLastMatched(updatedList: ArrayList<Property>): void
        +emailMatchingProperties(): void
        +searchDatabaseFor(searchData: Search) ArrayList<Property>
        +addPreference(newPreference: PreferenceForm): void
        +removePreference(index: int): void
    }

    class LoginForm {
        -onlyInstance: LoginForm
        +username: String
        +password: String
        +getOnlyInstance(): LoginForm
        +display(): JPanel
        +login(): void
    }

    class Search {
        -buildingType: String
        -numOfBedrooms: int
        -numOfBathrooms: double
        -furnished: bool
        -cityQuadrant: String
        -maxPrice: double
        -minPrice: double
        +searchProperties(): Property[]
        +display(): JPanel
    }

    class SignupForm {
        +username: String
        +password: String
        +confirmPassword: String
        +display(): JPanel
        +SignupForm()
    }

    class LandlordSignupForm {
        +signUp(): Landlord
        +display(): JPanel
        +LandlordSignupForm()
    }

    class RenterSignupForm {
        +RenterSignupForm()
        +display(): JPanel
        +signUp(): RegisteredRenter
    }

    class PropertyApplication {
        -id: int
        -address: String
        -numBedrooms: int
        -numBathrooms: double
        -furnished: bool
        -cityQuad: String
        -price: double
        -landlordID: int
        -landlordName: String
        +PropertyApplication()
        +display(): JPanel
    }

    class Manager {
        -fullName: String
        -managerID: String
        -gender: String
        -birthday: Date
        -status: String
        +retrieveData(query): String
        +generateReport(): void
        +changeFee(): void
        +changeStatus(): void
        -dateRangeStart: Calendar
        -dateRangeEnd: Calendar
        -numPropertiesListed: int
        -numPropertiesRented: int
        -numPropertiesActive: int
        -propertiesRented: ArrayList
    }

    class BillingSystem {
        -feeAmount: Double
        -landlord: Landlord
        -paymentDate: Date
        -paymentType: String
    }

    class BillingController {
        +personDetailsPaid: ArrayList
        +createPaidList(Person person): void
        +BillingController(ArrayList<Person> personDetailsPaid): void
        +updatePaidList(Person person): void
    }

    class DatabaseObserver {
        <<interface>>
        +updatePreferences(prefs: PreferenceForm): void
    }

    class DatabaseSubject {
        <<interface>>
        +addObserver(dbo: DatabaseObserver): void
        +removeObserver(dbo: DatabaseObserver): void
        +notifyAllObservers(): void
    }

    class DatabaseController {
        -registeredRenters: ArrayList<RegisteredRenter>
        -managers: ArrayList<Manager>
        -landlords: ArrayList<Landlord>
        +getAllProperties(): ArrayList<Property>
        +getMatchingProperties(searchInfo: Search)
        +getPropertyByID(idNum: int)
        +getPropertyWithLandlord(landlordID: int)
        +getPropertiesRentedIn(startingDate: Calendar, endingDate: Calendar)
    }

    class Landlord {
        +propertyApp: PropertyApplication
        +properties: ArrayList<Property>
        +emailAddress: String
        +Apply(): void
        +Landlord(String email): void
        +Landlord(String email, Property[] properties)
    }

    class Observer {
        <<interface>>
    }

    class Subject {
        <<interface>>
    }

    Property "1" --> "1..*" LoginForm
    LoginForm "1" --> "1" LoginForm
    LoginForm "1" --> "1" Property
    LoginForm "1" --> "1" SignupForm
    LoginForm "1" --> "1" LandlordSignupForm
    LoginForm "1" --> "1" RenterSignupForm
    LoginForm "1" --> "1" PropertyApplication
    LoginForm "1" --> "1" Manager
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    LoginForm "1" --> "1" Subject
    LoginForm
```



# Detailed Class Specifications

## .forms

ContactForm
+message: String +senderField: String
+submit(): void +parseEmail(): Email +ContactForm(String message, Email mail, String senderField): void

PreferenceForm
-quadrant: String -priceMin: int -priceMax: int -numBedrooms: int -numBathrooms: double -furnished: boolean -apartment: boolean -house: boolean -attached: boolean -detached: boolean -townhouse: boolean -condo: boolean
+submit(): void +PreferenceForm(String quadrant, int priceMin, int priceMax, int numBedrooms, double numBathroom, boolean furnished, boolean apartment, boolean house, boolean attached, boolean detached, boolean townhouse, boolean condo):void +getPriceMin: int +getPriceMax: int +getNumBedrooms: int +getNumBathrooms: int +getFurnished: boolean +getApartment: boolean +getHouse: boolean +getAttached: boolean +getDetached: boolean +getTownhouse: boolean +getCondo: boolean

Form
+ display(): Jpanel

LoginForm
- <u>onlyInstance: LoginForm</u>
+ username: String + password: String
+ getOnlyInstance(): LoginForm - LoginForm() + display(): Jpanel + login(): void + getUsername(): String + setPassword(String): void + setUsername(String): void + getPassword(): String

PropertyApplication
- id: int - address: String - numBedrooms: int - numBathrooms: double - furnished: bool - cityQuad: String - price: double - landlordID: int - landlordName: String
+ PropertyApplication() + display(): Jpanel + setID(int): void + getID(): int + setAddress(String): void + getAddress(): String + setNumBedrooms(int): void + getNumBedrooms(): int + getNumBathrooms(): int + setNumBathrooms(int): void + setFurnished(boolean): void + getFurnished(): boolean + setCityQuad(String): void + getCityQuad(): String + setPrice(double): void + getLandlordID(): int + getPrice(): double + setLandlordID(int): void + setLandlordName(String): void + getLandlordName(): String

Search
- buildingType: String - numOfBedrooms: int - numOfBathrooms: double - furnished: bool - cityQuadrant: String - maxPrice: double - minPrice: double
+ searchProperties(): Property [] + display(): Jpanel + setNumBedrooms(int): void + getCityQuad(): String + setCityQuad(String): void + getFurnished(): boolean + setFurnished(boolean): void + setNumBathrooms(int): void + getNumBathrooms(): int + getNumBedrooms(): int + Search() + setBuildingType(String): void + getBuildingType(): String + getMaxPrice(): double + setMaxPrice(double): void + getMinPrice(): double + setMinPrice(double): void

RenterSignUpForm
+ display(): Jpanel + RenterSignUpForm() + signUp(): RegisteredRenter

LandlordSignUpForm
+ signUp(): Landlord + display(): Jpanel + LandlordSignUpForm

SignupForm
+ username: String, + password: String, + confirmPassword: String
+ display(): Jpanel + SignupForm() + getUsername(): String + getPassword(): String + setUsername(String): void + setPassword(String): void + setConfirmPassword(String): void + getConfirmPassword(): String

## .dbcontrol

Report
<ul style="list-style-type: none"> <li>- dateRangeStart: Calendar</li> <li>- dateRangeEnd: Calendar</li> <li>- numPropertiesListed: int</li> <li>- numPropertiesRented: int</li> <li>- numPropertiesActive: int</li> <li>- propertiesRented: ArrayList&lt;Property&gt;</li> </ul>
<ul style="list-style-type: none"> <li>+ Report(startDate: Calendar, endDate: Calendar)</li> <li>+ generateReport(): String+ printReport(): void</li> <li>+ getDateRangeStart(): Calendar</li> <li>+ getDateRangeEnd(): Calendar</li> <li>+ getNumPropertiesListed(): int</li> <li>+ getNumPropertiesRented: int</li> <li>+ getNumPropertiesActive(): int</li> <li>+ getPropertiesRented(): ArrayList&lt;Property&gt;</li> <li>+ setDateRangeStart(startDate: Calendar)</li> <li>+ setDateRangeEnd(endDate: Calendar)</li> <li>+ setNumPropertiesListed(numListed: int)</li> <li>+ setNumPropertiesRented(numRented: int)</li> <li>+ setNumPropertiesActive(numActive: int)</li> <li>+ addRentedProperty(property: Property)</li> <li>+ removeRentedProperty(property: Property)</li> <li>+ removeRentedProperty(index: int)</li> </ul>

<<Interface>> DatabaseSubject
<ul style="list-style-type: none"> <li>+ addObserver(dbo: DatabaseObserver): void</li> <li>+ removeObserver(dbo: DatabaseObserver): void</li> <li>+ notifyAllObservers(): void</li> </ul>

<<Interface>> DatabaseObserver
<ul style="list-style-type: none"> <li>+ updatePreferences(prefs: PreferenceForm): void</li> </ul>

DatabaseController
<ul style="list-style-type: none"> <li>- registeredRenters: ArrayList&lt;RegisteredRenter&gt;</li> </ul>
<ul style="list-style-type: none"> <li>+ DatabaseController()</li> <li>+ getAllProperties(): ArrayList&lt;Property&gt;+ getMatchingP</li> <li>+ getPropertyByID(idnum: int)</li> <li>+ getPropertyWithLandlord(landlordID: int)</li> <li>+ getPropertiesRentedIn(startingDate: Calendar, endingDate: Calendar)</li> <li>+ getRegisteredRenters(): ArrayList&lt;RegisteredUsers&gt;</li> <li>+ addRegisteredRenter(renter: RegisteredRenter)</li> <li>+ removeRenter(renter: RegisteredRenter)</li> </ul>

## .billcontrol

BillingSystem
<ul style="list-style-type: none"><li>- feeAmount: Double</li><li>- landlord: Landlord</li><li>- paymentDate: Date</li><li>- paymentType: String</li></ul>
<ul style="list-style-type: none"><li>+ getPaymentType(): String</li><li>+ getFeeAmount(): Double</li><li>+ getPaymentDate(): Date</li><li>+ getFeeAmount(): Double</li><li>+ BillingSystem(Double feeAmount, Landlord landlord, Date paymentDate, String paymentType): void</li><li>+ setPaymentDate(): void</li><li>+ setFeeAmount(): void</li><li>+ setPaymentType(): void</li></ul>

BillingController
<ul style="list-style-type: none"><li>+ personDetailsPaid: ArrayList</li></ul>
<ul style="list-style-type: none"><li>+ createPaidList(Person person): void</li><li>+ getPersonDetailsPaid(): ArrayList</li><li>+ BillingController(ArrayList personDetailsPaid): void</li><li>+ updatePaidList(Person person): void</li><li>+ setPersonDetailsPaid(): void</li></ul>

## .users

Landlord
+propertyApp: PropertyApplication -properties: ArrayList<Property> -emailAddress: String
+Apply():void +Landlord(String email):void +Landlord(String email,Property[] properties) +getProperties():void

Manager
- fullName: String - ManagerID: String - gender: String - birthday: Date - status: String
+ retrieveData(query): String - generateReport(): void - changeFee(): void - changeStatus(): void + getFullName(): String + setFullName(): void + getManagerID(): String + setManagerID(): void + getManagerBirthday(): String + setManagerBirthday(): void + setStatus(): void + getStatus(): String + Manager(String fullName, String ManagerID, String gender, Date birthday, String status): void

RegisteredRenter
- emailAddr: String - renterID: int - dbController: DatabaseController - savedPreferences: ArrayList<PreferenceForm> - lastMatchedProperties: ArrayList<Property>
+ RegisteredRenter(emailAddress: String, dbController: DatabaseController) + getAllPreferences(): ArrayList<PreferenceForm> + getPreferenceAt(index: int): PreferenceForm + getEmailAddress(): String + getRenterID(): int + getDBController(): DatabaseController + getLastMatchedProperties(): ArrayList<Properties> + setEmailAddress(emailAddr: String) + setRenterID(id: int) + setdbController(dbController: DatabaseController) + setLastMatchedProperties(properties: ArrayList<Property>) + contactLandlordAbout(propertyID: int): void + contactLandlordAbout(property: Property): void - compareAndUpdateLastMatched(updatedList: ArrayList<Property>): void - emailMatchingProperties(): void + searchDatabaseFor(searchData: Search): ArrayList<Property> + addPreference(newPreference: PreferenceForm): void + removePreference(index: int): void

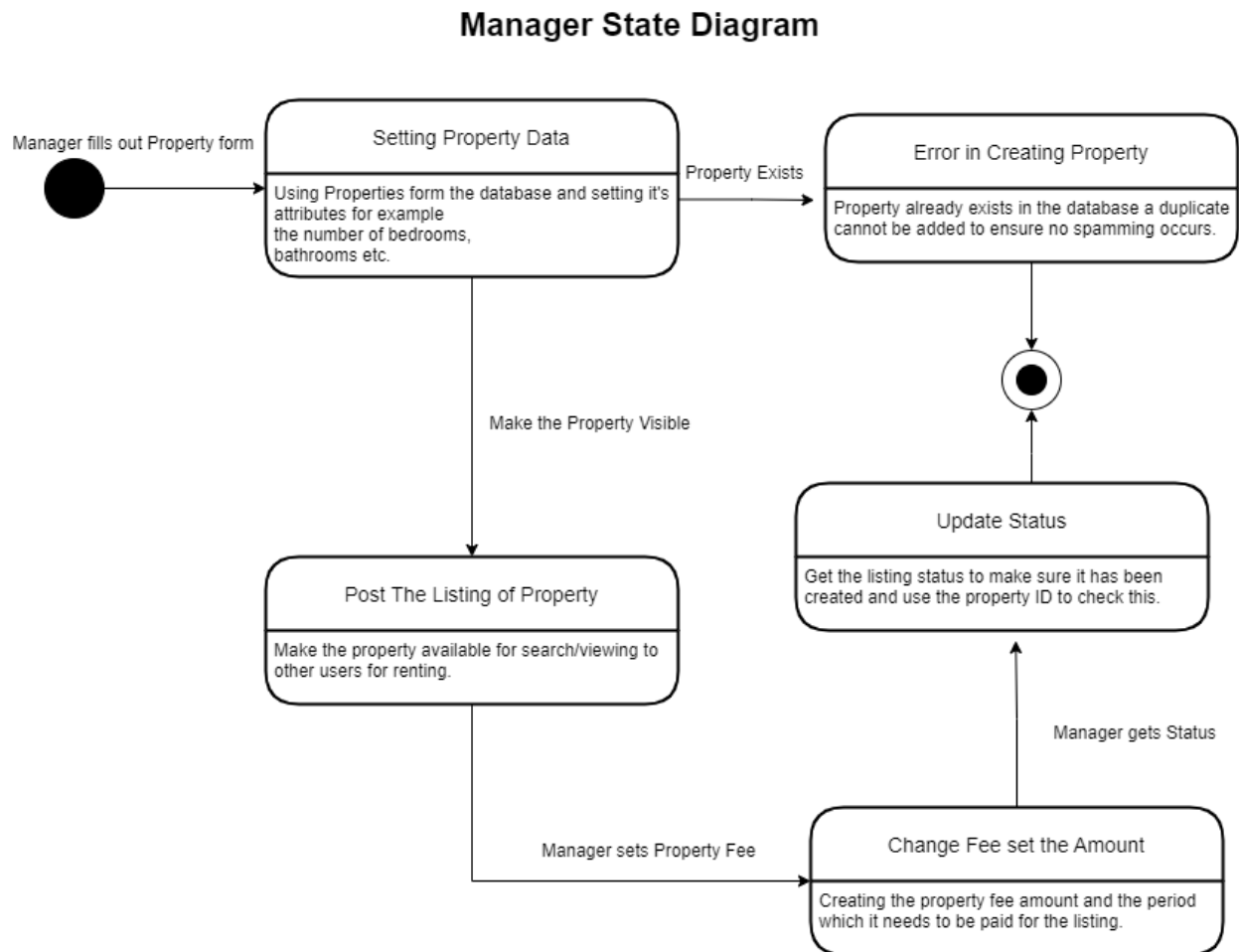
## .external

Email
- recipient: String - subject: String - body: String - sender: String
+ sendEmail(): void + setRecient(): String + setSubject(): String + setBody(): String + setSender():String + getRecient(): String + getSubject(): String + getBody(): String + getSender():String + Email(String recipient, String subject, String body , String Sender): void

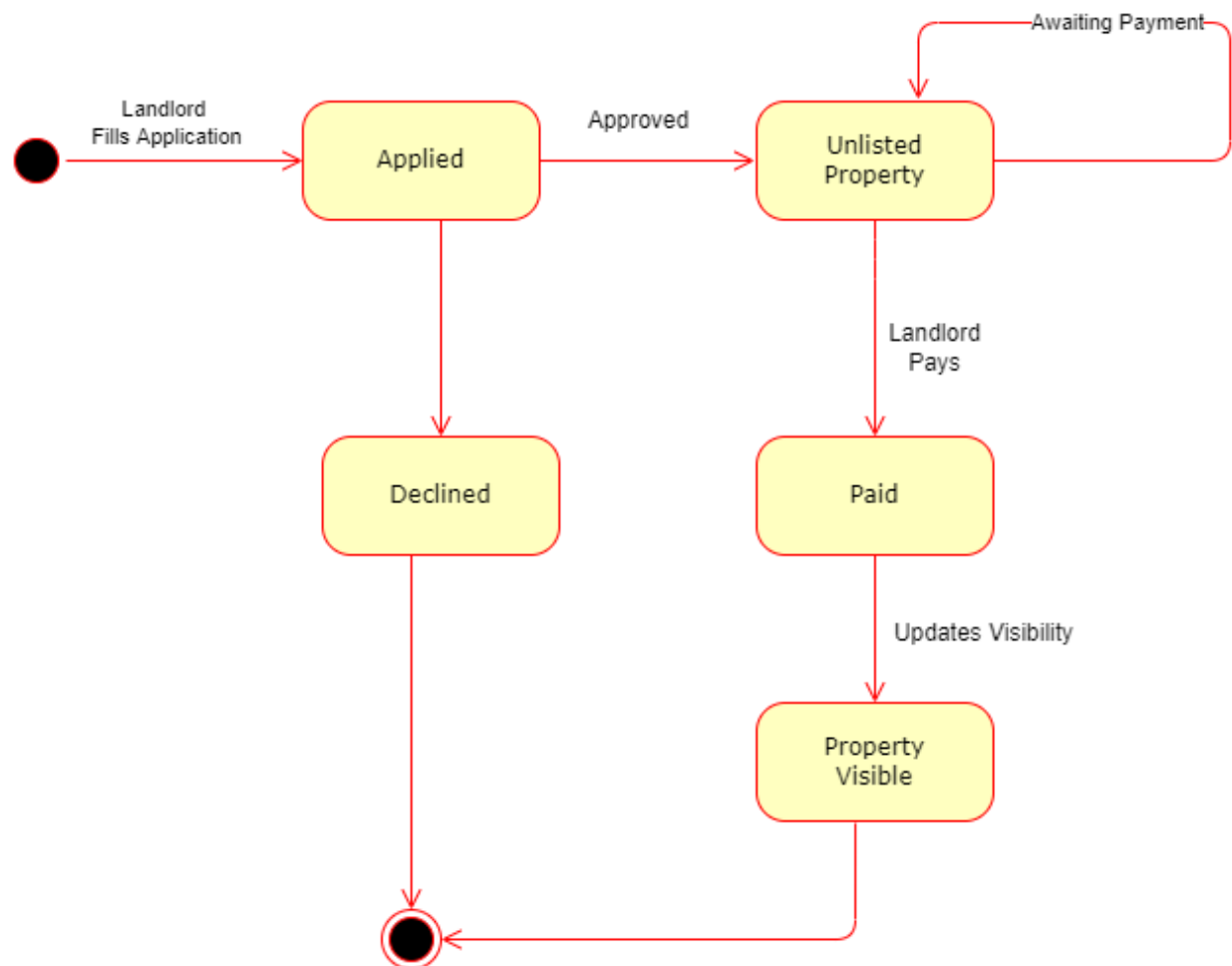
Property
- iD: int - address: String - numBedrooms: int - numBathrooms: double - furnished: bool - cityQuad: String - price: double - visibleToRenters: bool - rentalState: String - landlordID: int - landlordName: String - dateLastListed: Calendar - dateRented: Calendar
+ Property(iD: int, address: String, numBedrooms: int, nunBathrooms: int, furnished: boolean, cityQuad: String, price: double, visibleToRenters: boolean, rentalState: String, landlordID: int, landlordName: String)  + getID(): int+ getAddress(): String + getBedrooms(): int + getBathrooms(): double + getFurnished(): bool + getCityQuad: String + getPrice(): int + getVisibleToRenters(): bool + getRentalState(): String + getLandlordID(): int + getLandlordName(): String + getDateLastListed(): Calendar + getDateRented(): Calendar  + setAddress(addr: String) + setBedrooms(numBedrooms: int) + setBathrooms(numBathrooms: double) + setFurnished(isFurnished: bool) + setPrice(price: int) + setVisibleToRenters(isVisible: bool) + setRentalState(rentalState: String) + setLandlordID(landlordID: int) + setLandlordName(name: String) + setDateLastListed(date: Calendar) + setDateRented(date: Calendar)

# State Transition Diagrams

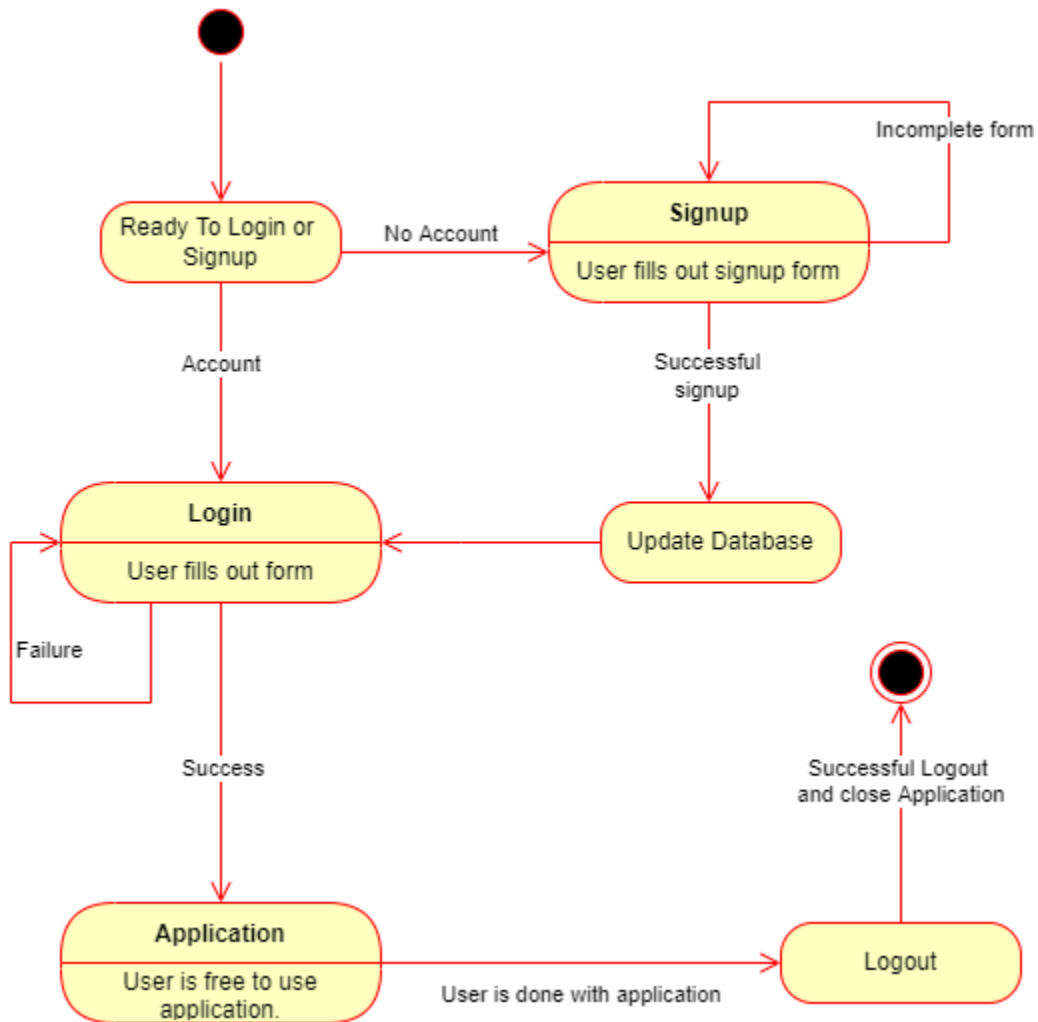
## Manager State Diagram



## Landlord Publicly Posting Property Listing

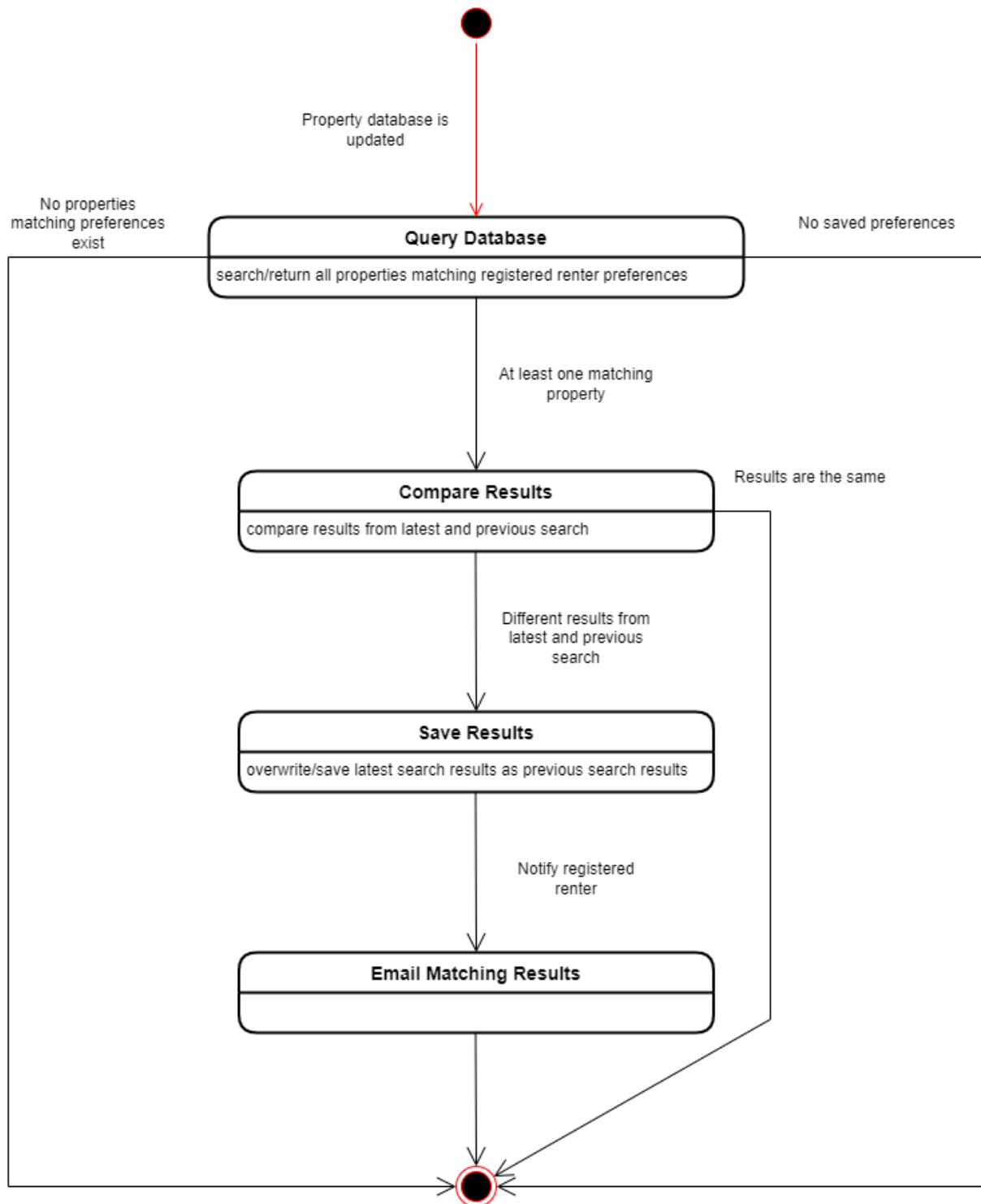


## Signup and Log In Process

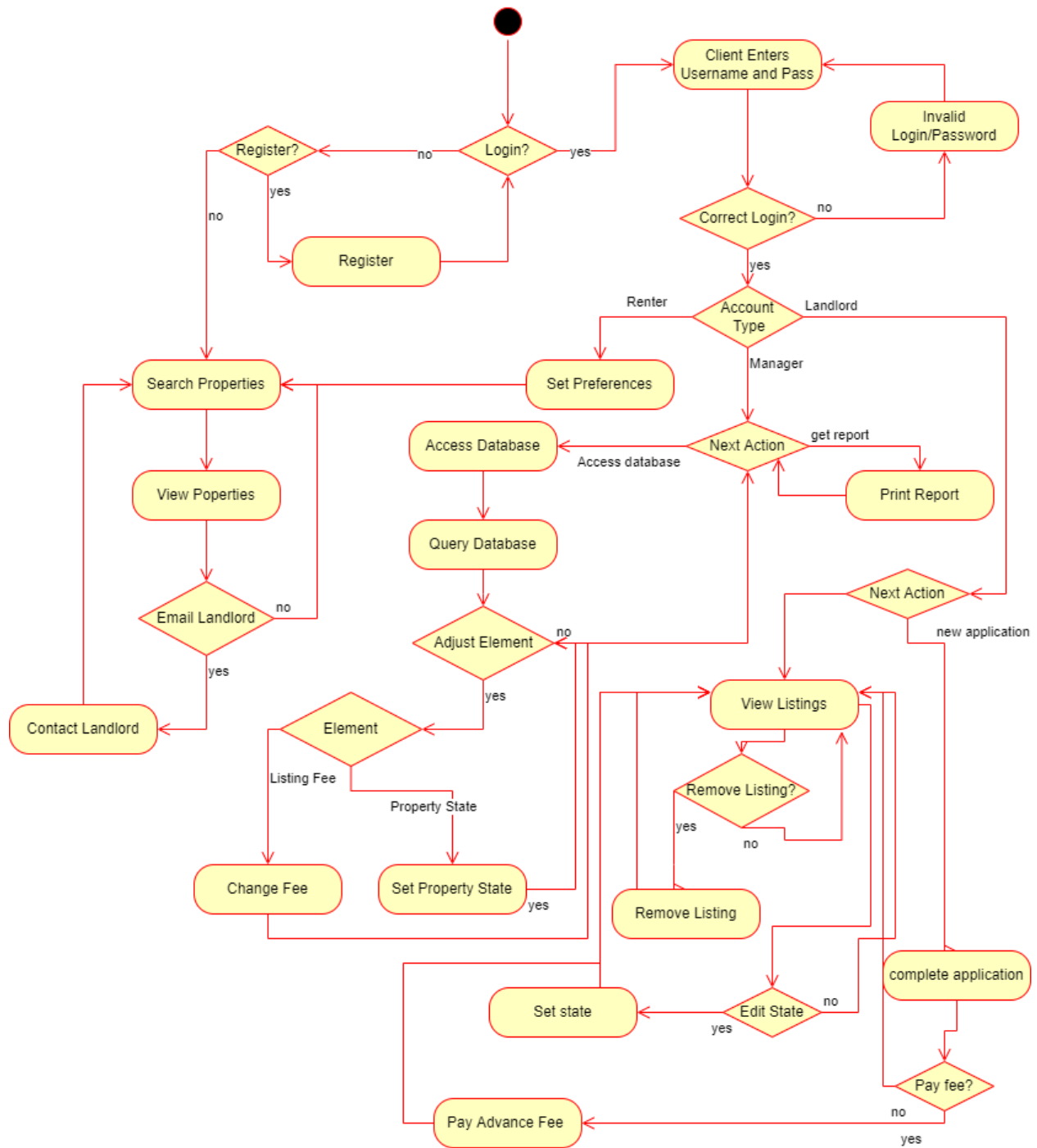




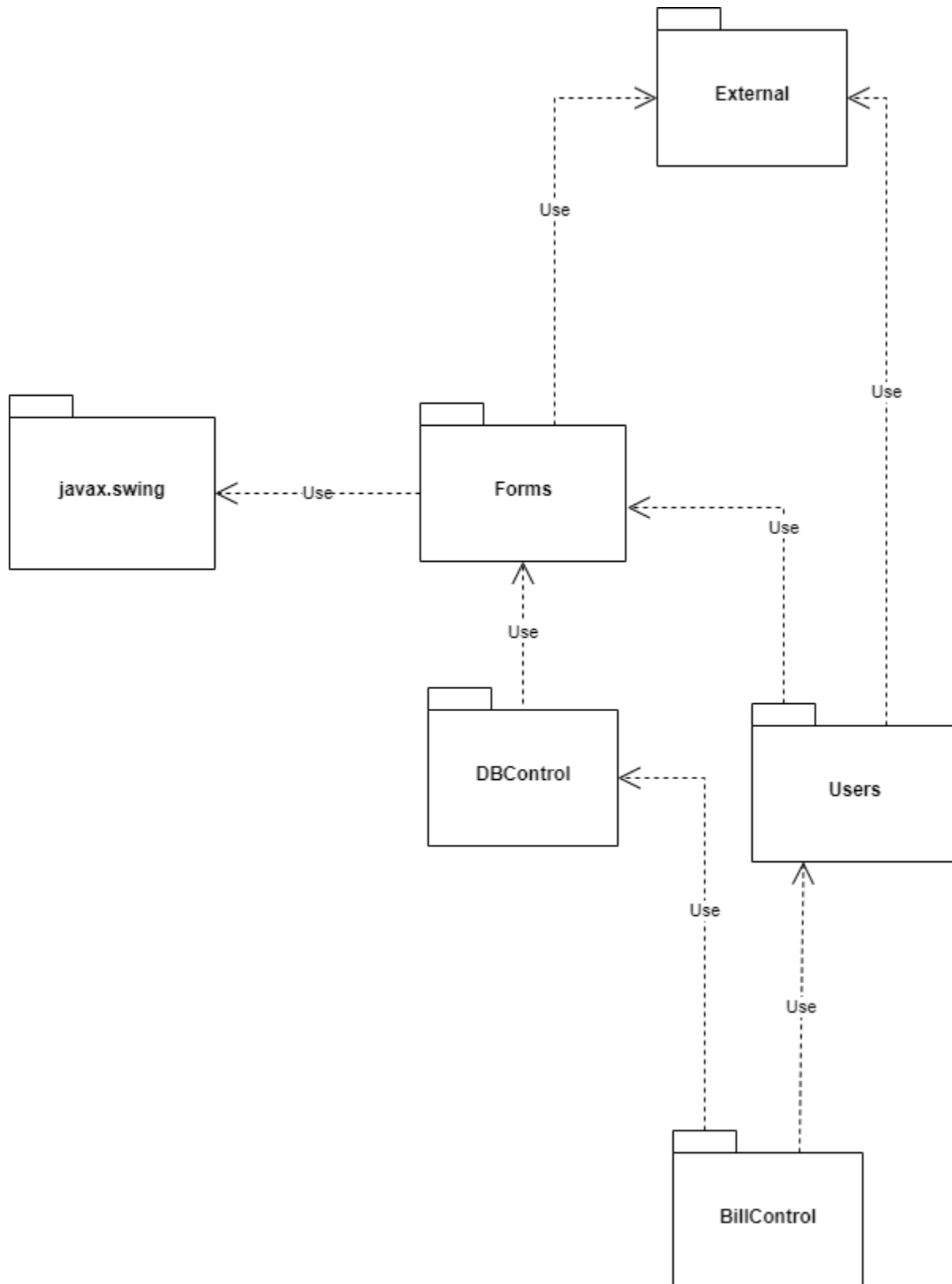
## Preference Notification Process



# System Activities Diagram



# Package Diagram



# Deployment Diagram

