

!Standard Mode:off

Use Case: RentBike

Scope: BIXISystem

Level: SUMMARY

Intention: "A user intends to rent a bike from a BIXI station."

Multiplicity: "Many users can rent bikes simultaneously."

Primary Actor: HUMAN::User::1..*

Secondary Actor:

STATION::BikeStation::1..*,

BIKE::Bike::1..*

SOFTWARE::SubscriptionManagementSystem::1..1

Main Success Scenario:

"The User approaches a BikeStation."

[IdentifyUserType] "The system identifies the User as a Member or Non-Member."

[SelectBike] "The User selects a Bike from the BikeStation."

[UnlockBike] "The system unlocks the Bike."

"The User takes the Bike."

Use Case Ends in: SUCCESS

Extensions:

Alternative for 1:

1a. "The User is a Non-Member."

1a.1. [PurchaseAccess] "The User purchases 1-day, 3-day, or one-way access at the PayStation."

1a.2. "The system generates an unlocking code."

1a.3. "The User enters the unlocking code at the BikeDock."

Use Case Ends in: SUCCESS

Alternative for 2:

2a. "The User is a Member."

2a.1. "The User inserts their BIXI key into the BikeDock."

Use Case Ends in: SUCCESS

Alternative for 3:

3a. "The BikeStation is full."

3a.1. "The system informs the User that no bikes are available."

Use Case Ends in: FAILURE

Alternative for 4:

4a. "The selected Bike is unavailable (e.g., out of service)."

4a.1. "The system informs the User that the Bike is unavailable."

Use Case Ends in: FAILURE

Alternative for 5:

5a. "The system fails to unlock the Bike."

5a.1. [HandleBikeUnlockFailure] "The system attempts to unlock the Bike again."

5a.2. "If the Bike cannot be unlocked, the system logs the error and informs the User."

Use Case Ends in: FAILURE

Exception for (1-5):

(1-5)a.^ timeout:30s "The system experiences a communication failure."

(1-5)a.1. {NETWORK_EXCEPTION::CommunicationFailure} "The system attempts to reconnect."

Use Case Ends in: FAILURE

Exception for (1-5):

(1-5)b. {HARDWARE_EXCEPTION::BikeDockFailure} "The BikeDock fails to function."

(1-5)b.1. [HandleBikeDockFailure] "The system attempts to use an alternative BikeDock."

Use Case Ends in: DEGRADED

Exception for (1-5):

(1-5)c. {HARDWARE_EXCEPTION::BikeFailure} "The Bike fails to function."

(1-5)c.1. "The system informs the User that the Bike is out of service."

Use Case Ends in: FAILURE

Use Case: ReturnBike

Scope: BIXISystem

Level: SUMMARY

Intention: "A user intends to return a bike to a BIXI station."

Multiplicity: "Many users can return bikes simultaneously."

Primary Actor: HUMAN::User::1..*

Secondary Actor:

STATION::BikeStation::1..*

BIKE::Bike::1..*

Main Success Scenario:

"The User approaches a BikeStation."

"The User docks the Bike into an empty BikeDock."

[LockBike] "The system locks the Bike."

Use Case Ends in: SUCCESS

Extensions:

Alternative for 1:

1a. "The BikeStation is full."

1a.1. "The system informs the User that no docks are available."

Use Case Ends in: FAILURE

Alternative for 2:

2a. "The system fails to lock the Bike."

2a.1. [HandleBikeLockFailure] "The system attempts to lock the Bike again."

2a.2. "If the Bike cannot be locked, the system logs the error and informs the User."

Use Case Ends in: FAILURE

Exception for (1-3):

(1-3)a.^ timeout:30s "The system experiences a communication failure."

(1-3)a.1. {NETWORK_EXCEPTION::CommunicationFailure} "The system attempts to reconnect."

Use Case Ends in: FAILURE

Exception for (1-3):

(1-3)b. {HARDWARE_EXCEPTION::BikeDockFailure} "The BikeDock fails to function."

(1-3)b.1. [HandleBikeDockFailure] "The system attempts to use an alternative BikeDock."

Use Case Ends in: DEGRADED

Exception for (1-3):

(1-3)c. {HARDWARE_EXCEPTION::BikeFailure} "The Bike fails to function."

(1-3)c.1. "The system informs the User that the Bike is out of service."

Use Case Ends in: FAILURE

3. Manage Subscriptions

Use Case: ManageSubscriptions

Scope: BIXISystem

Level: SUMMARY

Intention: "A user intends to purchase or manage a BIXI subscription."

Multiplicity: "Many users can manage subscriptions simultaneously."

Primary Actor: HUMAN::User::1..*

Secondary Actor:

SOFTWARE::SubscriptionManagementSystem::1..1

STATION::PayStation::1..*

Main Success Scenario:

"The User accesses the SubscriptionManagementSystem (either online or through the PayStation)."

[SelectSubscription] "The User selects a subscription type (e.g., 1-day, 3-day, monthly, yearly)."

[PurchaseSubscription] "The User purchases the subscription using a credit card."

"The system generates a BIXI key (for Members) or an unlocking code (for Non-Members)."

Use Case Ends in: SUCCESS

Extensions:

Alternative for 1:

1a. "The User is already a Member."

1a.1. "The User can view their subscription details, renew their subscription, or cancel their subscription."

Use Case Ends in: SUCCESS

Alternative for 2:

2a. "The User's credit card is declined."

2a.1. "The system informs the User that the payment failed."

Use Case Ends in: FAILURE

Alternative for 3:

3a. "The system fails to generate a BIXI key or unlocking code."

3a.1. [HandleKeyGenerationFailure] "The system attempts to generate the key or code again."

3a.2. "If the key or code cannot be generated, the system logs the error and informs the User."

Use Case Ends in: FAILURE

Exception for (1-4):

(1-4)a.^ timeout:30s "The system experiences a communication failure."

(1-4)a.1. {NETWORK_EXCEPTION::CommunicationFailure} "The system attempts to reconnect."

Use Case Ends in: FAILURE

Exception for (1-4):

(1-4)b. {SOFTWARE_EXCEPTION::SubscriptionManagementSystemFailure} "The SubscriptionManagementSystem fails."

(1-4)b.1. [HandleSubscriptionManagementSystemFailure] "The system attempts to use an alternative method for subscription management."

Use Case Ends in: DEGRADED

4. Manage Stations

Use Case: ManageStations

Scope: BIXISystem

Level: SUMMARY

Intention: "BIXI staff intends to manage BIXI stations."

Multiplicity: "Many staff members can manage stations simultaneously."

Primary Actor: HUMAN::BIXIStaff::1..*

Secondary Actor:

STATION::BikeStation::1..*

SOFTWARE::StationManagementSystem::1..1

Main Success Scenario:

"The BIXIStaff logs into the StationManagementSystem."

[SelectStation] "The BIXIStaff selects a BikeStation."

[ManageStation] "The BIXIStaff performs actions such as adding, removing, or configuring the BikeStation."

Use Case Ends in: SUCCESS

Extensions:

Alternative for 1:

1a. "The BIXIStaff fails to log into the StationManagementSystem."

1a.1. "The system informs the BIXIStaff that the login failed."

Use Case Ends in: FAILURE

Alternative for 2:

2a. "The BIXIStaff fails to select a BikeStation."

2a.1. "The system informs the BIXIStaff that the selection failed."

Use Case Ends in: FAILURE

Alternative for 3:

3a. "The system fails to perform the requested action on the BikeStation."

3a.1. [HandleStationManagementFailure] "The system attempts to perform the action again."

3a.2. "If the action cannot be performed, the system logs the error and informs the BIXIStaff."

Use Case Ends in: FAILURE

Exception for (1-3):

(1-3)a.^ timeout:30s "The system experiences a communication failure."

(1-3)a.1. {NETWORK_EXCEPTION::CommunicationFailure} "The system attempts to reconnect."

Use Case Ends in: FAILURE

Exception for (1-3):

(1-3)b. {SOFTWARE_EXCEPTION::StationManagementSystemFailure} "The StationManagementSystem fails."

(1-3)b.1. [HandleStationManagementSystemFailure] "The system attempts to use an alternative method for station management."

Use Case Ends in: DEGRADED

5. Monitor System Health

Use Case: MonitorSystemHealth

Scope: BIXISystem

Level: SUMMARY

Intention: "The system intends to monitor the health of its components."

Multiplicity: "The system monitors the health of all components continuously."

Primary Actor: None

Secondary Actor:

STATION::BikeStation::1..*

BIKE::Bike::1..*

SOFTWARE::SystemMonitoringSystem::1..1

Main Success Scenario:

"The SystemMonitoringSystem collects data from all components (e.g., bikes, docks, pay stations)."

[AnalyzeData] "The SystemMonitoringSystem analyzes the data to identify potential issues."

[GenerateAlerts] "The SystemMonitoringSystem generates alerts for any critical issues."

Use Case Ends in: SUCCESS

Extensions:

Alternative for 1:

1a. "The SystemMonitoringSystem fails to collect data from a component."

1a.1. [HandleDataCollectionFailure] "The system attempts to collect the data again."

1a.2. "If the data cannot be collected, the system logs the error and continues."

Use Case Ends in: DEGRADED

Alternative for 2:

2a. "The SystemMonitoringSystem fails to analyze the data."

2a.1. [HandleDataAnalysisFailure] "The system attempts to analyze the data again."

2a.2. "If the data cannot be analyzed, the system logs the error and continues."

Use Case Ends in: DEGRADED

Alternative for 3:

3a. "The SystemMonitoringSystem fails to generate alerts."

3a.1. [HandleAlertGenerationFailure] "The system logs the error and continues."

Use Case Ends in: DEGRADED

Exception for (1-3):

(1-3)a.^ timeout:30s "The system experiences a communication failure."

(1-3)a.1. {NETWORK_EXCEPTION::CommunicationFailure} "The system attempts to reconnect."

Use Case Ends in: FAILURE

Exception for (1-3):

(1-3)b. {SOFTWARE_EXCEPTION::SystemMonitoringSystemFailure} "The SystemMonitoringSystem fails."

(1-3)b.1. [HandleSystemMonitoringSystemFailure] "The system attempts to use an alternative method for system monitoring."

Use Case Ends in: DEGRADED

use case: IdentifyUserType

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The system identifies the User as a Member or Non-Member."

Multiplicity: "The system can identify many users."

Primary Actor: None

Main Success Scenario:

"The system checks the User's subscription status."

Use Case Ends in: SUCCESS

use case: SelectBike

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The User selects a Bike from the BikeStation."

Multiplicity: "The User can select many Bikes."

Primary Actor: None

Main Success Scenario:

"The User chooses a Bike from the available Bikes."

Use Case Ends in: SUCCESS

use case: UnlockBike

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The system unlocks the Bike."

Multiplicity: "The system can unlock many Bikes."

Primary Actor: None

Main Success Scenario:

"The system sends a signal to the BikeDock to unlock the Bike."

Use Case Ends in: SUCCESS

use case: PurchaseAccess

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The User purchases 1-day, 3-day, or one-way access at the PayStation."

Multiplicity: "The User can purchase many accesses."

Primary Actor: None

Main Success Scenario:

1. "The User selects the desired access type."

2. "The User pays using a credit card."

Use Case Ends in: SUCCESS

use case: LockBike

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The system locks the Bike."

Multiplicity: "The system can lock many Bikes."

Primary Actor: None

Main Success Scenario:

"The system sends a signal to the BikeDock to lock the Bike."

Use Case Ends in: SUCCESS

use case: SelectSubscription

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The User selects a subscription type."

Multiplicity: "The User can select many subscription types."

Primary Actor: None

Main Success Scenario:

"The User chooses a subscription type from the available options."

Use Case Ends in: SUCCESS

use case: PurchaseSubscription

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The User purchases the subscription using a credit card."

Multiplicity: "The User can purchase many subscriptions."

Primary Actor: None

Main Success Scenario:

"The User provides their credit card information."

"The system processes the payment."

Use Case Ends in: SUCCESS

use case: SelectStation

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The BIXIStaff selects a BikeStation."

Multiplicity: "The BIXIStaff can select many BikeStations."

Primary Actor: None

Main Success Scenario:

"The BIXIStaff chooses a BikeStation from the list of available stations."

Use Case Ends in: SUCCESS

use case: ManageStation

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The BIXIStaff performs actions such as adding, removing, or configuring the BikeStation."

Multiplicity: "The BIXIStaff can perform many actions on a BikeStation."

Primary Actor: None

Main Success Scenario:

"The BIXIStaff selects the desired action."

"The system performs the action on the BikeStation."

Use Case Ends in: SUCCESS

use case: AnalyzeData

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The SystemMonitoringSystem analyzes the data to identify potential issues."

Multiplicity: "The system can analyze data from many components."

Primary Actor: None

Main Success Scenario:

"The system analyzes the collected data using predefined rules and algorithms."

Use Case Ends in: SUCCESS

use case: GenerateAlerts

Scope: BIXISystem

Level: SUB_FUNCTION

Intention: "The SystemMonitoringSystem generates alerts for any critical issues."

Multiplicity: "The system can generate many alerts."

Primary Actor: None

Main Success Scenario:

"The system sends alerts to the appropriate personnel (e.g., BIXIStaff) for any critical issues identified."

Use Case Ends in: SUCCESS

handler use case: HandleBikeUnlockFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle Bike unlock failure."

Multiplicity: "The system can handle unlock failures for many Bikes."

Primary Actor: None

Contexts and Exceptions:

RentBike {HARDWARE_EXCEPTION::BikeDockFailure}

RentBike {SOFTWARE_EXCEPTION::BikeUnlockFailure}

Main Success Scenario:

"The system attempts to unlock the Bike again."

"If the Bike cannot be unlocked, the system logs the error and informs the User."

Use Case Ends in: FAILURE

handler use case: HandleBikeDockFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle BikeDock failure."

Multiplicity: "The system can handle BikeDock failures for many BikeDocks."

Primary Actor: None

Contexts and Exceptions:

RentBike {HARDWARE_EXCEPTION::BikeDockFailure}

ReturnBike {HARDWARE_EXCEPTION::BikeDockFailure}

Main Success Scenario:

"The system attempts to use an alternative BikeDock."

Use Case Ends in: DEGRADED

handler use case: HandleBikeLockFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle Bike lock failure."

Multiplicity: "The system can handle lock failures for many Bikes."

Primary Actor: None

Contexts and Exceptions:

ReturnBike {HARDWARE_EXCEPTION::BikeDockFailure},

ReturnBike {SOFTWARE_EXCEPTION::BikeLockFailure}

Main Success Scenario:

"The system attempts to lock the Bike again."

"If the Bike cannot be locked, the system logs the error and informs the User."

Use Case Ends in: FAILURE

handler use case: HandleKeyGenerationFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle BIXI key or unlocking code generation failure."

Multiplicity: "The system can handle key generation failures for many users."

Primary Actor: None

Contexts and Exceptions:

ManageSubscriptions {SOFTWARE_EXCEPTION::KeyGenerationFailure}

Main Success Scenario:

"The system attempts to generate the key or code again."

"If the key or code cannot be generated, the system logs the error and informs the User."

Use Case Ends in: FAILURE

handler use case: HandleSubscriptionManagementSystemFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle SubscriptionManagementSystem failure."

Multiplicity: "The system can handle SubscriptionManagementSystem failures for many users."

Primary Actor: None

Contexts and Exceptions:

ManageSubscriptions {SOFTWARE_EXCEPTION::SubscriptionManagementSystemFailure}

Main Success Scenario:

"The system attempts to use an alternative method for subscription management."

Use Case Ends in: DEGRADED

handler use case: HandleStationManagementFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle StationManagementSystem failure."

Multiplicity: "The system can handle StationManagementSystem failures for many stations."

Primary Actor: None

Contexts and Exceptions:

ManageStations {SOFTWARE_EXCEPTION::StationManagementSystemFailure}

Main Success Scenario:

"The system attempts to use an alternative method for station management."

Use Case Ends in: DEGRADED

handler use case: HandleDataCollectionFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle data collection failure."

Multiplicity: "The system can handle data collection failures for many components."

Primary Actor: None

Contexts and Exceptions:

MonitorSystemHealth {HARDWARE_EXCEPTION::ComponentCommunicationFailure}

Main Success Scenario:

"The system attempts to collect the data again."

"If the data cannot be collected, the system logs the error and continues."

Use Case Ends in: DEGRADED

handler use case: HandleDataAnalysisFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle data analysis failure."

Multiplicity: "The system can handle data analysis failures for many components."

Primary Actor: None

Contexts and Exceptions:

MonitorSystemHealth {SOFTWARE_EXCEPTION::DataAnalysisFailure}

Main Success Scenario:

"The system attempts to analyze the data again."

"If the data cannot be analyzed, the system logs the error and continues."

Use Case Ends in: DEGRADED

handler use case: HandleAlertGenerationFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle alert generation failure."

Multiplicity: "The system can handle alert generation failures for many components."

Primary Actor: None

Contexts and Exceptions:

MonitorSystemHealth {SOFTWARE_EXCEPTION::AlertGenerationFailure}

Main Success Scenario:

"The system logs the error and continues."

Use Case Ends in: DEGRADED

handler use case: HandleSystemMonitoringSystemFailure

Scope: BIXISystem

Level: SUMMARY

Intention: "To handle SystemMonitoringSystem failure."

Multiplicity: "The system can handle SystemMonitoringSystem failures for many components."

Primary Actor: None

Contexts and Exceptions:

MonitorSystemHealth {SOFTWARE_EXCEPTION::SystemMonitoringSystemFailure}

Main Success Scenario:

"The system attempts to use an alternative method for system monitoring."

Use Case Ends in: DEGRADED