Class Diagram

Librarian
+addBookItem(): bool
+BlockMember(): bool
+unblockMember(): bool

Library
institution: String
address: String

+getAddress(): String

User
-UserNames: String
-UserID: int
-UserEmail: String
-Password: String
-PhoneNumber: String
-dateOfMembership: date
-totalBooksTaken: int

-getTotalBooksTaken(): int
+setUserID(): int
-getUserEmail(): String
-SetPassword(): String
+UserNames(): String

BorrowedBook
-ID: int
-bookID: String
+borrowedDate: date
+returnDate:date
+status: String

+setBookID(): String
- getStatus(): String
-setID(): int

Reservation
+reservationID: int
-reservationDate: date
+returnDate: date
+status : String
+bookID: String

-getReturnDate(): date
+setreservationDate(): date

LibraryCard
-cardNumber: long
-issueDate: String
-barcode: String
-status: String

+setStatus(): String
+getIssueDate(): String

Catalog
-creationDate: date
-totalBooks: int
-bookTitles: string
-bookSubject: string
-bookAuthor: string

+updateCatalog(): bool

Book
+bookID: String
-title: string
-author: string
-type: string
-publicationYear: year

+getTitle(): string
+getType: string

Notification
notificationID: int
createdOn: date
content: string
userEmail: String
textMessage: String

+sendNotification(): bool
+setContent(): String
+getContent(): String
-getCreatedOn(): date

FineTransation
fineID: int
userID: int
creationDate: date
amount: double
paymentMethod: String
fineDate: date

-initiateTransaction(): double
+setAmount(): double
+getAmount(): double
+getPaymentMethod(): String

Object Diagram

Librarian:StaffMember
+addBookItem= True/False
+BlockMember= True/False
+unblockMember= True/False

Library: NUST
institution = "NUST"
address= "New York Ex 33'

User: Ruhepo
UserNames= "Ujama Ruhepo L "
UserID= 210112608
UserEmail= "rujama@gmail.com"
Password= "Pa$$word"
PhoneNumber= "0811234567"
dateOfMember=11/04/2020
totalBooksTaken=5

BorrowedBook:Borrowed
ID=0011
bookID= "SNB000131"
barcode="221Y493A123"
borrowed=11/04/2022
dueDate=25/04/2022

LibraryCard:LibraryCard
cardNumber= "210112608"
issueDate= 28/02/2019
barcode= "221Y493A123"
status= "Active"

Catalog:Catalog
publicationYear=2006
totalBooks=5 000000
bookSubject="Science Fiction"
bookAuthor="Peter Stone"
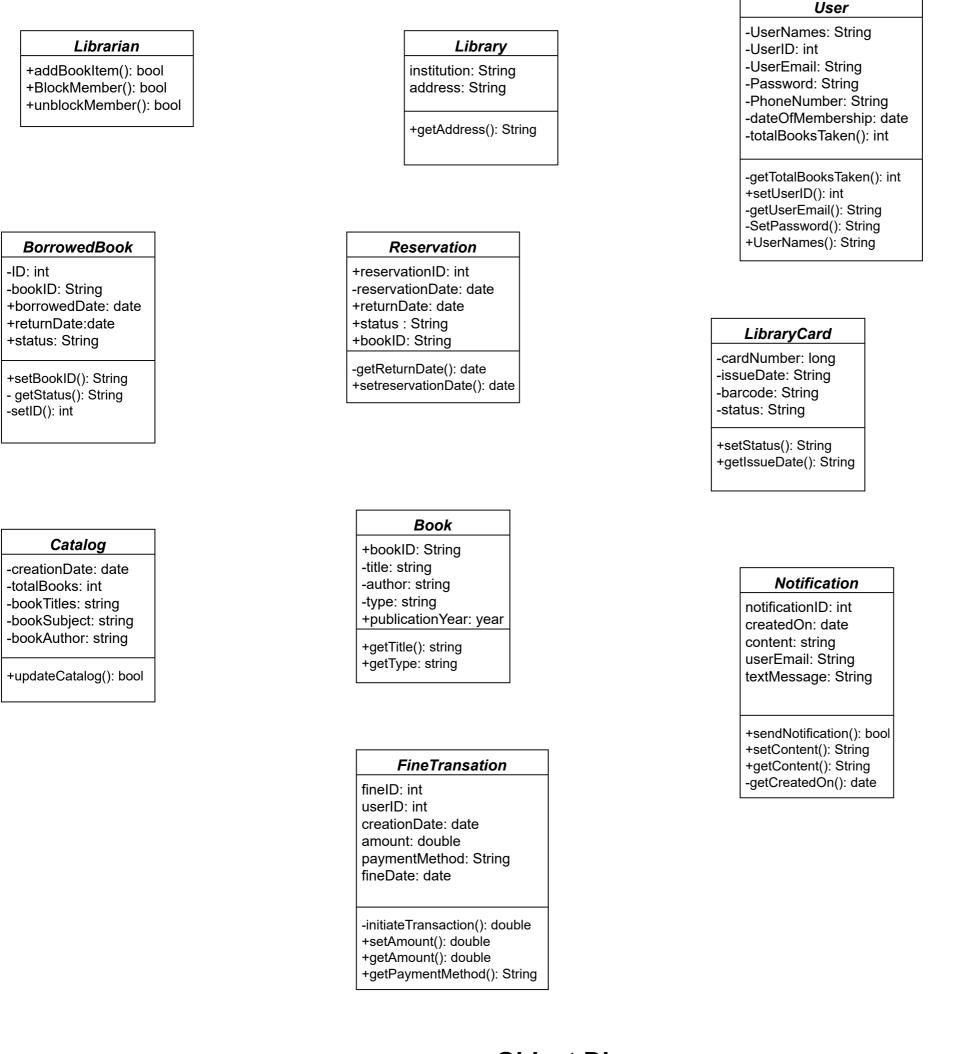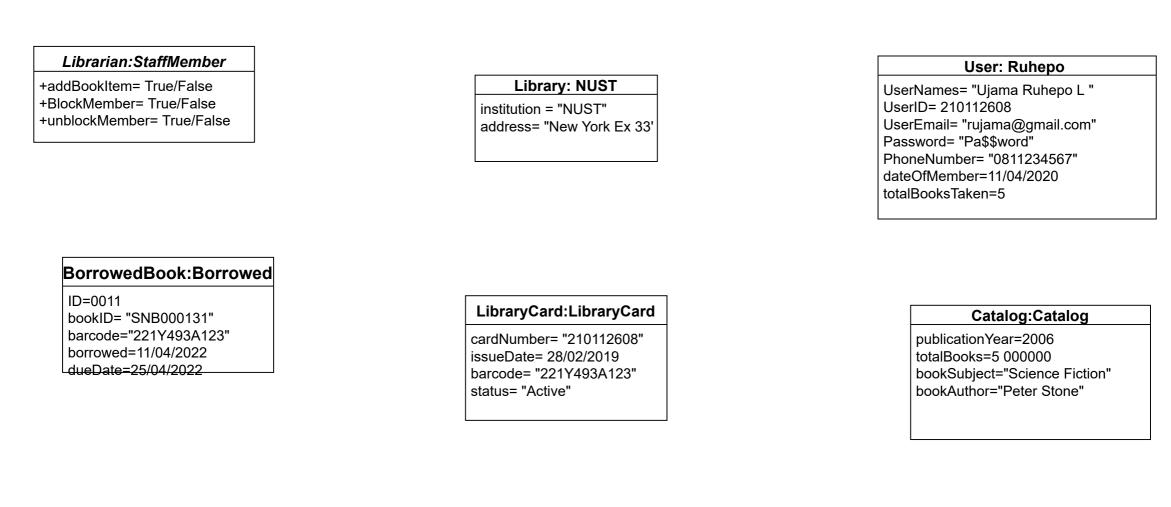
Reservation:Reservation
+reservationID= 00001
-creationDate = 05/04/2022
+returnDate= 12/04/2022
status= "processing"
bookID = SNB000131"

Book:The Fault in Our Stars
bookID= "SNB000131"
title= "The Fault in Our Stars"
author= "Peter Stone"
type= "Fiction"
publicationYear= 2006

Notification:Notification
notificationID= 40911
createdOn= 11/04/2022
content= "return bookItem to the library"
email= 220116699@students.nust.na
textmessage= "Good day you are reminded to retur
the item or collect the item."

FineTransaction: Fine
fineID= 1101
userID=220116608
craetionDate= 11/04/2022
amount=N$50.00
paymentMethod= "Cash only"
fineDate= 12/04/2022

UML Diagram

Library
name: string
address: Address

+getAddress(): Address

Librarian
+addBookItem(): bool
+BlockMember(): bool
+unblockMember(): bool

User
-UserNames: String
-UserID: int
-UserEmail: String
-Password: String
-PhoneNumber: String
-dateOfMembership: date
-totalBooksTaken: int

-getTotalBooksTaken(): int
+setUserID(): int
-getUserEmail(): String
-SetPassword(): String
+UserNames(): String

Extends

Extends

Book
+bookID: String
-title: string
-author: string
-type: string
-publicationYear: year

+getTitle(): string
+getType: string

BorrowedBook
-ID: int
-bookID: String
+borrowedDate: date
+returnDate:date
+status: String

+setBookID(): String
- getStatus(): String
-setID(): int

LibraryCard
-cardNumber: long
-issueDate: String
-barcode: String
-status: String

+setStatus(): String
+getIssueDate(): String

Catalog
-creationDate: date
-totalBooks: int
-bookTitles: string
-bookSubject: string
-bookAuthor: string

+updateCatalog(): bool

Reservation
+reservationID: int
-reservationDate: date
+returnDate: date
+status : String
+bookID: String

-getReturnDate(): date
+setreservationDate(): date

Notification
notificationID: int
createdOn: date
content: string
userEmail: String
textMessage: String

+sendNotification(): bool
+setContent(): String
+getContent(): String
-getCreatedOn(): date

FineTransation
fineID: int
userID: int
creationDate: date
amount: double
paymentMethod: String
fineDate: date

-initiateTransaction(): double
+setAmount(): double
+getAmount(): double
+getPaymentMethod(): String

Extends