ER Diagram

**Writes**

**Insert**

**Delete****

**Search****

**Book**

**Update****

Shopkeeper

**Author**

Data Flow Diagram

New Book

Add Book Detail

Search Book Detail

Search Book

Book Shopkeeper

Book Data Base

Delete Book

Update Book Detail

Update book

Delete Book

Flow Chart (Login Module)

Start S1

Input *u\_Usernam*e and *u\_Password*

Make Connection to Database

Execute ‘select \* from shopkeeper’

Get *Usernam*e = getString(username) and *Password* = getString(password)

Close connection to database

If u\_U*sername = username & u\_Password = password*

Login Successful. Open Insert Window

YES

NO

L1a

L1

L1a

L1

If u\_U*sername = null and u\_Password = null*

Login Denied. Display message ‘Illegal Username & Password’

YES

NO

If u\_U*sername = null or u\_Password = null*

Login Denied. Display message ‘Illegal Username or Password’

YES

NO

Login Denied. Display message ‘Invalid login credentials

End E1

Flow Chart (Change Button Module)

Start S2

Input *u\_Usernam*e and *u\_Password*

Make Connection to Database

Execute ‘select \* from shopkeeper’

Get *Usernam*e = getString(username) and *Password* = getString(password)

Close connection to database

If u\_U*sername = username & u\_Password = password*

Login Successful. Open Change Password Window

YES

NO

L2a

L2

L2a

a

L2

If u\_U*sername = null and u\_Password = null*

Login Denied. Display message ‘Illegal Username & Password’

YES

NO

If u\_U*sername = null or u\_Password = null*

Login Denied. Display message ‘Illegal Username or Password’

YES

NO

Login Denied. Display message ‘Invalid login credentials

End E2

Flow Chart (Change Password Module)

Start S3

Input *un*=*New username p1=New password p2=confirm New password*

If *p1*=*p2*

Show error message ‘*Confirm password didn’t match with new password*’

NO

YES

Make Connection to Database

Execute ‘*select \* from shopkeeper*’

Get *olduser* = *getString*(*username*)

L3a

L3

End

L3a

Execute ‘*update shopkeeper set password = p1 where username= olduser*’

If *un* = null

YES

Execute ‘*delete from shopkeeper where username = olduser*’

L3

NO

Execute ‘*insert into shopkeeper (username, password) values (un,p1)*’

Close Connection to database

Close Connection to database

Show message dialogue ‘Password changed’

Show message dialogue ‘Username and password changed’

End E3

Flow Chart (Insertion Module)

Initialize *‘b=false’* Get *book\_isbn* from user as *bisbn*=*book\_isbn*

Make connection to Database

Execute ‘select \* from *BOOK* where *book\_isbn* = *bisbn’*

Show message ‘Book already exists’

If data found?

YES

NO

Close connection to Database

Set *b=true*

Set *b=false*

Get rest book details like *bt*= *title*, *an*=*author* , *pn* = *publisher , p=price, sp=stock*

Close connection to Database

L4

Check validations of entered details (like null values, format of details as number and texts, invalid inputs)

L4

*If b=true*

If Validation successful?

NO YES

Show error message ‘invalid entry’

YES

Make Connection to Database

Execute ‘select \* from *AUTHOR* where *author\_name* = *an’*

If data found?

NO

Execute ‘insert into *AUTHOR values (--author details--)’*

YES

Execute ‘insert into *BOOK values (--book details--)’*

Show message dialog *‘Values saved’*

Close Connection to Database

Flow Chart (Updation Module)

Get *book\_isbn* from user as *bisbn*=*book\_isbn*

Get rest book details like *bt*= *title*, *an*=*author* , *pn* = *publisher , p=price, sp=stock*

Check validations of entered details (like null values, format of details as number and texts, invalid inputs)

If Validation successful

NO

Show error message ‘invalid entries’

YES

Connect to Database

Execute ‘select \* from *AUTHOR* where *author\_name* = *an’*

L5a

L5

If data found?

L5a

L5

Execute ‘insert into *AUTHOR values (--author details--)’*

NO

YES

Execute ‘update *BOOK set --book detail--‘*

Close Connection to database

Show message dialog ‘values updated’

Flow Chart (Deletion Module)

Initialize row=-1

Get row number ‘*row=getSelectedRow()*’

If row=-1

Show error message ‘*select a row first*’

YES

NO

Get ISBN number from selected row ‘*bisbn=getValue()*’

Make connection to database

Execute ‘*delete from* ***BOOK*** *where book\_isbn=bisbn*’

Remove selected row from table ‘removeRow(row)’

Flow Chart (Searching Module)

Start S7

Input *Searching Method* and *ISBN* of book

If *isbn=null*

NO

If *Searching Method*= Binary Search

If *Searching Method*= Linear Search

Linear and Binary Searching of Book

NO NO

If Book is found

YES YES

NO

Binary Searching of Book

Linear Searching of Book

YES

Display Details of Book

Display N/F encountered

If Book is found

NO

Display Time Taken by both searching techniques in showing output separately

YES

L74

L72

Display N/F encountered

Display Details of Book

L73

Compare between both techniques and mark which one is faster

L71

L71

L72

L74

L73

Display Time Taken in showing output

End E7

Flow Chart (Linear Searching Module)

Get startup system time ‘stt=nanoTime()’

Make connection to database

Execute ‘ResultSet rs= executeQuery( select \* from book)’

If rs.next()

no

yes

Get ISBN number ‘*bisbn=getLong(book\_isbn)*’

If bisbn=isbn

L82

NO

yes

L81

L82

L81

Display details of book found

If flag=1

Exit from loop ‘break’

Display processing time

Get total processing time ’(edt-stt)/1000000’

Get current system time ‘edt=nanoTime()’

Get all tuple data from *ResultSet* *rs*

Flag=1

Get time taken and display with error message ’not\_found’

no

yes

End E8

Flow Chart (Binary Searching Module)

Get startup system time ‘stt=nanoTime()’, set b= false, size=0, min=0, max=0

Make connection to database

Execute ‘ResultSet rs= executeQuery (select \* from **Book** order by book\_isbn)’

If rs.next()

no

yes

*size++*

*max=size*

If size!=0

L91

yes YES no

L91a

Display message ‘there is no book in database’

Put ResultSet cursor to first line of table *‘rs.beforeFirst()’*

L91

If min<=max

yes

no

mid=(min+max)/2

If mid=0

yes

mid=1

no

Jump to mid’th row of table ‘rs.absolute(mid)’

If isbn=rs.getLong (book\_isbn)

no

yes

Set b=true

L93

L92

L94

L95

L95a

L93

L94

L92

L95

If isbn< ’rs.getLong (book\_isbn)’

Set all tuple data from *ResultSet rs to UI*

no

Display total processing time ‘(edt-stt)/1000000’

Get current system time ‘edt=nanoTime()’

yes

min=mid+1

max=mid-1

If max=0

no

yes

If b=false

Exit from loop ‘break’

Get system current time ‘ttb=nanoTime()’

no yes

Display processing time ‘(ttb-stt)/1000000’

Display error message ‘Not\_found’

End E9