

Hispanic Digital Archive

System and Software Architecture Description (SSAD)

TEAM 5

Erin Ballew
Cyrus Fakharzadeh
Deepak Ganesan
Kam Wing Lo
Nikunj Mehta

Version control:

| Date | Author | Changes | Version |
|---------------------|--------------|---|---------|
| 10/24/1998 11:40 PM | Nikunj Mehta | Initial Draft based on CS 577a guidelines | 0.1 |
| 10/30/1998 5:00 PM | Nikunj Mehta | Included walkthrough recommendations added behavior model, simplified component model | 0.2 |
| 11/03/1998 6:40 PM | Nikunj Mehta | Added operations and object models | 0.3 |
| 11/4/1998 1:30 PM | Nikunj Mehta | CDL, LCO Package | 1.0 |
| 11/29/1998 9:40 PM | Nikunj Mehta | LCA Draft | 1.1 |
| 12/5/1998 11:30 AM | Nikunj Mehta | According to modified guidelines | 1.2 |
| 12/7/1998 1:30 PM | Nikunj Mehta | Incorporated Review Comments | 1.3 |
| 12/13/1998 2:00 PM | Nikunj Mehta | Incorporated ARB comments, LCA package | 2.0 |
| 02/03/1999 11:00 PM | Deepak G | Updated for Rebaseline | 2.1 |
| 02/23/1999 2:30 AM | Deepak G | RLCA package | 3.0 |
| 03/13/1999 5:00 PM | Nikunj Mehta | Updated object specifications for Zaguán | 3.1 |
| 03/15/1999 3:00 PM | Nikunj Mehta | Updated architecture description | 3.2 |
| 03/23/1999 1:00 PM | Deepak G | Updated Architecture Description for Mayordomo | 3.3 |
| 03/24/1999 8:30 PM | Nikunj Mehta | Refined Data model and added index classes | 3.4 |

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System and Software Architecture Description (SSAD)

1 Introduction

The System and Software Architecture document transforms the Hispanic Digital Archive (HDA) system requirements into a realizable system that can be constructed within the constraints of the CS577 development environment.

1.1 Purpose

This document describes the design architecture required to construct the software components of the HDA. It provides the blueprint of this system in the form of models and specifications of components and the interaction among these components. It provides the high-level design architecture of the system.

This document is intended for use by developers and assessment teams to construct either a working system or a prototype for HDA. It would serve as the starting point for a detailed design of the system. A domain expert can also use this document to validate against the system requirements. The customer can also use this document for an understanding of the system design.

1.2 References

CS 577a - Guidelines for the LCO and LCA deliverables for MBASE
Hungarian Notation – [The Ivory Smokestack](#)
HDA Project Documentation Template
Operational Concept Definition ver 1.1
System and Software Requirements Definition ver 1.1
Meeting with Dennis Smith, IBM Digital Library consultant on November 17, 1998.
Rational Rose for UML based analysis and design
Prototype developed by ISD using IBM Digital Library – ERSort

2 Architectural Analysis

The intent of this analysis is to identify the overall software structure and assign functionality to individual structure elements called components.

2.1 Scope of the system

The Hispanic Digital Archive has been conceived to provide wide and easy access to a wealth of Latin American, owned by the Boeckmann Center in the University of Southern California. The collections contain items in a variety of forms and comprise primarily of handwritten and printed literature and to a small extent, electronic media.

2.2 Component Model

Candidate components are identified on the basis of the entity model [OCD 2.4]. HDA refers to the Hispanic Digital Archive. The following are identified as components:

1. Hispanic_Digital_Archive
2. HDA_Material
3. HDA_Administrator
4. HDA_Patron_Interface

COM-01 HDA_Material

| | | |
|-------------------------|--|--|
| <i>Defining Quality</i> | Digitized information on Hispanic material of the Boeckmann Center. | |
| <i>Attributes</i> | a) Location b) Box number c) Folder number d) Item number e) Record Number f) Type g) Title h) Creator i) Date j) Description k) Country | l) Language m) Collection n) Contributor o) Publisher p) Relation q) Subject r) Resource Identifier s) Coverage t) Format u) Source v) Rights Management |
| <i>Behaviors</i> | Display information Display images | |
| <i>Relationships</i> | a) Maintains <REL-02> b) Stores <REL-01> | |
| <i>Roles</i> | Viewed item { view <patron_brief_view>, view <patron_detail_view>, view<patron_imge_view>,view <administrator_view> } | |
| <i>State Groups</i> | Pending, Approved | |
| <i>Constraints</i> | <i>Candidate Key</i> | Item Id (<i>Not from domain</i>) |
| | <i>Cardinality</i> | → 1 Hispanic_Digital_Archive → n HDA_Manager → n HDA_Patron_Interface |
| <i>Relates to</i> | Entity E-03 of OCD 2.4 | |

Attribute ATR-01

| | | |
|-------------------------|---|----------|
| <i>Name</i> | Item Type | |
| <i>Defining Quality</i> | The item type determines the relevance of various fields describing an archive item | |
| <i>Accessibility</i> | Readable, Settable | |
| <i>Scope</i> | Unique, shared | |
| <i>Constraints</i> | <i>Initial Value</i> | Book |
| | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → n |

Attribute ATR-02

| | | |
|-------------------------|---|----------|
| <i>Name</i> | Collection | |
| <i>Defining Quality</i> | A group of items belonging to a logical grouping as determined by the Administrator | |
| <i>Accessible</i> | Readable, Settable | |
| <i>Scope</i> | Unique, shared | |
| <i>Constraints</i> | <i>Initial Value</i> | None |
| | <i>Modality</i> | Optional |
| | <i>Cardinality</i> | → n |

Attribute ATR-03

| | | |
|-------------------------|---|--|
| <i>Name</i> | Country | |
| <i>Defining Quality</i> | The geographical or political region where the item was originally created. | |
| <i>Accessible</i> | Readable, Settable | |
| <i>Scope</i> | Unique, shared | |

| | | |
|--------------------|----------------------|----------|
| <i>Constraints</i> | <i>Initial Value</i> | None |
| | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → n |

Attribute ATR-04

| | | |
|-------------------------|--|----------|
| <i>Name</i> | Language | |
| <i>Defining Quality</i> | The language in which the item has been created. If multiple languages are used, the primary language is used. | |
| <i>Accessible</i> | Readable, Settable | |
| <i>Scope</i> | Unique, shared | |
| <i>Constraints</i> | <i>Initial Value</i> | Spanish |
| | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → n |

Attribute ATR-05

| | | |
|-------------------------|--|--------------|
| <i>Name</i> | Location | |
| <i>Defining Quality</i> | The location of the item in the physical Archive administered by the Boeckmann Center. | |
| <i>Accessible</i> | Readable, Settable | |
| <i>Scope</i> | Unique | |
| <i>Constraints</i> | <i>Initial Value</i> | East Library |
| | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → n |

Relationship REL-01

| | | |
|-------------------------|---|----------|
| <i>Name</i> | Stores | |
| <i>Defining Quality</i> | The HDA_Material is stored by the Hispanic_Digital_Archive. | |
| <i>Accessibility</i> | Readable, Searchable, Modifiable. | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Optional |
| | <i>Cardinality</i> | → n |
| <i>Role names</i> | Inspected Item { Viewed, Retrieval Requested } | |

Relationship REL-02

| | | |
|-------------------------|--|----------|
| <i>Name</i> | Maintains | |
| <i>Defining Quality</i> | An administrator performs maintenance operations on items such as add, modify, delete. | |
| <i>Accessibility</i> | Settable | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Optional |
| | <i>Cardinality</i> | → n |
| <i>Role names</i> | Maintained Item: { Added, Deleted, Modified, Approved } | |

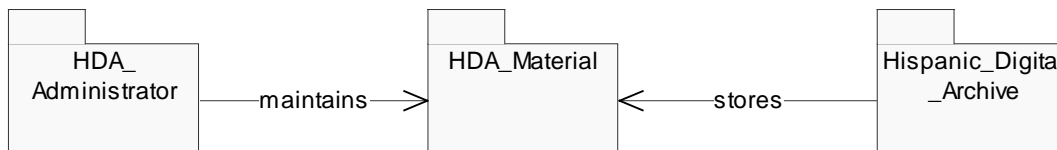


Figure 1 COM-01 HDA_Material

COM-02 *Hispanic_Digital_Archive*

| | | |
|-------------------------|---|--|
| <i>Defining Quality</i> | A vast collection of digitized Hispanic material being managed by the Boeckmann Center of the University of Southern California. | |
| <i>Attributes</i> | <ul style="list-style-type: none"> a) Item list b) Item type list c) Country list d) Location list e) Language list f) Collection list | |
| <i>Behaviors</i> | <ul style="list-style-type: none"> a) Stores items b) Locates items c) Provides a catalog of items d) Provides related resources e) Provides summary reports | |
| <i>Relationships</i> | <ul style="list-style-type: none"> a) Queries <REL-01> b) Updates <REL-02> c) Stores <COM -01 REL - 01> | |
| <i>Roles</i> | Archive_provider { Archive_Search_Engine<patron_search>, Archival <HDA_Material storage> } | |
| <i>State Groups</i> | Idle, Searching | |
| <i>Constraints</i> | <i>Dependencies</i> | HDA_Material |
| | <i>Cardinality</i> | <ul style="list-style-type: none"> → n HDA_Administrator → n HDA_Patron_Interface → n HDA_Material |
| | <i>Other</i> | <ul style="list-style-type: none"> Reliability [SSRD 3.1.1] Availability [SSRD 3.1.2] Serviceability [SSRD 3.1.3] Security [SSRD 3.2.1] Integrity [SSRD 3.2.2] Performance of item search [SSRD 3.4.1] Reusability [SSRD 3.6] |
| <i>Relates to</i> | Entity E-04 of OCD 2.4 | |

Relationship REL-01

| | | |
|-------------------------|--|----------|
| <i>Name</i> | Queries | |
| <i>Defining Quality</i> | A patron would use the archive to find out items of interest | |
| <i>Accessibility</i> | Readable | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Required |
| | <i>Cardinality</i> | 1 |
| <i>Role names</i> | Query sink: {Search sink, Browse sink} | |

Relationship REL-02

| | | |
|-------------------------|---|----------|
| <i>Name</i> | Updates | |
| <i>Defining Quality</i> | An administrator carries out updation of archive | |
| <i>Accessibility</i> | Readable, Settable | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Required |
| | <i>Cardinality</i> | 1 |
| <i>Role names</i> | <ul style="list-style-type: none"> TypeMaint: { Add, Modify, Delete } FieldOptionsMaint: { Add, Modify, Delete } RelatedResourceMaint: { Add, Modify, Delete } | |

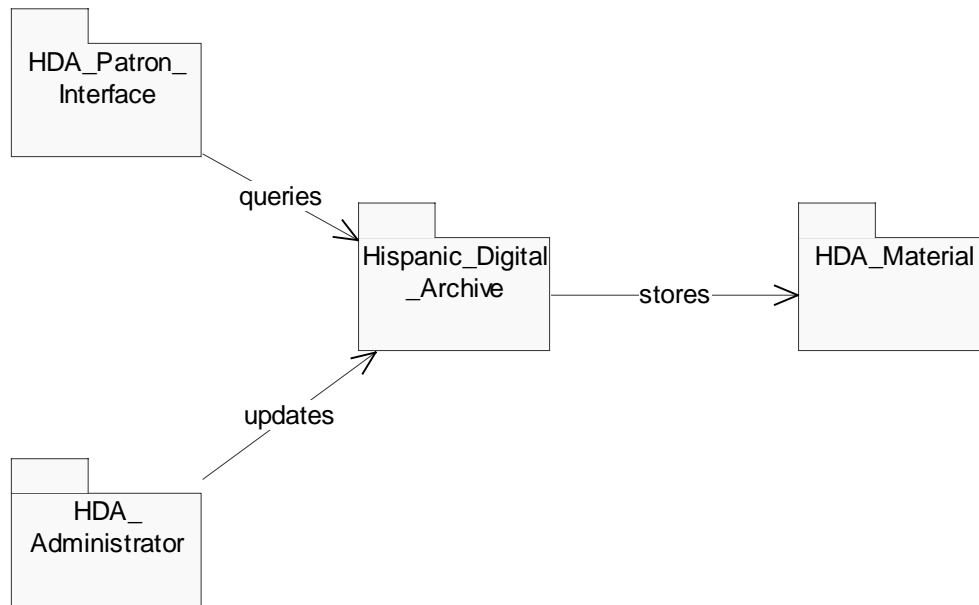


Figure 2 COM-2 Hispanic_Digital_Archive

COM-03 HDA_Administrator

| | | |
|-------------------------|--|--|
| <i>Defining Quality</i> | A person who performs management and maintenance operations on the archive and its items. | |
| <i>Attributes</i> | a) Name b) Credential | |
| <i>Behaviors</i> | a) Maintain archive b) Maintain items | |
| <i>Roles</i> | Level of Access {Manager, Operator } | |
| <i>State Groups</i> | Authenticated, Unauthenticated | |
| <i>Constraints</i> | Security [SSRD 3.2.1] Integrity [SSRD 3.2.2] Ease of Use [SSRD 3.3.1] Ease of Learning [SSRD 3.3.2] | |
| | <i>Dependencies</i> | HDA_Material Hispanic_Digital_Archive |
| | <i>Candidate Key</i> | Social Security Number |
| | <i>Cardinality</i> | → n HDA_Material |
| <i>Relates to</i> | Entity E-02 of OCD 2.4 | |

Relationship REL-01

| | | |
|-------------------------|---|----------|
| <i>Name</i> | Updates | |
| <i>Defining Quality</i> | Add and modify item information. | |
| <i>Accessibility</i> | Readable, Settable | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → n |
| <i>Dependency</i> | HDA_Material | |
| <i>Role names</i> | ItemMaint: {Add, Modify, Delete} ImageMaint {Add, Modify, Reorder} | |

Relationship REL-02

| | | |
|-------------------------|--|----------|
| <i>Name</i> | M archive | |
| <i>Defining Quality</i> | Add and delete related links information and archive maintenance information | |
| <i>Accessibility</i> | Readable, Settable | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → 1 |
| <i>Dependency</i> | HD_ Archive | |
| <i>Role names</i> | Type Maint: { Add, Modify, Delete } Field Options Maint: { Add, Modify } | |

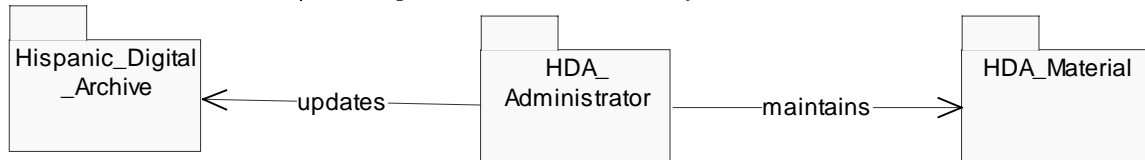


Figure 3 COM-03 HDA_Administrator

COM-04 HDA_Patron_Interface

| | | |
|-------------------------|--|-----------------------------------|
| <i>Defining Quality</i> | A person who is interested in using the Hispanic literature. | |
| <i>Attributes</i> | a) | Name |
| | b) | Email address |
| <i>Behaviors</i> | a) | Request advance retrieval of item |
| | b) | Use related links |
| <i>Relationships</i> | a) Queries <REL-01> | |
| <i>Roles</i> | Inspector, of search archive | |
| | Requestor, of advance retrieval and item e-mail | |
| <i>State Groups</i> | See figure 10 | |
| <i>Constraints</i> | Network Bandwidth Usage [3.4.2] | |
| | Portability [SSRD 3.5] | |
| <i>Dependencies</i> | a) | Item |
| | b) | Archive |
| <i>Candidate Key</i> | User profile | |
| <i>Cardinality</i> | → 1 | Hispanic_Digital_Archive |
| | → n | HDA_Material |

Relationship REL-01

| | | |
|-------------------------|--|----------|
| <i>Name</i> | Queries | |
| <i>Defining Quality</i> | A patron would use the archive to find out items of interest, request their retrieval, or request item by email. | |
| <i>Accessibility</i> | Readable, Fixed | |
| <i>Scope</i> | Shared | |
| <i>Constraints</i> | <i>Modality</i> | Required |
| | <i>Cardinality</i> | → 1 |
| <i>Role names</i> | Query source: { Search, Browse } | |
| | Request Sink: { E-mail, Request } | |
| <i>Dependency</i> | Hispanic_Digital_Archive | |

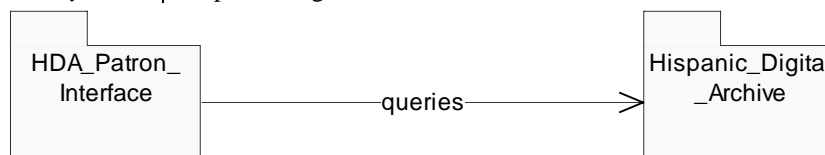


Figure 4 COM - 04 HDA_Patron_Interface

The overall component diagram is shown below.

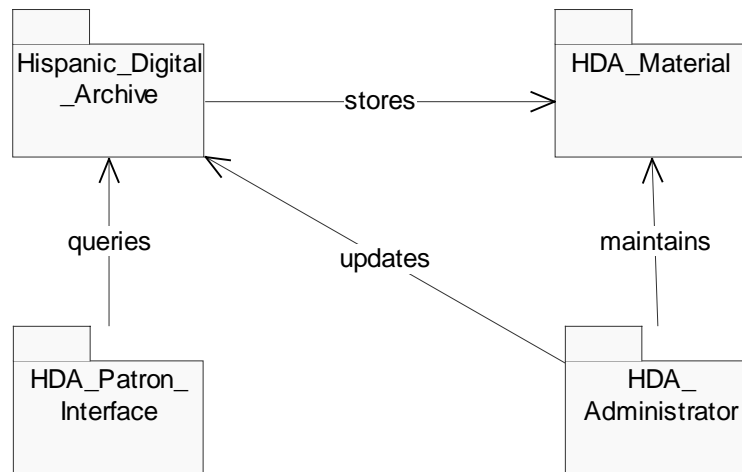


Figure 5 Component Model

2.3 Behavior Model

This section describes the expected behavior of the system and its interaction with its users. It is described using scenarios and use cases.

2.3.1 Archive administrator subsystem

The responsibilities of the administrator subsystem are [OCD 3.3] [SSRD 2.3]:

- SR - 1 Maintain item Details
 - BH-1 Administrator adds an item <event> (OCD SR-05, SSRD RQ-05)
 - BH-2 Administrator deletes archive item <event>(OCD SR-05, SSRD RQ-06)
 - BH-3 Administrator modifies archive item <event>(OCD SR-05, SSRD RQ-07)
 - BH-4 Administrator adds image <event> (OCD SR-05, SSRD RQ-09, RQ-13)
 - BH-5 Administrator deletes image <event>(OCD SR-05, SSRD RQ-10)
 - BH-6 Administrator Rearranges image <event>(OCD SR-05, SSRD RQ-11)
 - BH-7 Administrator watermarks image <event>(OCD SR-05, SSRD RQ-14)
 - BH-8 Administrator verifies archive item updates <event > (OCD SR-05, SSRD RQ-12)
 - BH-9 Administrator prints item summary report <event>(OCD SR-05, SSRD RQ-15)
- SR - 2 Maintain types
 - BH-10 Administrator adds item type <event>(OCD SR-05, SSRD RQ-02)
 - BH-11 Administrator deletes item type <event> (OCD SR-05, SSRD RQ-03)
- SR - 3 Maintain item field options
 - BH-12 Administrator adds a field option <event>(OCD SR-05, SSRD RQ-08)
 - BH-13 Administrator deletes a field option <event> (OCD SR-05, SSRD RQ-08)
- SR - 4 Validate administrator <policy>
 - BH-14 Validate administrator <algorithm> (OCD SR-04, SSRD RQ-01)
 - BH-15 Manager adds Operator <event>(OCD SR-04, SSRD RQ-16)
 - BH-16 Manager deletes Operator <event>(OCD SR-04, SSRD RQ-16)
 - BH-17 Manager modifies Operator <event>(OCD SR-04, SSRD RQ-17, RQ-16)
- SR - 5 Locate item for maintenance <policy>
 - BH-18 Search item <algorithm> (OCD SR-01, SSRD RQ-05)
- SR - 6 Provide Help
 - BH - 19 Provide context related help (OCD SR-04, SSRD RQ-18)

Scenario SC-01

| | |
|-----------------------|---|
| <i>Name</i> | Maintain items |
| <i>Trigger</i> | Administrator issues command – maintain archive items |
| <i>Preconditions</i> | Administrator logged in as manager for all operations except MODIFY, for MODIFY and ADD as operator. The scenario SC-4 has executed before this one. |
| <i>Postconditions</i> | Added items are not immediately available to users, they are kept pending for manager’s approval. Verified items are available to patrons, deleted items are removed from the archive, and modifications are available to the patrons after archive is updated. |
| <i>Inputs</i> | Choice of operation: ADD, MODIFY, DELETE, VERIFY, SUMMARY, QUIT For ADD - Item Type, Item Identification, Item, Images, Description For MODIFY – Item selection, item modification information, image order For DELETE – Item selection For VERIFY – Item selection For PRINT – nil |
| <i>Outputs</i> | Item information in the archive |
| <i>Exceptions</i> | Not Authorized |
| <i>Relates to</i> | RQ-05, RQ-06, RQ-07, RQ-09, RQ-10, RQ-11,RQ-12,RQ-14, RQ-15 of SSRD 2.3.1.1 |

Scenario SC-02

| | |
|-----------------------|---|
| <i>Name</i> | Maintain item type |
| <i>Trigger</i> | Administrator issues command – maintain item type |
| <i>Preconditions</i> | Administrator logged in as manager |
| <i>Postconditions</i> | Changes in item types are reflected when archive is updated. |
| <i>Inputs</i> | Choice of operation: ADD, DELETE, QUIT For ADD – Type name, Type description For DELETE –Type name |
| <i>Outputs</i> | Type information in the archive |
| <i>Exceptions</i> | Type Exists, Type Issued |
| <i>Relates to</i> | RQ-02, RQ-03 of SSRD 2.3.1.1 |

Scenario SC-03

| | |
|-----------------------|---|
| <i>Name</i> | Modify item field options |
| <i>Trigger</i> | Administrator issues command – maintain item field options |
| <i>Preconditions</i> | Administrator logged in as manager. |
| <i>Postconditions</i> | Changes in field options are reflected when archive is updated. |
| <i>Inputs</i> | Choice of operation: ADD, MODIFY, DELETE, QUIT For ADD – Field name, Option For MODIFY – Field name, Option modification information For DELETE –Field name, Option |
| <i>Exceptions</i> | No Such Option Option Exists Option Is Used |
| <i>Relates to</i> | RQ-08 of SSRD 2.3.1.1 |

Scenario SC-04

| | |
|-----------------------|--|
| <i>Name</i> | Validate administrator |
| <i>Trigger</i> | Administrator wants to log in |
| <i>Preconditions</i> | Archive has been initialized, Administrator has been setup by manager. |
| <i>Postconditions</i> | Administrator allowed to perform operations suited to level of authority |
| <i>Inputs</i> | Admin credentials |
| <i>Exceptions</i> | Invalid Authentication |
| <i>Relates to</i> | RQ-01, RQ-16, RQ-17 of SSRD 2.3.1.1 |

Scenario SC-05

| | |
|-----------------------|---|
| <i>Name</i> | Locate item for maintenance |
| <i>Trigger</i> | Administrator chooses maintain archive |
| <i>Preconditions</i> | Archive has been initialized |
| <i>Postconditions</i> | Zero or more matching items have been located to match administrator's criteria |
| <i>Inputs</i> | One or more of the following: a) Box number b) Folder number c) Item number d) Title e) Source f) Location g) Type |
| <i>Exceptions</i> | No Match |
| <i>Relates to</i> | RQ-05 of SSRD 2.3.1.1 |

Scenario SC-06

| | |
|-----------------------|---|
| <i>Name</i> | Provide Help |
| <i>Trigger</i> | Administrator wishes to view help for a particular administrative activity. |
| <i>Preconditions</i> | Administrator has been authenticated. |
| <i>Postconditions</i> | Context Related help is displayed. |
| <i>Inputs</i> | None |
| <i>Exceptions</i> | No Match |
| <i>Relates to</i> | RQ-18 of SSRD 2.3.1.1 |

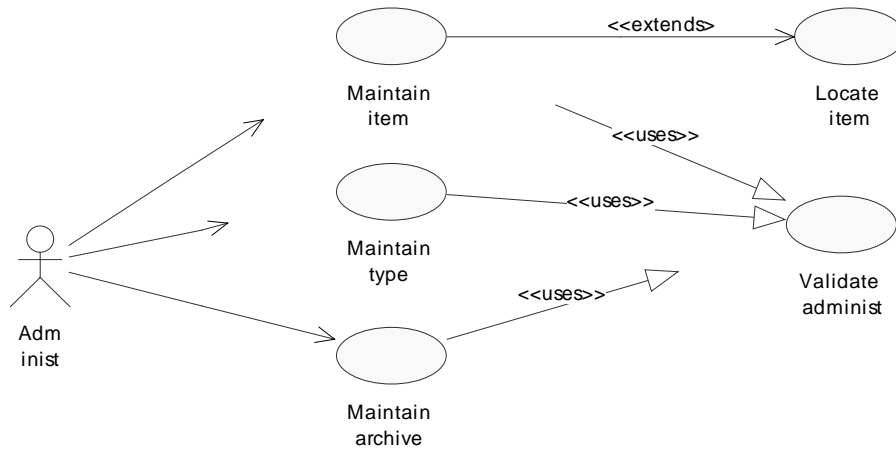


Figure 6 Behavior model – Administrator sub-system

2.3.2 Archive Patron subsystem (Zaguán)

This subsystem carries out the following system responsibilities:

- SR – 7 Display item Details
 - BH-20 Patron displays archive item <event> (OCD SR-02, SSRD RQ-23, RQ-23, RQ-24, RQ-27, RQ-28)
 - BH-21 Patron displays images of item <event> (OCD SR-02, SSRD RQ-22, RQ-23, RQ-27, RQ-28)
- SR-8 Request archive item <policy>
 - BH-22 Patron makes page request for archived item <algorithm> (OCD SR-01, SSRD RQ-24)
 - BH-23 Patron requests an electronic record of item by e-mail <algorithm> (OCD SR-03, SSRD RQ-26, RQ-30)
- SR-9 Provide usage assistance
 - BH-24 Patron requires help (OCD SR-03, SSRD RQ-25, RQ-29)
 - BH-25 Patron provides feedback (OCD SR-03, SSRD RQ-30)
- SR-10 Select archive item <policy>
 - BH-26 Patron searches archive <algorithm> (OCD SR-01, SSRD RQ-20)
 - BH-27 Patron browses archive <algorithm> (OCD SR-03, SSRD RQ-21)
 - BH-28 Patron selects an item <event> (OCD SR-03, SSRD RQ-26, RQ-30)
 - BH-29 Patron deselects an item <event> (OCD SR-03, SSRD RQ-26, RQ-30)

Scenario SC-07

| | |
|-----------------------|---|
| <i>Name</i> | Display item details |
| <i>Trigger</i> | User issues a command to view an item |
| <i>Preconditions</i> | User has selected an item |
| <i>Postconditions</i> | The view changes to a detailed view of the item |
| <i>Inputs</i> | List of items to view |
| <i>Outputs</i> | Item is displayed using its template definition |
| <i>Relates to</i> | RQ-11 of SSRD 2.3.1.2 |

Scenario SC-08

| | |
|-----------------------|--|
| <i>Name</i> | Request archive item |
| <i>Trigger</i> | User selects – request item |
| <i>Preconditions</i> | User has located the required item |
| <i>Postconditions</i> | The request is sent to the manager by e-mail |
| <i>Inputs</i> | List of items to request |
| <i>Outputs</i> | Request confirmation, Select kind of request (Email, Page) |
| <i>Exceptions</i> | Cannot Send Request |

Relates to | RQ-22,RQ-23,RQ-27, RQ-28 of SSRD 2.3.1.2

Scenario SC-09

| | |
|-----------------------|--|
| <i>Name</i> | Provide usage assistance |
| <i>Trigger</i> | User selects usage assistance |
| <i>Preconditions</i> | Links have been created by administrator |
| <i>Postconditions</i> | The user can navigate to web sites of related interest |
| <i>Inputs</i> | Choice of: HELP, FEEDBACK. |
| <i>Outputs</i> | If HELP, Online help on usage |
| <i>Exceptions</i> | No Help Available |
| <i>Relates to</i> | RQ-25, RQ-29, RQ-30 of SSRD 2.3.1.2 |

Scenario SC-10

| | |
|-----------------------|---|
| <i>Name</i> | Select archive item |
| <i>Trigger</i> | System starts up |
| <i>Postconditions</i> | The list of selected items is updated |
| <i>Inputs</i> | Choice of operations: SEARCH, BROWSE, SELECT, DESELECT, QUIT If SEARCH, one or more of: Title, Creator (1,2,3), Country, Publisher, Date, Subject. If BROWSE, one or both of: Collection, Type If SELECT, item name IF DESELECT, item name |
| <i>Outputs</i> | A list of items matching patron needs |
| <i>Exceptions</i> | No Such Item |
| <i>Relates to</i> | RQ-20, RQ-21, RQ-30 of SSRD 2.3.1.2 |

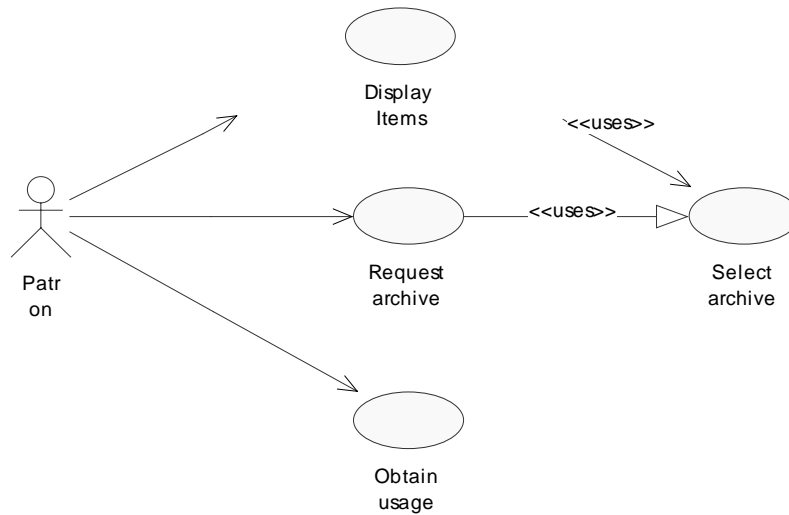


Figure 7 Behavior model – User sub-system

2.4 Enterprise Model

This model describes the top level components and behaviors. The components are modeled as actors and classes of UML, whereas behaviors are modeled as UML Use Cases.

2.4.1 Logical Behavior classifications

This diagram depicts the top-level behavior in the HDA system. The classification provides an is-kind-of relationship among behaviors. [SSRD 2.3]

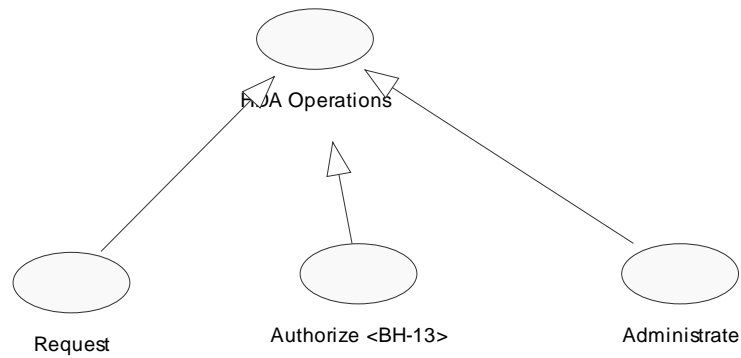


Figure 7 Enterprise model – Behaviors (highest level)

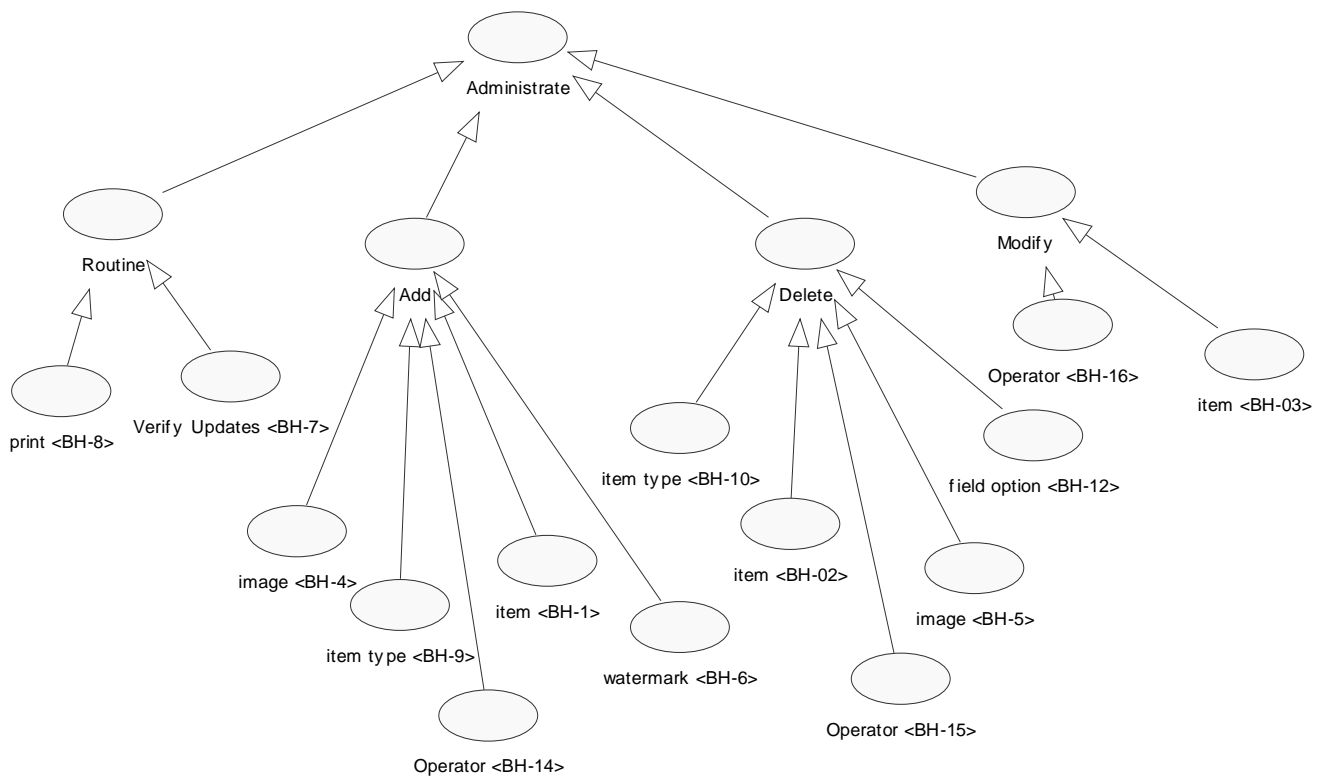


Figure 8 Logical Behaviors - 1

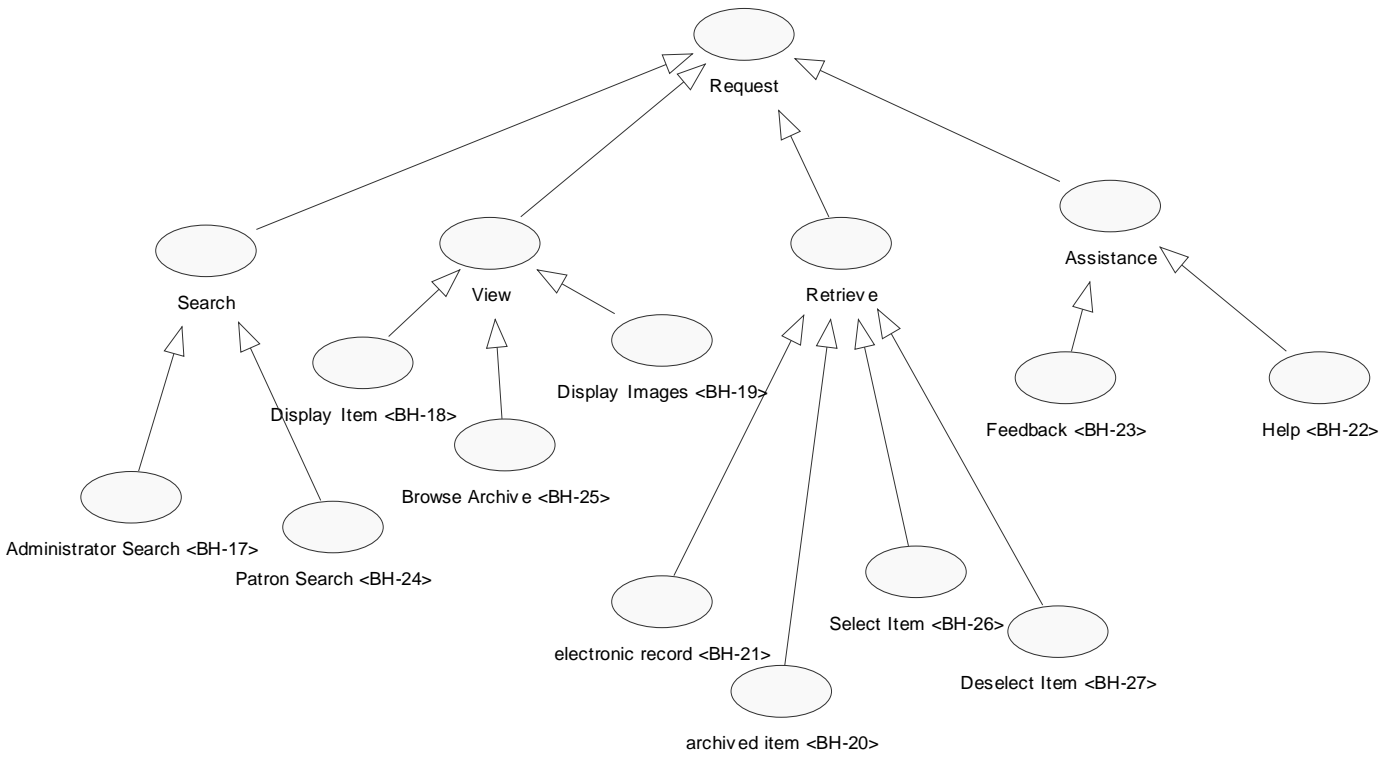


Figure 8 Logical Behaviors 2

2.4.2 Logical Component Classification

This diagram depicts the top-level components in the HDA system. It also shows the is-kind-of relationships among components.

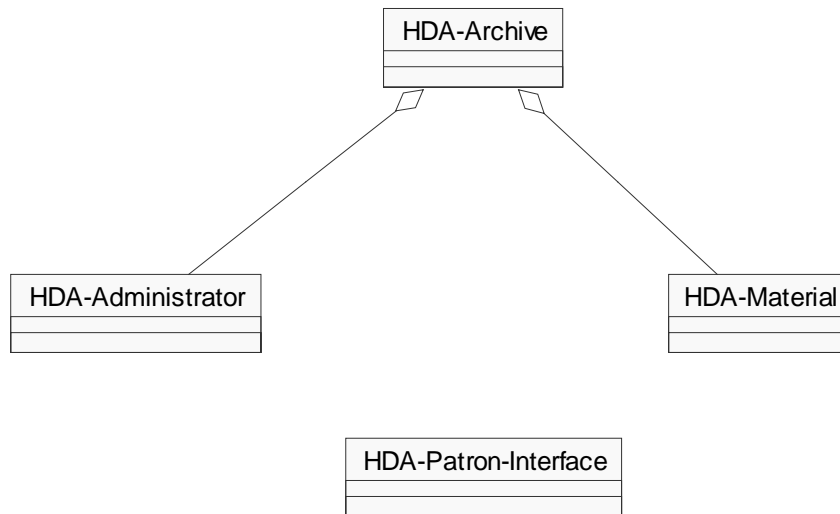


Figure 10 Enterprise model – components

3 System Design

The models and specifications in this section describe how the system would be realized and system requirements would be met.

3.1 Design Views

This section leads you from a high-level design perspective to the physical placement of software modules in the system.

3.1.1 Logical View

The Hispanic Digital Archive is a digital library that allows users to view brief information of archived items on computer systems. The HDA does this by allowing users to identify the archive items of their interest and then displaying visual information on those selected items so that a user can better understand the quality of literature available in the Boeckmann Center [OCD 4.1].

The following diagram depicts the logical view of the system after analysis.

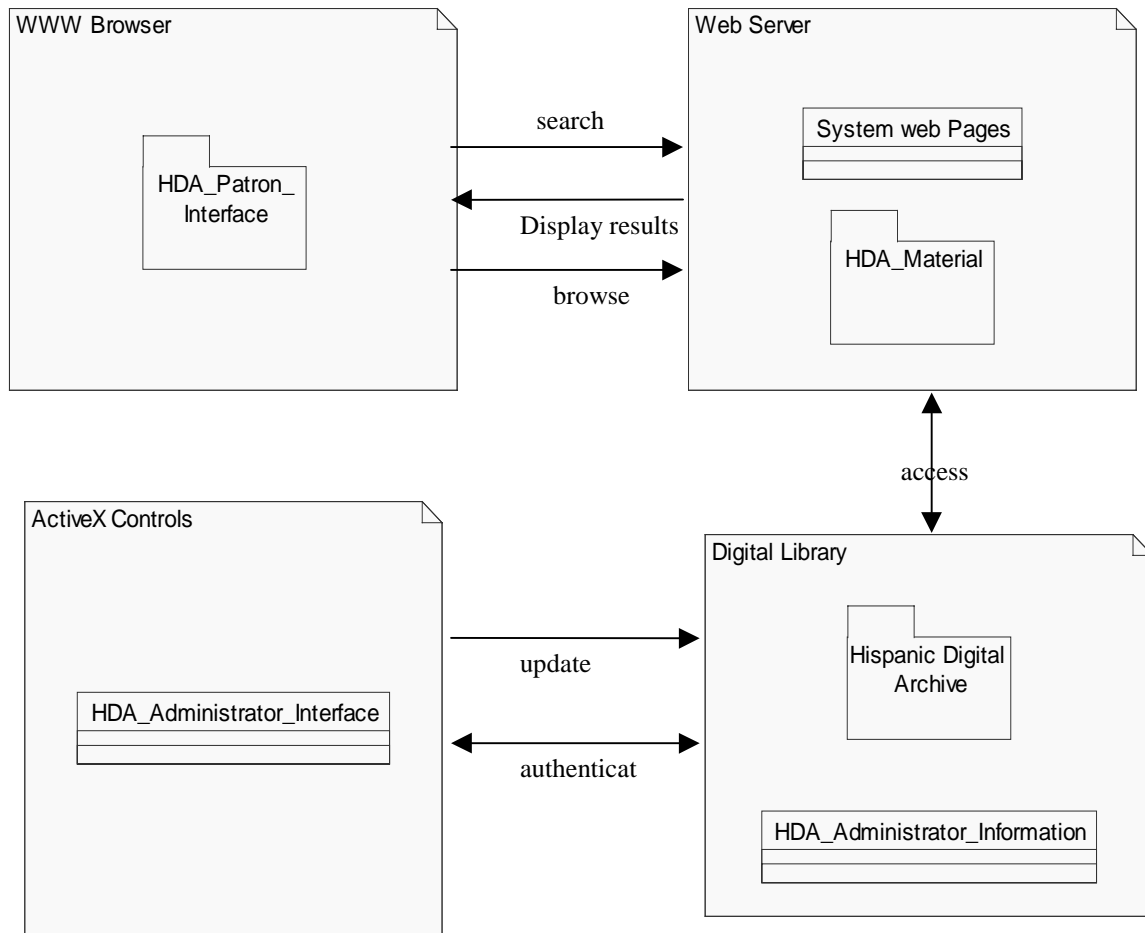


Figure 11 Logical View

Visual Basic would be used to build the user interfaces for the Administrator interface and Net.Data with DL Dynamic Page Builder for the patron. The System Web pages are to be developed in HTML 3.2.

3.1.2 System Component View

The system component view describes the physical structure of the software system in terms of modules and external components. The system has been layered into four layers namely view, control, model, and persistence. Frameworks used are

1. Visual Basic scripting environment for the Administrator interface – Mayordomo.
2. IBM Digital Library Automation control for
3. Web Server for HispanicDigitalArchive HTTP controller.
4. Net.Data with Digital Library Dynamic Page Builder for HispanicDigitalArchive.
5. IBM Digital Library for persistence.
6. Web browser for Patron Interface

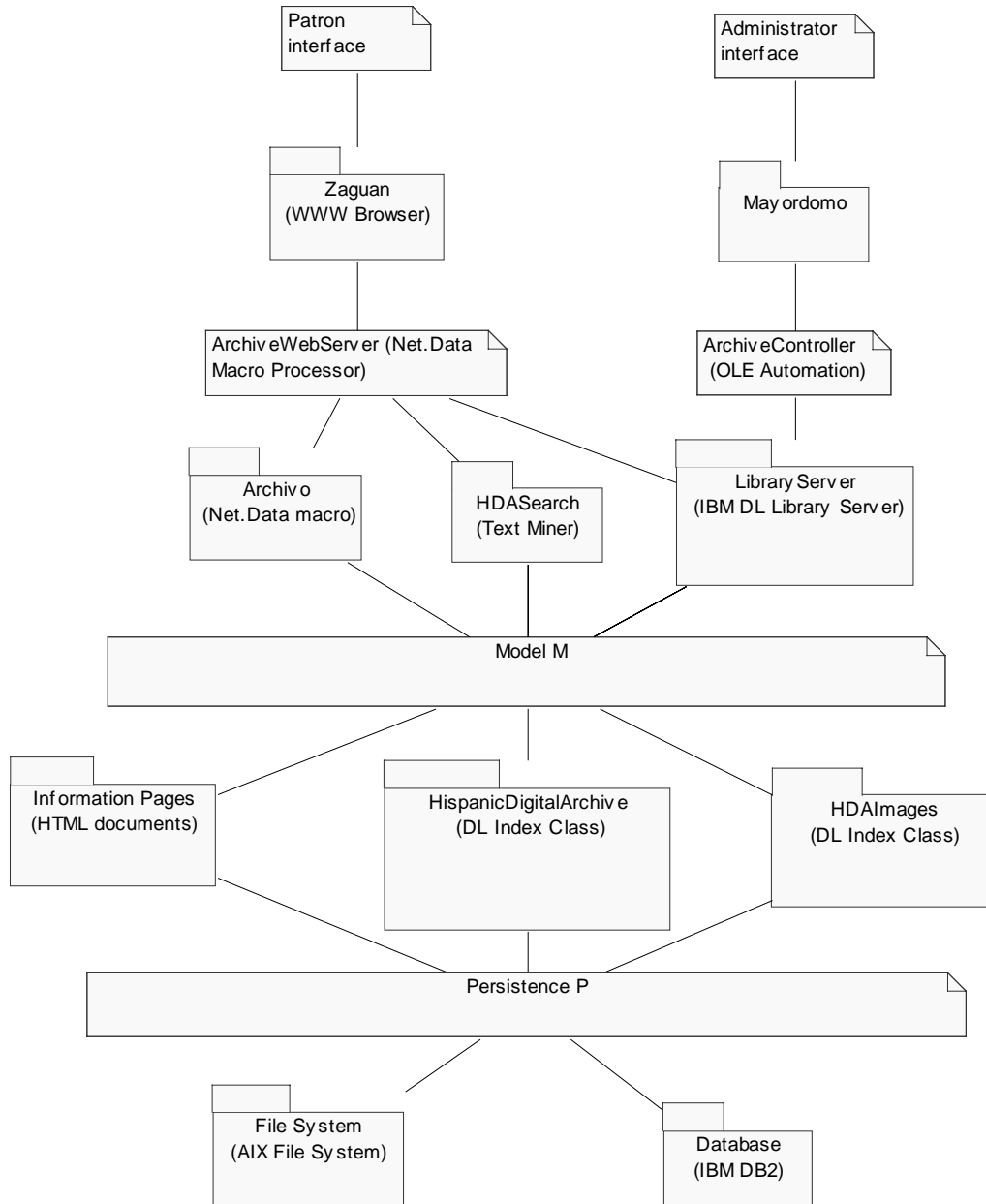


Figure 12 System Layered View

3.1.3 Deployment View

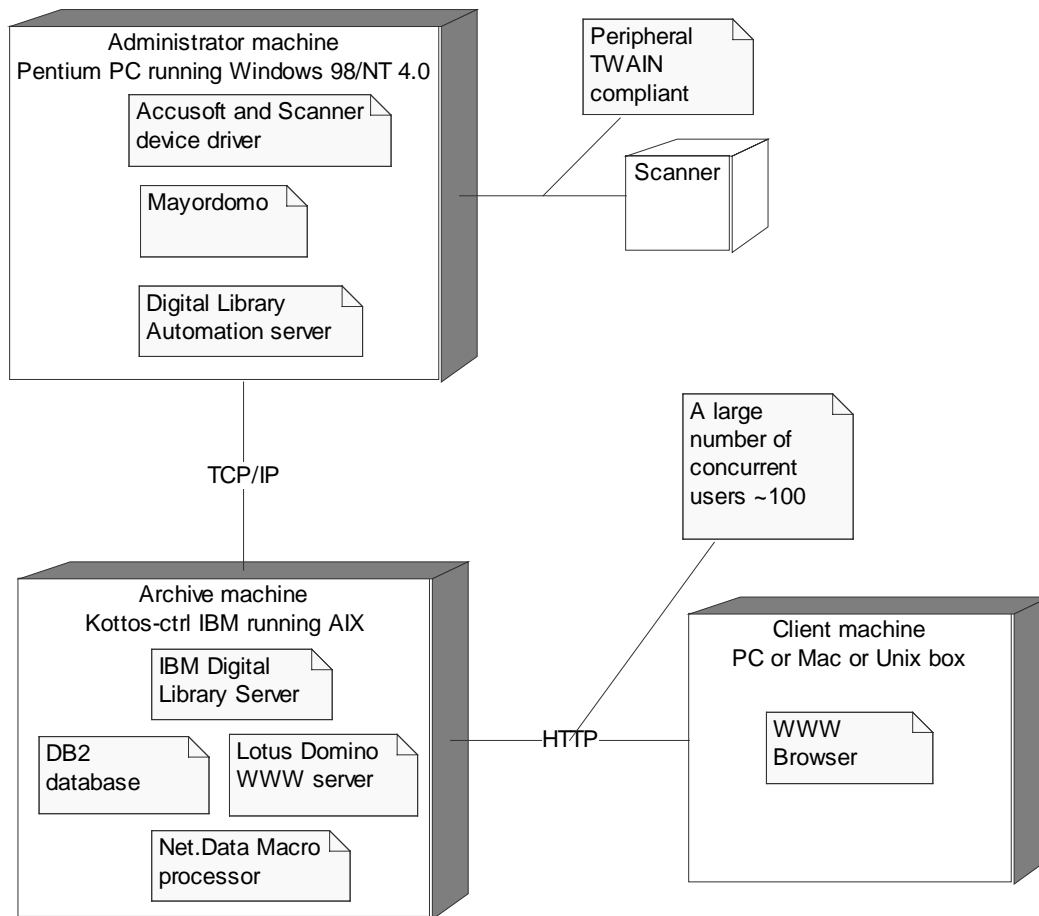


Figure 13 Deployment View

The deployment diagram shows different processing nodes of the system along with their interconnections. After examining the administrative requirements and system load during operation, it was decided to have three processors in the system. The Archive is housed in the IBM Digital Library by the ISD, whereas the maintenance of Hispanic Digital archive would be done from a different processor. Administrators would run an Admin module on a Windows PC. This PC should be connected to the University network. Patrons would access the information over the World Wide Web from a large number of simultaneous (typically ~100) different processors using WWW browsers.

3.2 Object Model

The components identified in the System layered view are described and, if necessary, refined in this section.

3.2.1 Detailed Component Specification

This section describes in detail, the software components that constitute the system. Components are either developed in a specific programming language or are used off-the-shelf.

DCOM-01 Patron Interface

Patrons make requests for information through this view. The view allows entry of query information and provides item selection and navigation mechanisms.

| | |
|---------------------------|---|
| <i>Attributes</i> | a) Search keywords Any/all selection b) Email/Retrieval selection c) Email address of patron d) Retrieval/Email remarks e) Preferred retrieval date |
| <i>Assigned Behaviors</i> | a) Select and deselect items b) Search Archive by keywords c) Search Archive by collection and types d) View details of an Item e) View Table of Contents of Images for an Item f) View Images of an Item g) Request advance retrieval of Item(s) h) Request Items by e-mail |
| <i>Relationships</i> | Zaguán |
| <i>State Groups</i> | BrowserView {Showing, Refresh} |
| <i>Possible Roles</i> | BrowserInput for Zaguán BrowserOutput for Zaguán |
| <i>Constraints</i> | Graphical view |
| <i>Implementation</i> | Windows oriented |

DCOM-02 Zaguán

A COTS component that provides an Internet based interface to the patrons into the archive.

| | |
|---------------------------|---|
| <i>Attributes</i> | a) URL b) Viewing preferences c) Cache |
| <i>Assigned Behaviors</i> | a) Back and Forward navigation b) Add and remove bookmarks c) HTTP request d) Stop loading |
| <i>Relationships</i> | a) Archive Web Server b) Patron Interface |
| <i>State Groups</i> | HTTP {Lookup, Connecting, Waiting, Displaying} |
| <i>Possible Roles</i> | HTTP request source HTTP reply destination |
| <i>Constraints</i> | Should accept HTML 3.2 strict |
| <i>Implementation</i> | Netscape Navigator 4.0+ or Internet Explorer 4.0+ |

DCOM-03 ArchiveWebServer

The ArchiveWebServer provides an Internet interface to the archive based on HTTP. It accepts requests for searching the archive and for providing other useful information to the patron. In response, it directs the queries to the macro processor and also directly locates the documents containing requested information.

| | |
|---------------------------|---|
| <i>Attributes</i> | a) Port number b) URL c) Macro name d) HTML block name e) HTML block parameters |
| <i>Assigned Behaviors</i> | a) Open HTTP Connection b) Close HTTP Connection c) Read File d) Process Macro |
| <i>Relationships</i> | a) Zaguán b) Archivo |
| <i>State Groups</i> | Connection {Open, Closed} |
| <i>Possible Roles</i> | HTTP Server |
| <i>Constraints</i> | Should support Net.Data macros Should be able to concurrently serve up to 100 requests |

| | |
|-----------------------|---|
| <i>Implementation</i> | Lotus Domino Web Server 4.6.2 with Net.Data version 2 server on IBM AIX |
|-----------------------|---|

DCOM-04 Archivo

This component processes the queries and requests from Zaguán and sends back the requested Items and Images. It provides support for advance retrieval requests.

| | |
|---------------------------|---|
| <i>Attributes</i> | <ul style="list-style-type: none"> a) Library Server name b) Macro name c) MaxResults d) Archive Index Class name e) Images Index Class name f) Description Part ID g) Thumbnail Part ID |
| <i>Assigned Behaviors</i> | <ul style="list-style-type: none"> a) Search for keywords b) Browse c) Get Item d) Get Image e) Advance Retrieval Request f) Email Items |
| <i>Relationships</i> | <ul style="list-style-type: none"> a) ArchiveWebServer b) Model M c) HDASearch d) LibraryServer |
| <i>Possible Roles</i> | Dynamic Page generator |
| <i>Constraints</i> | Uses Net.Data, Perl and Dynamic Page Builder only Only access approved items |
| <i>Implementation</i> | Net.Data macro |

DCOM-05 HDASearch

Performs search on all free text information in the archive. This is used to match items for patron queries.

| | |
|---------------------------|--|
| <i>Attributes</i> | <ul style="list-style-type: none"> a) Query Condition b) Max results c) Text Index name d) Max search time |
| <i>Assigned Behaviors</i> | <ul style="list-style-type: none"> a) Search text |
| <i>Relationships</i> | <ul style="list-style-type: none"> a) Model M b) Archivo c) ArchiveWebServer |
| <i>State Groups</i> | Processing {Idle, Searching} |
| <i>Possible Roles</i> | Text search |
| <i>Constraints</i> | Upper limit on search time |
| <i>Implementation</i> | IBM DL Text Miner |

DCOM-06 LibraryServer

Provides manipulation of archive contents and searches meta data for keywords.

| | |
|---------------------------|--|
| <i>Attributes</i> | <ul style="list-style-type: none"> a) Query Condition b) Max results c) Text Index name |
| <i>Assigned Behaviors</i> | <ul style="list-style-type: none"> a) Parametric Search b) Get Folder meta data c) Get Document meta data d) Get Folder contents e) Get Document contents |
| <i>Relationships</i> | <ul style="list-style-type: none"> a) Archivo |

| | |
|-----------------------|---|
| | <ul style="list-style-type: none"> b) ArchiveWebServer c) LibraryServer d) ArchiveController e) Model M |
| <i>State Groups</i> | Processing {Idle, Searching, Retrieving, Storing} |
| <i>Possible Roles</i> | Parametric search |
| <i>Constraints</i> | Maximum returned results at a time 10 |
| <i>Implementation</i> | IBM DL Text Miner |

DCOM-07 Model M

This layer provides a logical abstraction of all information available in the archive.

| | |
|----------------------|--|
| <i>Relationships</i> | <ul style="list-style-type: none"> a) ArchiveController b) LibraryServer c) HDASearch d) InformationPages e) HispanicDigitalArchive f) HDASearch |
|----------------------|--|

DCOM-08 InformationPages

These are documents representing informative documents about the archive and the subject matters. This information does not change very often and is directly maintained in the form of HTML documents.

| | |
|---------------------------|--|
| <i>Attributes</i> | <ul style="list-style-type: none"> a) File Name b) Layout c) Content |
| <i>Assigned Behaviors</i> | <ul style="list-style-type: none"> a) Hyperlink to another Information page b) Hyperlink to the mainpage |
| <i>Relationships</i> | <ul style="list-style-type: none"> a) Model M b) Persistence P |
| <i>State Groups</i> | RWX {Readable, Writeable, Executable} |
| <i>Possible Roles</i> | Additional Resources |
| <i>Constraints</i> | Static pages |
| <i>Implementation</i> | HTML 3.2 documents |

DCOM-09 HispanicDigitalArchive

This component makes all item and image information as well as administrator information persistent.

| | |
|---------------------------|--|
| <i>Attributes</i> | <ul style="list-style-type: none"> a) Item meta data b) Item contents c) Field options d) Types e) Administrator Information |
| <i>Assigned Behaviors</i> | <ul style="list-style-type: none"> a) Maintain item details b) Maintain item thumbnail c) Provide item meta data d) Provide descriptions e) Provide thumbnail image |
| <i>Relationships</i> | <ul style="list-style-type: none"> a) Model M b) Persistence P |
| <i>State Groups</i> | Approval {Approved, Pending} |
| <i>Possible Roles</i> | Item storage Miscellaneous configuration storage |
| <i>Constraints</i> | Each item should have a thumbnail image corresponding to the first full size image |
| <i>Implementation</i> | IBM DL Index Class |

DCOM-10 HDImages

This component stores images for the items along with their descriptions. It only handles GIF and JPG images.

| | |
|---------------------------|---|
| <i>Attributes</i> | a) Image meta data b) Image contents |
| <i>Assigned Behaviors</i> | a) Maintain images |
| <i>Relationships</i> | a) Model M b) Persistence P |
| <i>Possible Roles</i> | Image storage |
| <i>Constraints</i> | Each image should be linked to exactly one item |
| <i>Implementation</i> | IBM DL Index Class |

DCOM-11 Persistence P

This layer provides persistence of information from one administrative session to another and from one query to another. However, it does not maintain any persistence for state of a previous query.

| | |
|---------------------------|--|
| <i>Attributes</i> | a) Maximum storage capacity |
| <i>Assigned Behaviors</i> | a) Get File b) Store File |
| <i>Relationships</i> | a) Information Pages b) HispanicDigitalArchive c) HDImages d) FileSystem e) Database |
| <i>Possible Roles</i> | Operating system |
| <i>Implementation</i> | AIX operating system |

DCOM-12 FileSystem

The file system provides a logical storage area for the system. It stores image and text files which are identified by their names. It stores the temporary files generated by the HispanicDigitalArchive in order to respond to queries.

| | |
|---------------------------|-------------------------------|
| <i>Attributes</i> | a) File Name |
| <i>Assigned Behaviors</i> | a) Store file b) Read File |
| <i>Relationships</i> | Persistence P |
| <i>Possible Roles</i> | Operating system |
| <i>Constraints</i> | Maximum file size |
| <i>Implementation</i> | AIX operating system |

DCOM-13 Database

| | |
|---------------------------|--|
| <i>Attributes</i> | a) Table name b) Attribute name c) View name d) User name |
| <i>Assigned Behaviors</i> | a) Maintain attributes b) Maintain tables c) Maintain binary objects |
| <i>Relationships</i> | Persistence P |
| <i>Possible Roles</i> | DataStore |
| <i>Constraints</i> | Available on AIX and Windows |
| <i>Implementation</i> | IBM DB2 database |

DCOM-14 Administrator Interface

The administrators provide all the data to the archive through this view. They also use the view for display of the item details and images. This view is also used to provide configuration information such as types and options.

| | |
|---------------------------|---------------------------------|
| <i>Attributes</i> | a) Window location |
| <i>Assigned Behaviors</i> | a) Input text b) GetFileName |
| <i>Relationships</i> | Mayordomo |
| <i>Possible Roles</i> | Administrator View |
| <i>Constraints</i> | Display Resolution of 800 x 640 |
| <i>Implementation</i> | Visual Basic Runtime DLL |

DCOM-15 Mayordomo

The archive is administered and maintained from Mayordomo. It manipulates information in the archive based on the instructions provided by the administrators. It ensures integrity of information in the archive by restricting access to the authorized personnel.

| | | |
|---------------------------|---|--|
| <i>Attributes</i> | a) ItemList b) ItemSelection c) Item details d) ImageList e) ImageSelection f) ImageDetails g) TypeList | h) TypeSelection i) TypeDetails j) UserList k) UserSelection l) UserDetails m) FieldOptionsList |
| <i>Assigned Behaviors</i> | a) Authorize administrator b) Locate Item c) Maintain Item d) Maintain archive types e) Maintain item fields f) Maintain Administrator information g) Verify item updates h) Generate statistical reports on archive i) Provide administration assistance | |
| <i>Relationships</i> | a) Administrator Interface b) ArchiveController | |
| <i>State Groups</i> | Authorization {Operator, Manager, Unauthorized} | |
| <i>Possible Roles</i> | Manager, Operator | |
| <i>Implementation</i> | A Visual Basic application with forms, classes and modules | |

DCOM-16 ArchiveController

This layer provides communication between Mayordomo and the ArchiveController using OLE Automation technology. The ArchiveController provides access to the data stored in the digital archive and controls the operations performed on the data.

| | |
|---------------------------|--|
| <i>Attributes</i> | a) Library Server name b) User c) Password |
| <i>Assigned Behaviors</i> | a) Connection operations b) Folder operations c) Document operations d) Part operations |
| <i>Relationships</i> | a) Mayordomo b) LibraryServer |
| <i>State Groups</i> | Connect {Connected, Disconnected} |
| <i>Possible Roles</i> | ArchiveView |
| <i>Constraints</i> | Use cs577t5 user id for login |
| <i>Implementation</i> | OLE Automation Object |

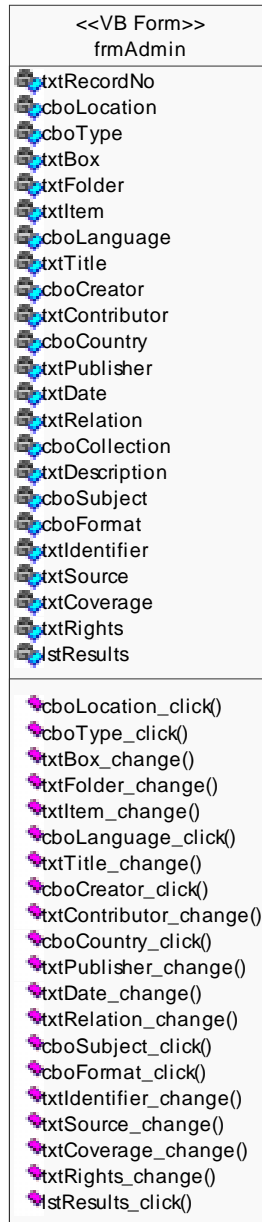
3.2.2 Object Specifications

All objects required for realization of the above components and the interactions among those components are specified in this section.

3.2.2.1 Mayordomo objects

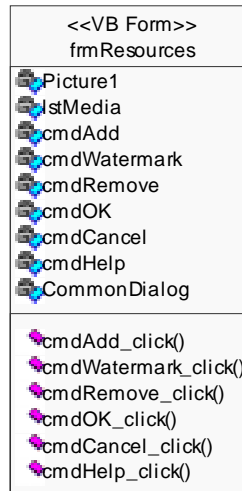
OBJ - 01 frmAdmin

| | |
|-------------------------|---|
| <i>Defining Quality</i> | This form provides the interface for the administrator to add known fields to a new item, retrieve items matching search criteria |
| <i>Constraints</i> | Should be displayable in a screen size of 800x640 |
| <i>Implementation</i> | Visual Basic Form |



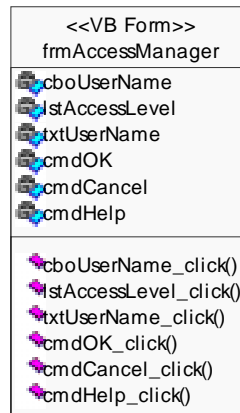
OBJ – 02 frmResources

| | |
|-------------------------|---|
| <i>Defining Quality</i> | This form allows the administrator to manipulate the images that are a part of each document. |
| <i>Constraints</i> | Should be displayable in a screen size of 800x640 |
| <i>Implementation</i> | Visual Basic Form |



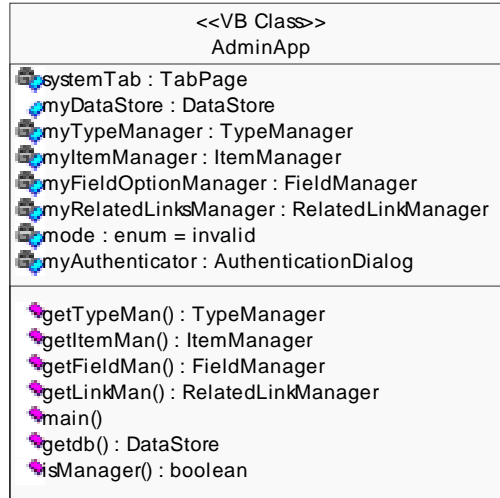
OBJ – 03 frmAccessManager

| | |
|-------------------------|---|
| <i>Defining Quality</i> | This form allows the administrator enter his/her credentials so that he/she can be authenticated. |
| <i>Constraints</i> | Should be displayable in a screen size of 800x640 |
| <i>Implementation</i> | Visual Basic Form |



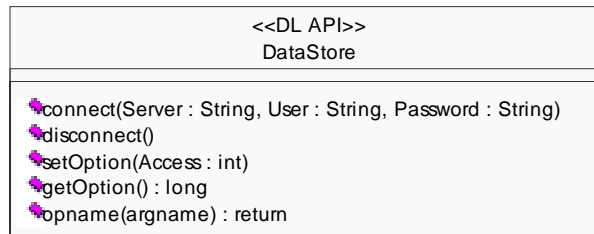
OBJ – 04 AdminApp

| | |
|-------------------------|--|
| <i>Defining Quality</i> | The executable that is started on the administrator machine to manage the archive |
| <i>Constraints</i> | Only one application can be running on one machine. Should be displayable in a screen size of 800x640 |
| <i>Implementation</i> | Visual Basic Application |



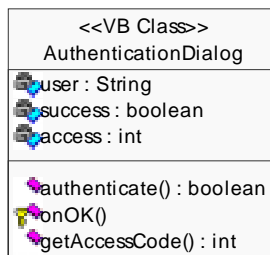
OBJ – 05 DataStore

| | |
|-------------------------|--|
| <i>Defining quality</i> | Automation object for Digital Library operations |
| <i>Constraints</i> | A connection has to be made to the relevant Digital Library before data can be accessed. |
| <i>Membership</i> | AdminApp |
| <i>Implementation</i> | COTS ActiveX component provided with IBM Digital Library |



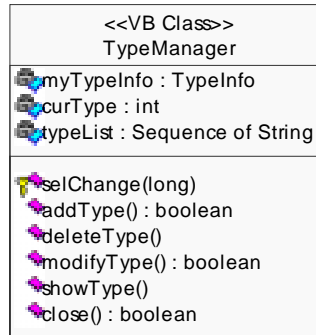
OBJ –06 AuthenticationDialog

| | |
|-------------------------|--|
| <i>Defining Quality</i> | Obtains the user name and password for the administrator and uses this information for their authentication to the system. |
| <i>Constraints</i> | Should be displayable in a screen size of 800x640 |
| <i>Membership</i> | AdminApp |
| <i>Implementation</i> | Visual Basic Form |



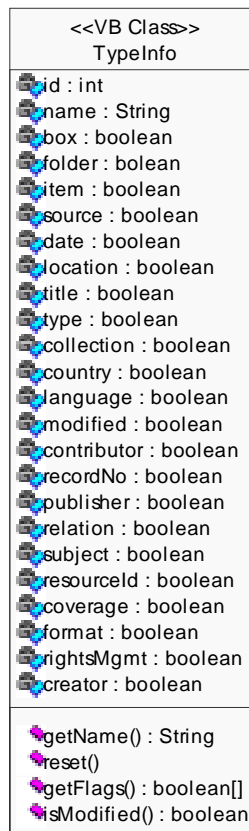
OBJ – 07 TypeManager

| | |
|-------------------------|---|
| <i>Defining Quality</i> | A tool used to maintain the content types in the archive. It displays all the information about types and allows its manipulation. Also provides selection of existing type for manipulation. |
| <i>Constraints</i> | Only manager can use this |
| <i>Membership</i> | AdminApp |
| <i>Implementation</i> | Visual Basic Tab page |



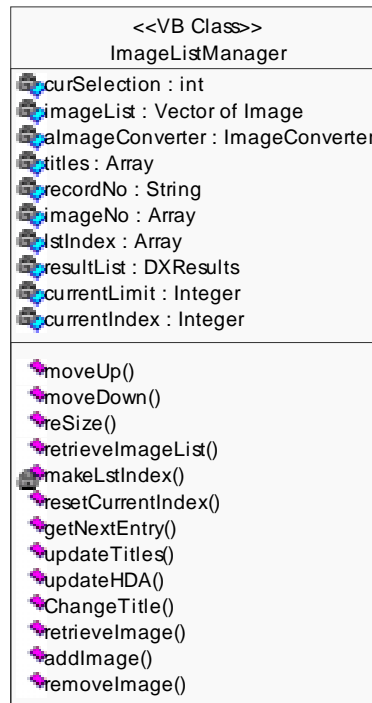
OBJ – 08 TypeInfo

| | |
|-------------------------|---|
| <i>Defining Quality</i> | Contains information about a content type and provides editing of this information. |
| <i>Membership</i> | Type Manager |
| <i>Implementation</i> | Visual Basic object |



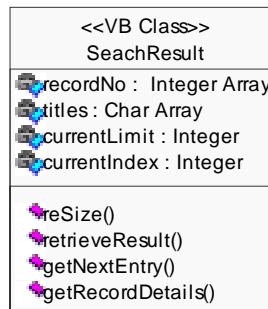
OBJ – 11 ImageListManager

| | |
|-------------------------|--|
| <i>Defining Quality</i> | A tool to attach images to items and set their order of appearance |
| <i>Membership</i> | ImageListManager |
| <i>Implementation</i> | Visual Basic object |



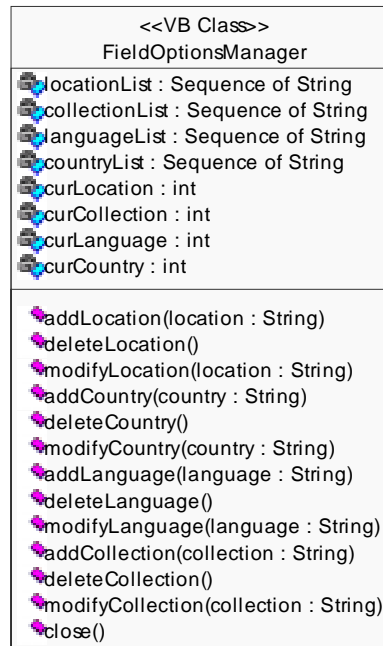
OBJ – 12 SearchResult

| | |
|-------------------------|--|
| <i>Defining Quality</i> | A list of items that match the required criteria. The list allows selection of one item at a time and also sequential movement through the list. |
| <i>Constraints</i> | A maximum of 50 matching items should be shown with an option to get the remaining or 50 items whichever is less. |
| <i>Membership</i> | ItemManager |
| <i>Implementation</i> | Visual Basic Class |



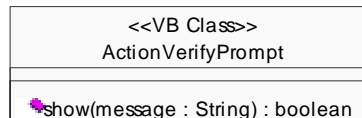
OBJ – 13 FieldOptionsManager

| | |
|-------------------------|---|
| <i>Defining Quality</i> | A tool used to maintain the options for the following options: Location, Country, Collection, Language. |
| <i>Constraints</i> | Should support any number of options for each field. |
| <i>Membership</i> | AdminApp |
| <i>Implementation</i> | Visual Basic Form |



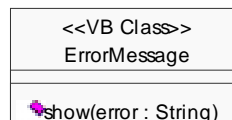
OBJ – 14 ActionVerifyPrompt

| | |
|-------------------------|--|
| <i>Defining Quality</i> | A message box that asks manager to verify any destructive actions. |
| <i>Constraints</i> | Should appear in the center of the display |
| <i>Implementation</i> | Visual Basic Message Box |



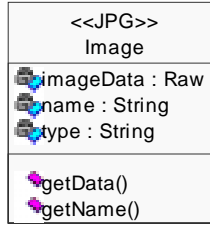
OBJ – 15 ErrorMessage

| | |
|-------------------------|---|
| <i>Defining Quality</i> | A message box that indicates the failure of an operation and provides the reason for failure. |
| <i>Constraints</i> | Message should be meaningful and suggest corrective action |
| <i>Implementation</i> | Visual Basic Message Box |



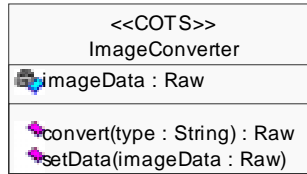
OBJ – 16 Image

| | |
|-------------------------|--|
| <i>Defining Quality</i> | A file that contains the image related to an item |
| <i>Constraints</i> | TIFF file is available from scanner software whereas JPEG is to be stored in the archive for compression. Loss of quality should not be more than 10%. |
| <i>Membership</i> | ItemInfo |
| <i>Implementation</i> | JPEG file format image |



OBJ – 17 ImageConverter

| | |
|-------------------------|---|
| <i>Defining Quality</i> | A library that performs image file format conversions. |
| <i>Constraints</i> | Should be able to convert TIFF to JPEG and BMP for display. |
| <i>Implementation</i> | COTS Accusoft Library |



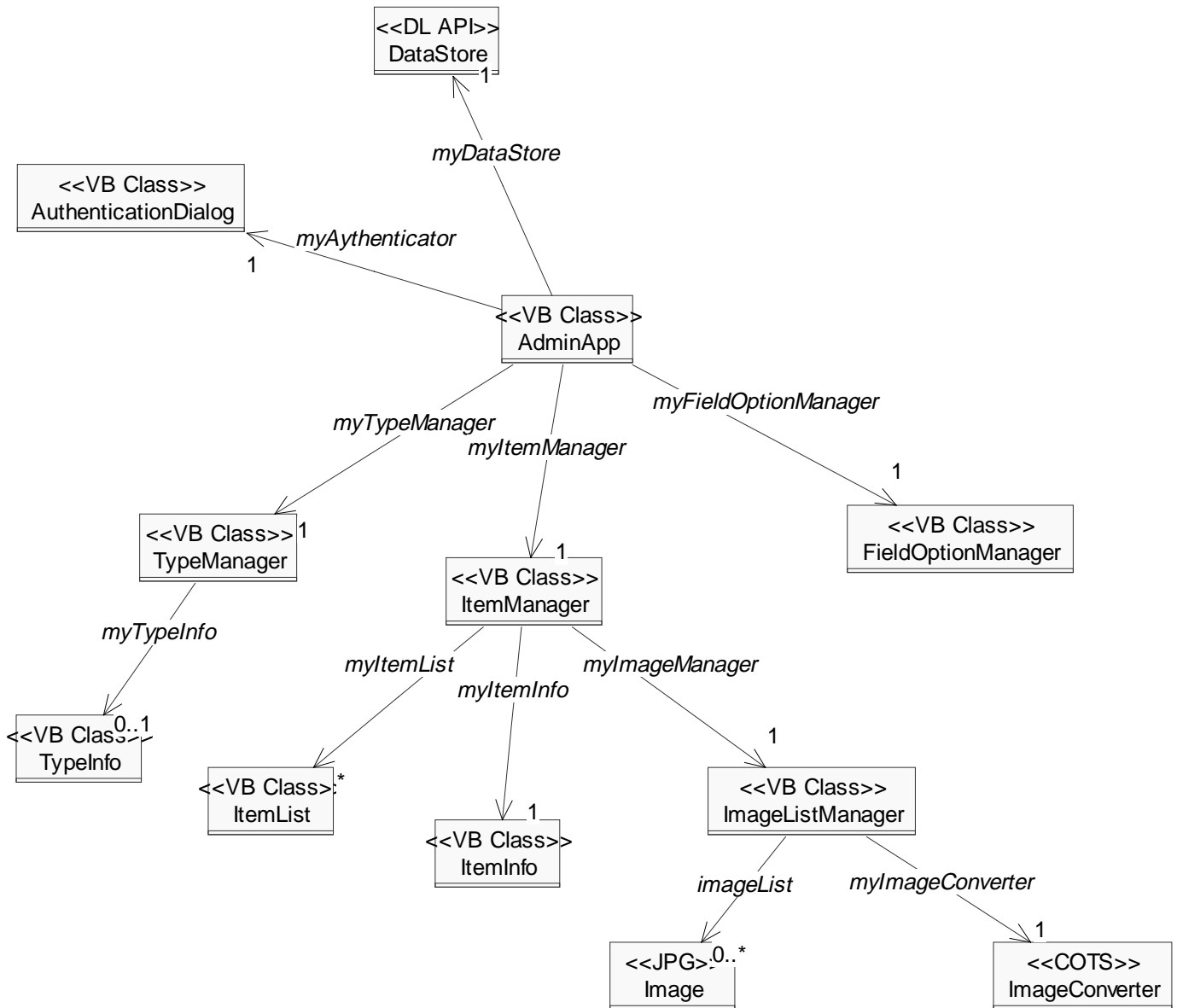


Figure 14 Class Interaction Diagram (Administration)

3.2.2.2 InformationPages objects

OBJ – 18 MainPage

| | |
|-------------------------|---|
| <i>Defining Quality</i> | Start page for patrons also provides a simple search |
| <i>Outlets</i> | Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page – /HDA/Related.html Overview Page – /HDA/Overview.html Acknowledgements Page – /HDA/Acknowledgements.html Feedback Page – /HDA/Feedback.html Help Page - /HDA/Help.html |
| <i>Constraints</i> | Should download on a 33.6 KBPS modem within 30 seconds. Whole page should be displayed in 800 x 640 pixels |
| <i>Membership</i> | InformationPages |
| <i>Implementation</i> | HTML 3.2 document |

| |
|--|
| <<Static HTML>> MainPage |
| <<Selection>> combine : String = All <<Input>> query : String <<URL>> \$ Base Ref : String = http://kottos-ctrl.usc.edu/ |
| <<SUBMIT>> Find It(combine : Text, query : Text) |

OBJ – 19 OverviewPage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | Describe the purpose of the Hispanic Digital Archive and provide information about browse categories. |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page – /HDA/Related.html Acknowledgements Page – /HDA/Acknowledgements.html Feedback Page – /HDA/Feedback.html Help Page - /HDA/Help.html |
| <i>Membership</i> | InformationPages |
| <i>Implementation</i> | HTML 3.2 document |

| |
|--|
| <<Static HTML>> OverviewPage |
| <<URL>> \$ Base Ref : String = http://kottos-ctrl.usc.edu/ |
| <<Anchor>> Collections() <<Anchor>> Types() |

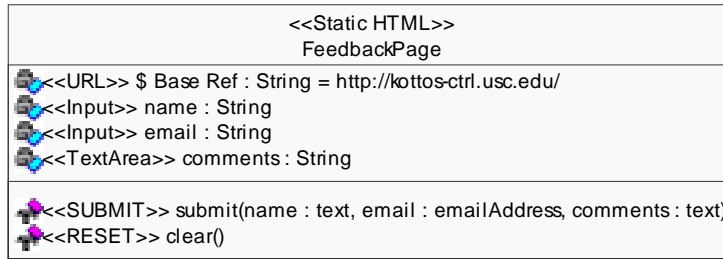
OBJ – 20 AcknowledgementsPage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | Information of all the people who have contributed to this project. |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page – /HDA/Related.html Overview Page – /HDA/Overview.html Feedback Page – /HDA/Feedback.html Help Page - /HDA/Help.html |
| <i>Membership</i> | InformationPages |
| <i>Constraints</i> | Provide email and WWW hyperlinks for all as applicable. |
| <i>Implementation</i> | HTML 3.2 document |

| |
|--|
| <<Static HTML>> Acknowledgements |
| <<URL>> \$ Base Ref : String = http://kottos-ctrl.usc.edu/ |

OBJ – 21 FeedbackPage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | A form for patrons to provide feedback to administrator |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page – /HDA/Related.html Overview Page – /HDA/Overview.html Acknowledgements Page – /HDA/Acknowledgements.html Help Page - /HDA/Help.html |
| <i>Membership</i> | InformationPages |
| <i>Implementation</i> | HTML 3.2 document |



OBJ – 22 HelpPage

Defining Quality

A document that contains description of and guidance for using the entire archive web site.

Outlets

- Main Page- [HDA/index.html](http://kottos-ctrl.usc.edu/HDA/index.html)
- Browse Page – [/cgi-bin/db2www/HDA/Browse](http://kottos-ctrl.usc.edu/cgi-bin/db2www/HDA/Browse)
- Related Resources Page– [/HDA/Related.html](http://kottos-ctrl.usc.edu/HDA/Related.html)
- Overview Page– [/HDA/Overview.html](http://kottos-ctrl.usc.edu/HDA/Overview.html)
- Acknowledgements Page – [/HDA/ Acknowledgements.html](http://kottos-ctrl.usc.edu/HDA/Acknowledgements.html)
- Feedback Page - [/HDA/Feedback.html](http://kottos-ctrl.usc.edu/HDA/Feedback.html)

Membership

InformationPages

Implementation

HTML 3.2 document

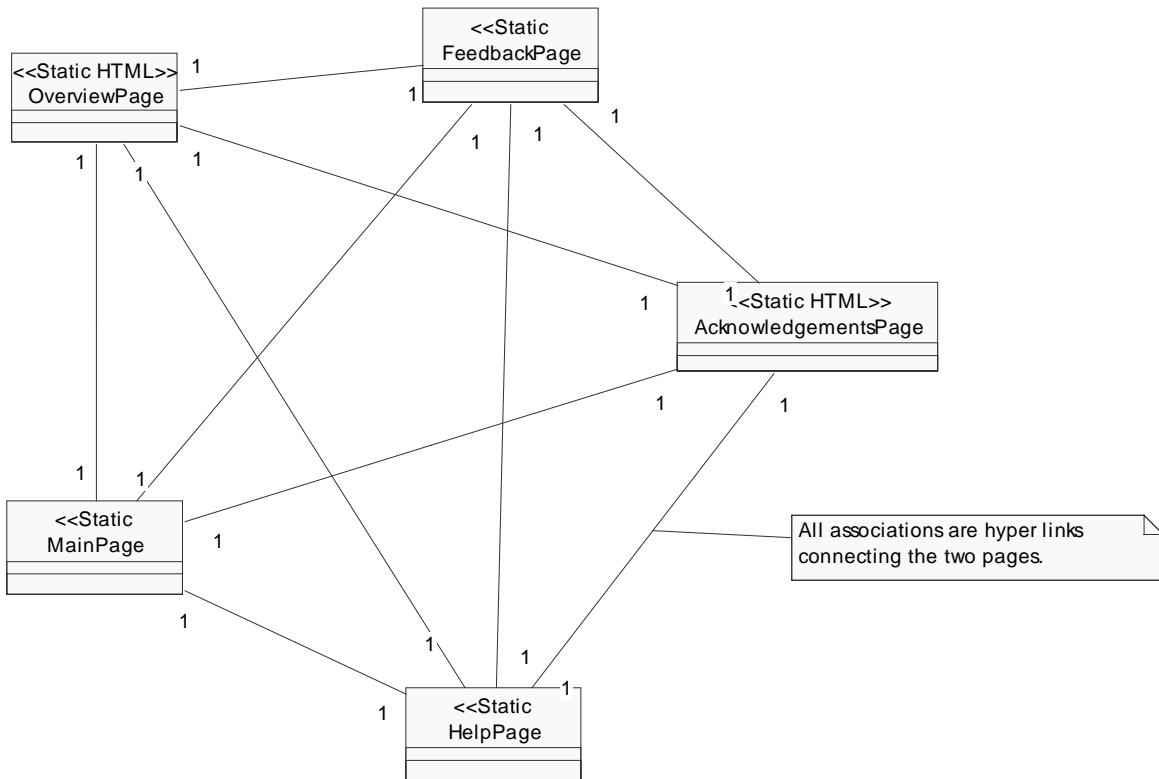
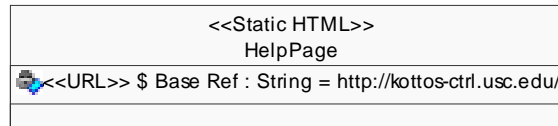







Figure 15 Class Interaction - InformationPages

3.2.2.3 Archivo sub-system






OBJ – 23 BrowsePage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | Page to provide browsing by type and collection and also allow a restricted search for keyword in the selected collection and type. |
| <i>Outlets</i> | Main Page- HDA/index.html Related Resources Page- /HDA/Related.html Overview Page- /HDA/Overview.html Acknowledgements Page - /HDA/ Acknowledgements.html Feedback Page - /HDA/Feedback.html Help Page - /HDA/Help.html |
| <i>Constraints</i> | Whole page should be displayed in 640 x 480 pixels |
| <i>Membership</i> | Archivo |
| <i>Implementation</i> | HTML 3.2 document |

| | |
|---|---|
| <<Dynamic HTML>> BrowsePage | |
|  | <<URL>> \$ Base Ref : String = http://kottos-ctrl.usc.edu/ |
|  | <<Selection>> collection : String |
|  | <<Selection>> type : String |
|  | <<Input>> query : String |
|  | <<SUBMIT>> browse(collection : String, type : String, query : String) |

OBJ – 24 ResultListPage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | List of matching items each with their selection tag, type icon, Title and Creator. |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page - /cgi-bin/db2www/HDA/Browse Related Resources Page- /HDA/Related.html Overview Page- /HDA/Overview.html Acknowledgements Page - /HDA/ Acknowledgements.html Feedback Page - /HDA/Feedback.html Help Page - /HDA/Help.html Icon Description in the OverviewPage - /HDA/Overview.html#Icon |
| <i>Constraints</i> | Should not show more than 10 items at any given time. |
| <i>Membership</i> | Archivo |
| <i>Implementation</i> | HTML 3.2 document |

| | |
|---|---|
| <<Dynamic HTML>> ResultListPage | |
|  | <<Hidden>> item[10] : BFI |
|  | <<Check>> selected[10] : Boolean |
|  | <<SUBMIT>> email(items : BFI[10], selection : Boolean[10]) |
|  | <<SUBMIT>> retrieve(items : BFI[10], selection : Boolean[10]) |
|  | <<RESET>> clear() |

OBJ – 25 ItemDetailsPage

| | |
|-------------------------|---|
| <i>Defining Quality</i> | Page containing details of the selected item along with its description and thumb nail image and the TOC of images. The details do not contain location information. |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page - /cgi-bin/db2www/HDA/Browse Related Resources Page- /HDA/Related.html Overview Page- /HDA/Overview.html Acknowledgements Page - /HDA/ Acknowledgements.html Feedback Page - /HDA/Feedback.html Help Page - /HDA/Help.html Email Page - /cgi-bin/db2www/Email?Item=\$n |

| | |
|-----------------------|--|
| | Retrieval Page - /cgi-bin/db2www/Retrieve?Item=\$n |
| <i>Constraints</i> | Any field that does not have values should be suppressed |
| <i>Membership</i> | Archivo |
| <i>Implementation</i> | HTML 3.2 document containing JPEG thumbnail image |

```

<<Dynamic HTML>>
ItemDetailsPage
item : RecordNo
image : ImageNo
<<URL>> $ Base Ref = http://kottos-ctrl.usc.edu/
    
```

OBJ – 26 ImagePage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | Display the full sized images with facilities to navigate among images of the same item. |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page– HDA/Related.html Overview Page– HDA/Overview.html Acknowledgements Page – HDA/ Acknowledgements.html Feedback Page - HDA/Feedback.html Help Page - HDA/Help.html Email Page - /cgi-bin/db2www/Email?Item=\$n Retrieval Page - /cgi-bin/db2www/Retrieve?Item=\$n |
| <i>Constraints</i> | Should be downloaded in 1 minute on a 33.6 kbps data link |
| <i>Membership</i> | Archivo |
| <i>Implementation</i> | HTML 3.2 document containing JPEG or GIF image |

```

<<Dynamic HTML>>
ImagePage
<<HIDDEN>> item : RecordNo
image : ImageNo
<<URL>> $ Base Ref = http://kottos-ctrl.usc.edu/()
    
```

OBJ – 27 RetrievePage

| | |
|-------------------------|--|
| <i>Defining Quality</i> | A form to request retrieval of selected items from the archive |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page– HDA/Related.html Overview Page– HDA/Overview.html Acknowledgements Page – HDA/ Acknowledgements.html Feedback Page - HDA/Feedback.html Help Page - HDA/Help.html |
| <i>Constraints</i> | A maximum of 5 items can be requested for retrieval in one request |
| <i>Membership</i> | Archivo |
| <i>Implementation</i> | HTML 3.2 document |

```

<<Dynamic HTML>>
RetrievePage
<<URL>> $ Base Ref = http://kottos-ctrl.usc.edu/
<<HIDDEN>> items : BFI[1..5]
<<INPUT>> name : Text
<<INPUT>> Email : Text
<<INPUT>> date : Text
<<SUBMIT>> send request(name : Text, email : Text, date : Text, items : BFI{1..5})
    
```

OBJ – 28 EmailPage

| | |
|-------------------------|---|
| <i>Defining Quality</i> | A form to send selected items and their associated full size images to the requesting Patron |
| <i>Outlets</i> | Main Page- HDA/index.html Browse Page – /cgi-bin/db2www/HDA/Browse Related Resources Page– /HDA/Related.html Overview Page– /HDA/Overview.html Acknowledgements Page – /HDA/ Acknowledgements.html Feedback Page - /HDA/Feedback.html Help Page - /HDA/Help.html |
| <i>Membership</i> | Archivo |
| <i>Implementation</i> | HTML 3.2 document |

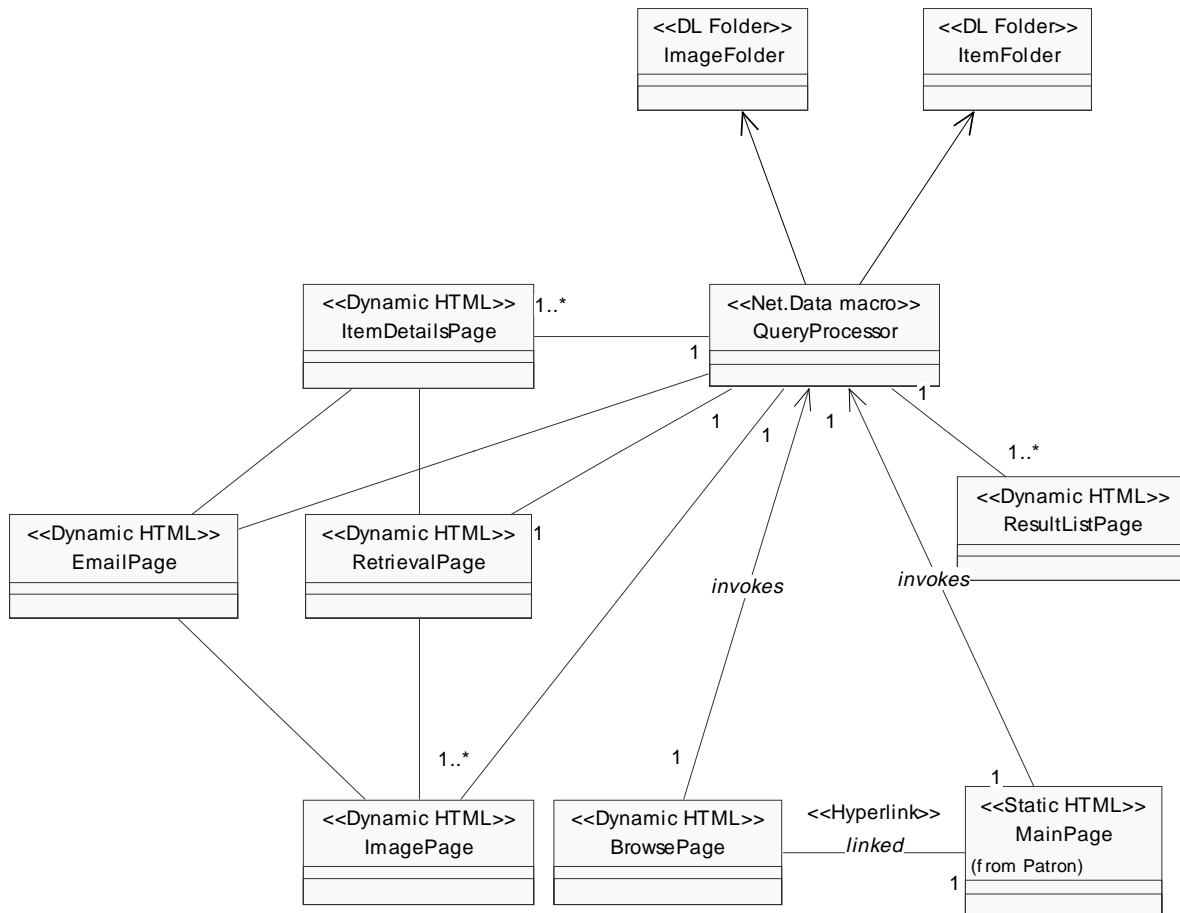
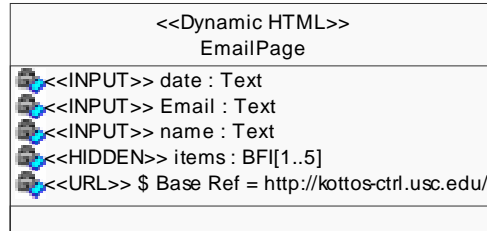


Figure 16 Class Interaction - Archivo

OBJ – 29 QueryProcessor

| | |
|-------------------------|---|
| <i>Defining Quality</i> | A macro that processes archive exploration requests and generates the required items and images. |
| <i>Outlets</i> | Unix date program - date Digital Library API |
| <i>Constraints</i> | Should be able to handle up to 100 concurrent users. |
| <i>Implementation</i> | Net.Data macro script interacting with JavaScript, Dynamic Page Builder, Perl and the Digital Library server. |

| <<Net.Data macro>> Query Processor |
|---|
| <pre> <<DL Library Server>> database : String = "LIBSRVRX" maxResults : Integer = "10" thumbnailID : Integer = "1" descriptionID : Integer = "2" <<Index Class>> archive : String = "HispanicDigitalArchive" <<Index Class>> images : String = "HDAImages" </pre> |
| <pre> <<HTML>> search(query : String, page : Integer = 0, combine : String = All) <<HTML>> item(PPID : Part ID) <<HTML>> image(record : Integer, image : Integer) <<HTML>> request(type : String = "email", records [1..5] : Integer, email : Text, name : Text, date : String = "") <<DLDPB>> findItems(<<IN>> query : String, <<IN>> page : Integer, <<OUT>> table : Table) <<DLDPB>> getItemDetails(<<IN>> PID : Part ID, <<OUT>> table : Table) <<DLDPB>> getImage(<<IN>> PID : Part ID, <<OUT>> table : Table) <<DLDPB>> getDescription(<<IN>> PID : Part ID, <<OUT>> table : Table) <<DLDPB>> getTOC((<<IN>> item : Integer, <<IN>> rec : Integer, <<OUT>> table : Table) <<DLDPB>> getEachImage(<<IN>> rec : Integer, <<IN>> image : Integer, <<IN>> prev : Integer, <<IN>> next : Integer, <<IN>> curltem : Integer, <<OUT>> table : Table) <<PERL>> formQueryString(<<IN>> phrase : String, <<OUT>> queryString : String) <<PERL>> expiryDate() : expireTag <<PERL>> formNameValue(<<IN>> STRING : String) : nameValue <<HTML>> startBrowse() <<HTML>> browse(collection : String, type : String, query : String) <<PERL>> formbrowseQuery(type : String, collection : String, query : String) : String </pre> |

OBJ – 30 ItemFolder

| | |
|-------------------------|---|
| <i>Defining Quality</i> | Metadata on item stored persistently in the database. Also contains thumbnail image, description and text mining information. |
| <i>Membership</i> | HispanicDigitalArchive |
| <i>Constraints</i> | Description is to be stored as ASCII text. |
| <i>Implementation</i> | Digital Library Folder |

OBJ – 31 ImageFolder

| | |
|-------------------------|--|
| <i>Defining Quality</i> | Images and metadata regarding images for an item stored persistently in the database |
| <i>Membership</i> | HDAImages |
| <i>Constraints</i> | The images can only be GIF or JPEG format |
| <i>Implementation</i> | Digital Library Folder |

3.3 Operations Model

This model describes the assignment of responsibilities to individual objects and the interaction of these objects to provide functionality to the system users.

3.3.1.1 Detailed behaviors

Operations initiated by behavior events:

1. Operator adds an item
2. Manager verifies archive item updates
3. Manager deletes item type
4. Manager deletes a field option
5. Manager deletes field option
6. Patron selects an item

7. Patron deselects an item
8. Add/Browse Item relation,type,language,country

Policies and their algorithms:

1. Validate administrator
This policy is implemented using a simple two letter initials mechanism. There is no user name or password associated with each user as it was found to be too restraining and unnecessary in the context. Each administrator is trusted to login using his/her initials. Common initials for administrators is not allowed.
2. Managing administrative access
An administrator can be added as either a manager or an operator. Only a manager is allowed to perform this operation. Multiple administrators with the same initials are not allowed.
3. Unique item identifier
Items for administrators are located using a combination of box, item and folder number. The above combination is expected to be unique for each entry and conflicting entries are not allowed. The name of the administrator who entered the item is entered into the database along with the rest of the information for logging purposes.
4. State of the entered item
The entered item can be approved for entry into the database only by the Manager. Items entered by the Operator is pending until approved by the Manager. Bulk status modification is allowed using a filter.
5. Update of an Item
Only the type, box, folder and item nos need to be entered for deletion. Modification requires a minimum of the above to be entered.
6. Image
Images can be in either the gif or jpg format only. Default titles are generated by the system (such as pic1, pic2 etc), but can be changed by the administrator to provide a relevant title. The display of the images in Mayordomo will be fit to screen although the administrator has the option of viewing it full size.
7. Request Item
A patron may choose to request an item either for retrieval from archive or by e-mail. A patron may choose to request a maximum of 5 items. Advance requests, called paging requests, must include the user's email address and a date of pickup which starts on the next plus one business day. A list of all selected items is shown. The request for retrieval is sent by e-mail to an administrator address. An e-mail that contains item details and all images in addition to any optionally provided information is sent in reply to e-mail requests.
8. Select archive item
One way of finding items is to search the archive for areas of interest. Users can search based on any or all the following criteria: Keyword, Title, Author, Date, Collection, Country and Language. These criteria are then used to build a query that is run on the archive database to identify the items. Another way of finding is to browse the archive in a sequential manner. Users can browse on the basis of alphabetic order of archive collections or item types.

3.3.1.2 Operation Specifications

This section refines the behavior model of SSAD 2.2 and forms each behavior into individual operations directly carried out by the software objects.

OP – 01 Search items

| | |
|------------------------|---|
| <i>Initiator</i> | Patron searches archive <algorithm> |
| <i>Parameters</i> | Keyword phrase – query Choice of combination (Any/All) – combine |
| <i>Return value</i> | Matching items results list |
| <i>Exceptions</i> | No Match |
| <i>Validation</i> | Query /= "" |
| <i>Synchronization</i> | Concurrent with operations of other patrons |
| <i>Relates to</i> | BH-26 of SSAD 2.2 |

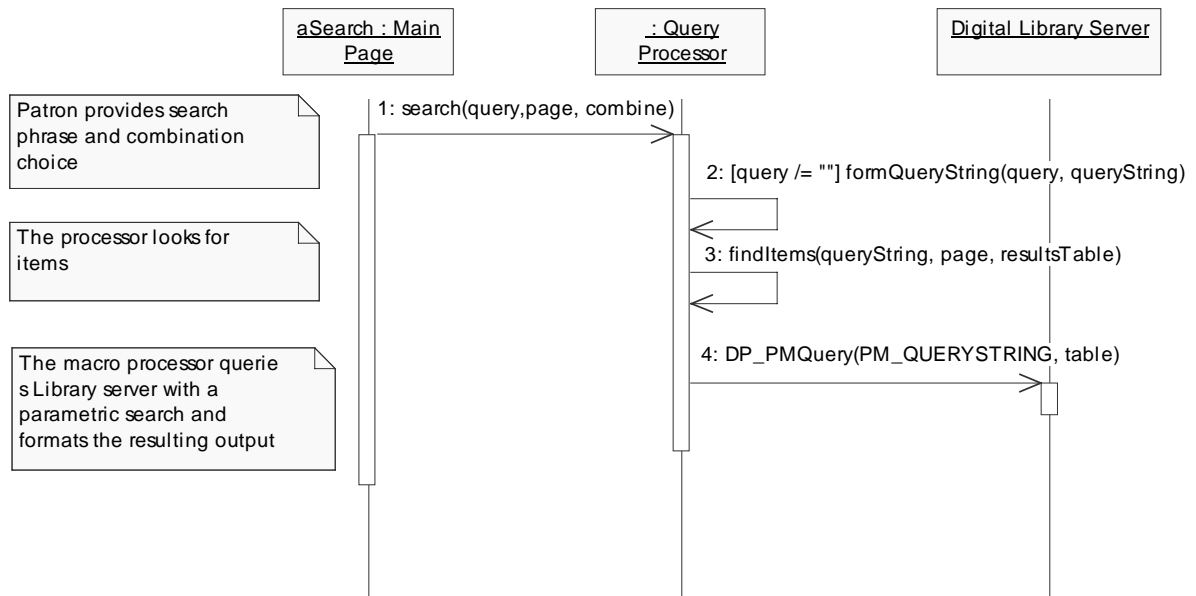


Figure 16 Operation OP – 01

OP – 02 Browse items by Patron

| | |
|------------------------|---|
| <i>Initiator</i> | Patron browses archive <algorithm> |
| <i>Parameters</i> | Collection, type and optional keyword |
| <i>Return value</i> | Matching items results list |
| <i>Exceptions</i> | No Match |
| <i>Validation</i> | Query /= "" or collection /= "" or type /= "" |
| <i>Synchronization</i> | Concurrent with operations of other patrons |
| <i>Related to</i> | BH-27 of SSAD 2.2 |

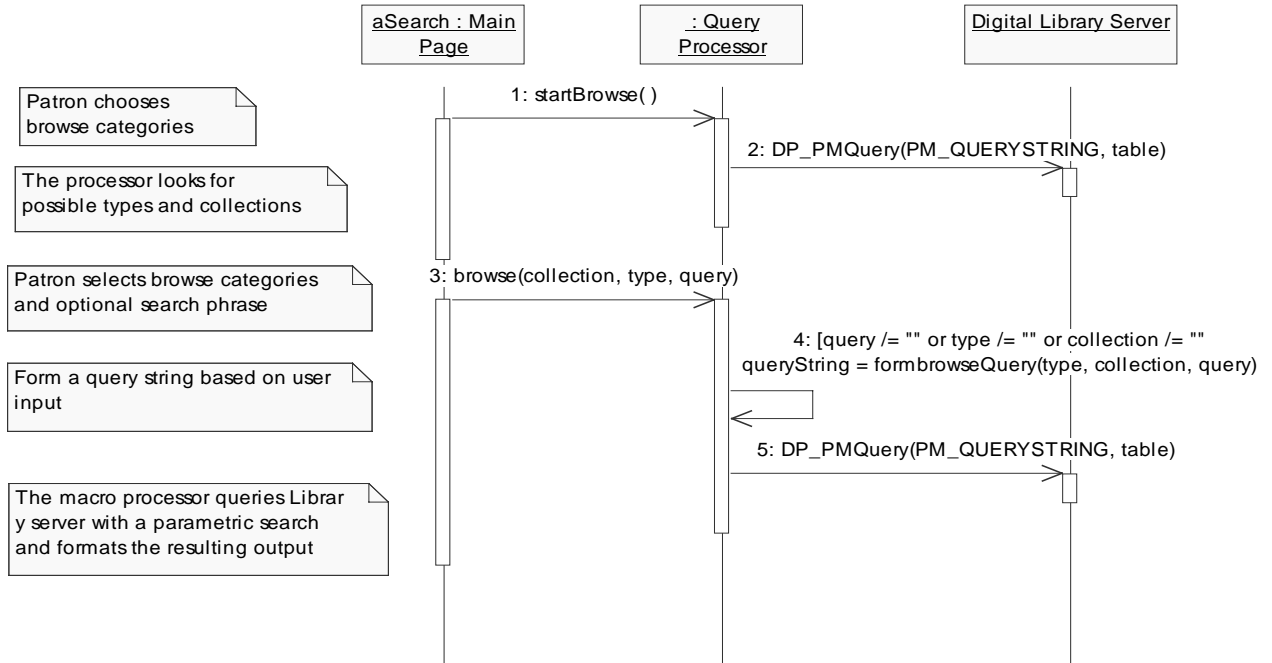


Figure 17 Operation OP –02

OP – 03 Patron displays item

| | |
|------------------------|---|
| <i>Initiator</i> | Patron displays archive item <event> |
| <i>Parameters</i> | PPID of selected item |
| <i>Return Value</i> | Detailed item information, thumbnail, description and TOC of images |
| <i>Exception</i> | Item PPID not found in archive |
| <i>Synchronization</i> | Concurrent with operations of other patrons |
| <i>Relates to</i> | BH-20 of SSAD 2.2 |

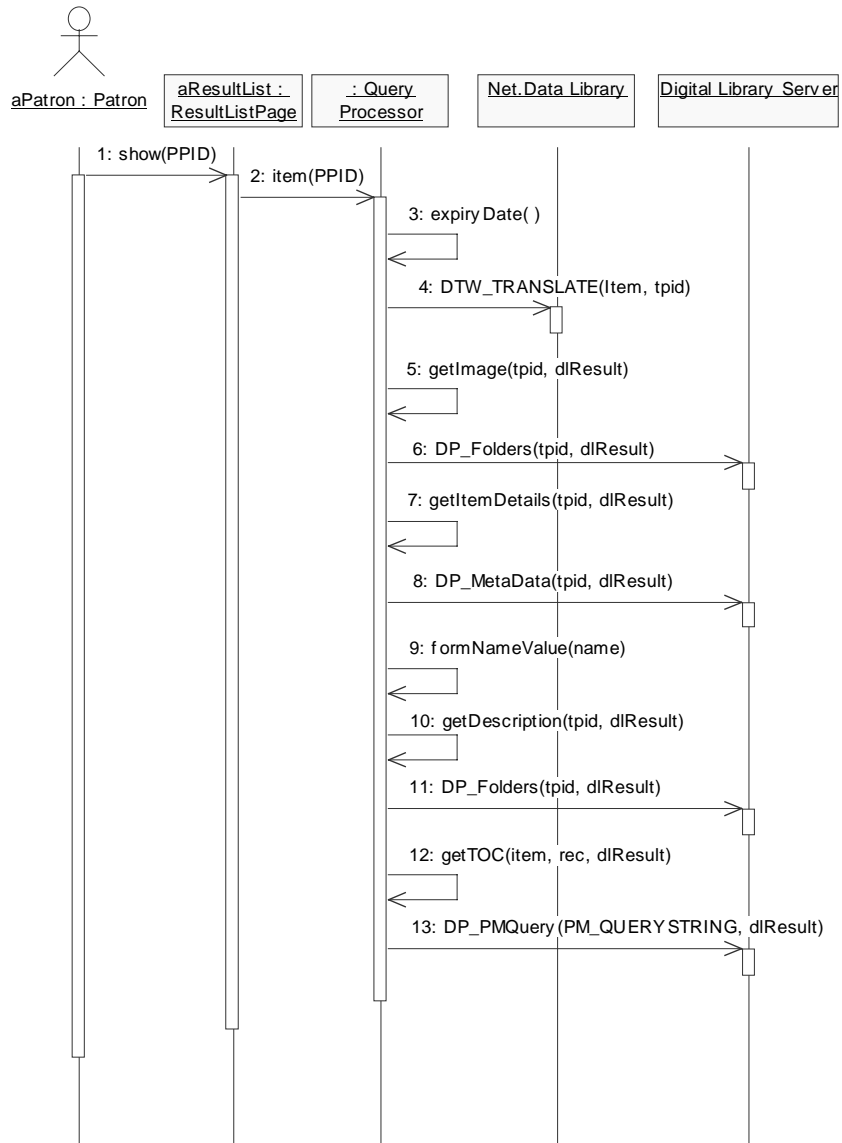


Figure 18 Operation OP – 03

OP – 04 Patron views images

| | |
|------------------------|---|
| <i>Initiator</i> | Patron displays images of item <event> |
| <i>Parameters</i> | HDARcordNo of selected item Image No to be displayed |
| <i>Return Value</i> | Captioned image with navigability to previous and next images |
| <i>Exception</i> | Images for RecordNo not found |
| <i>Synchronization</i> | Concurrent with operations of other patrons |
| <i>Relates to</i> | BH-21 of SSAD 2.2 |

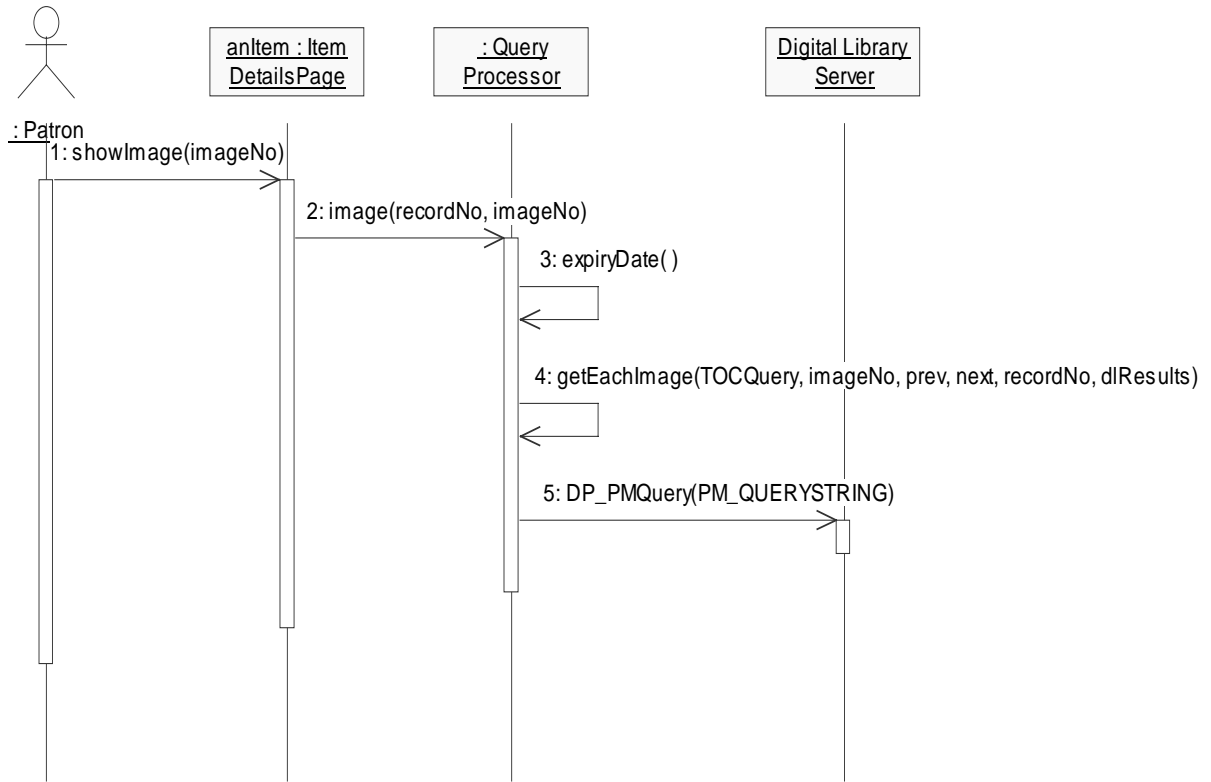


Figure 19 Operation OP – 04

OP – 05 Request help by patron

| | |
|-----------------|--------------------------------------|
| <i>Event</i> | Patron request help for using system |
| <i>Exits</i> | General help information is shown |
| <i>Messages</i> | Help |

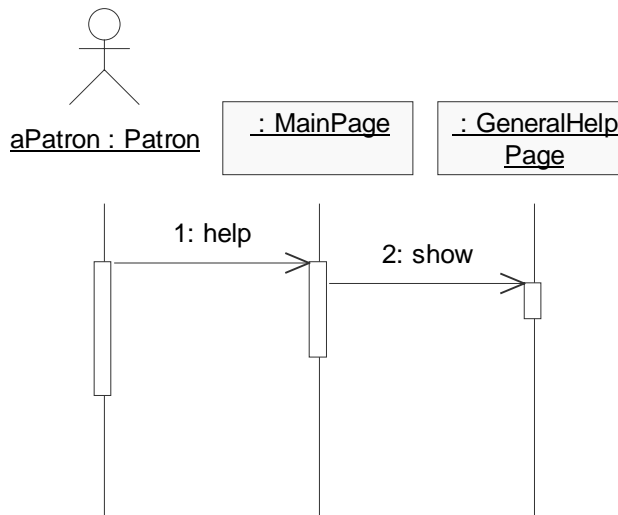


Figure 20 Operation OP – 05

OP – 06 Request browse help by patron

| | |
|-----------------|--|
| <i>Event</i> | Patron request help for using browse feature |
| <i>Exits</i> | Browse related help is shown |
| <i>Messages</i> | Help browse |

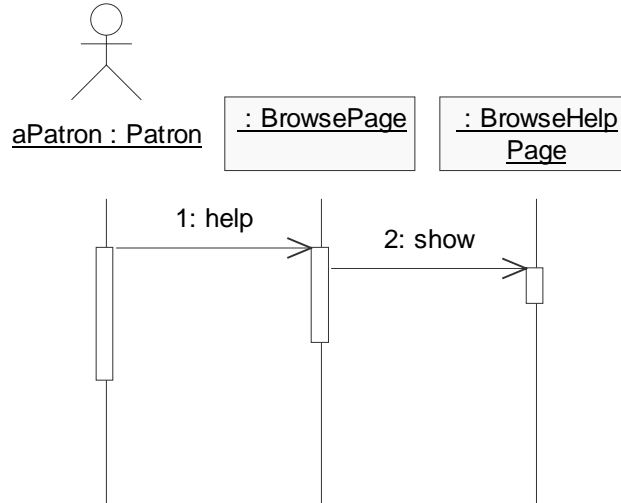


Figure 21 Operation OP – 06

OP – 07 Start Admin app

| | |
|-------------------|------------------------------|
| <i>Event</i> | Operator starts admin app |
| <i>Parameters</i> | User id, password |
| <i>Exits</i> | Administrator privileges set |
| <i>Messages</i> | Authenticate |

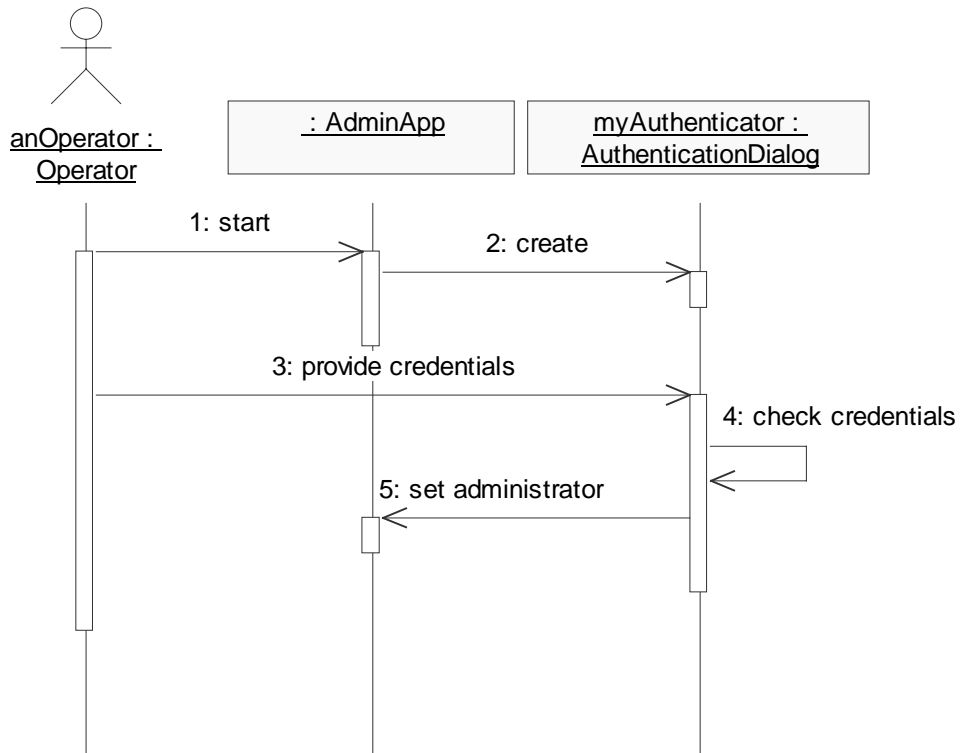


Figure 22 Operation OP – 07

OP – 08 Add items

| | |
|-------------------|--|
| <i>Event</i> | Administrator adds new item to archive |
| <i>Parameters</i> | Item information, images, image order |
| <i>Exits</i> | Administrator privileges set |
| <i>Messages</i> | Authenticate |

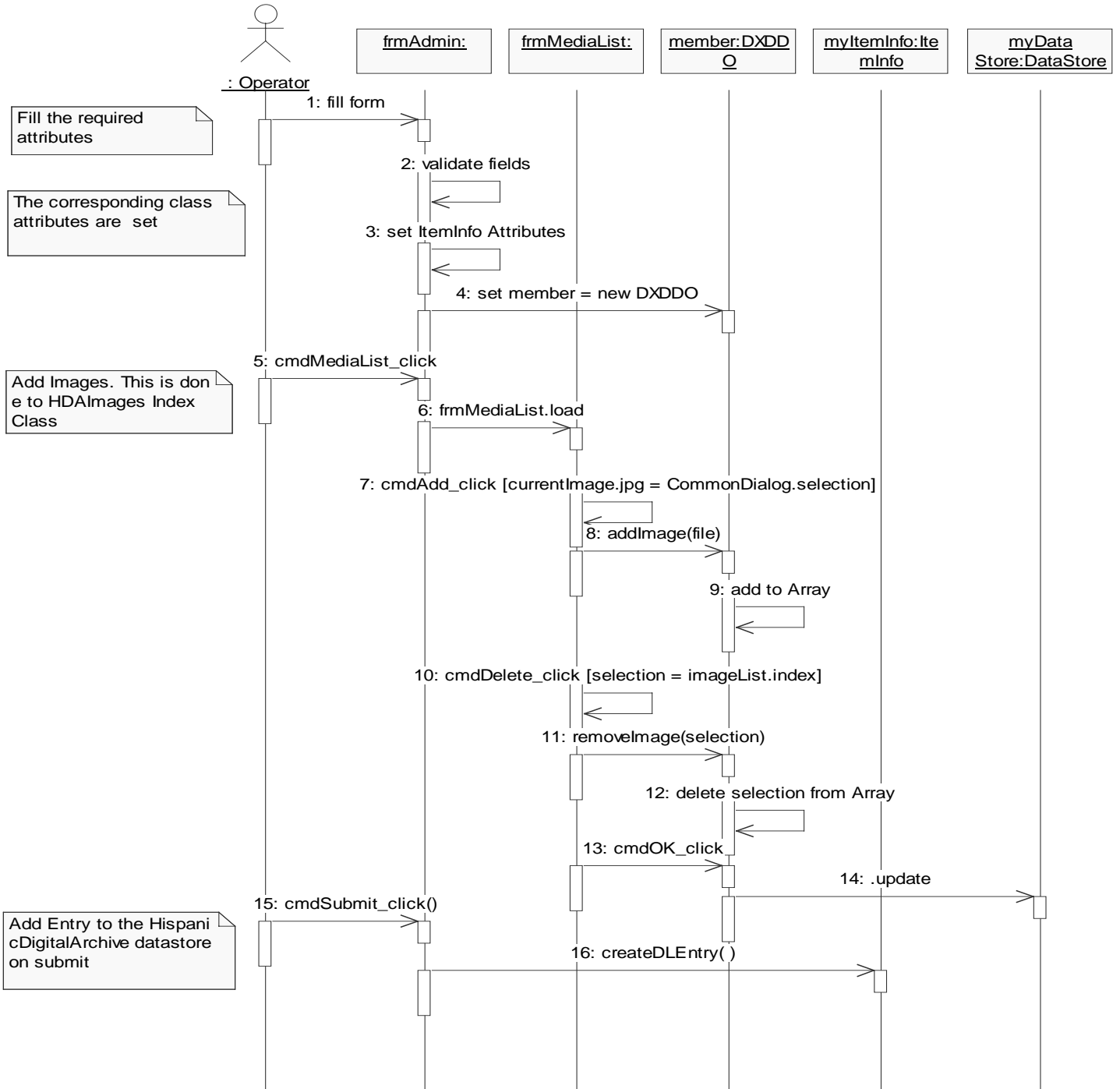


Figure 23 Operation OP – 08

OP – 09 Modify items

| | |
|-------------------|---|
| <i>Event</i> | Administrator modifies item information |
| <i>Parameters</i> | Item information |
| <i>Exits</i> | Item information updated |
| <i>Messages</i> | Update |

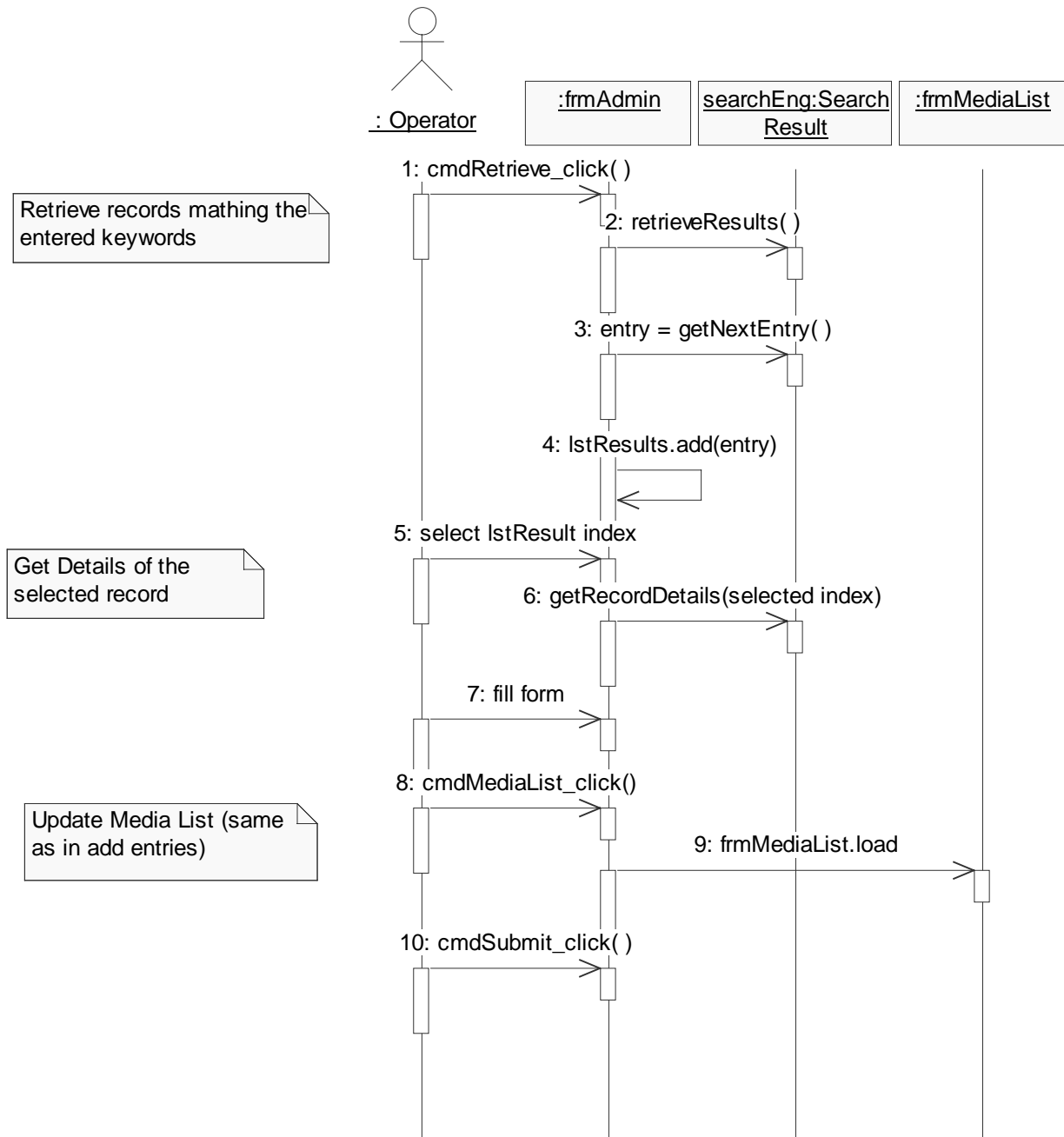


Figure 24 Operation OP – 09

OP – 10 Delete item

| | |
|------------------|---|
| <i>Event</i> | Operator deletes item |
| <i>Parameter</i> | Item |
| <i>Exits</i> | After successful action verification, item is removed |
| <i>Messages</i> | Remove |

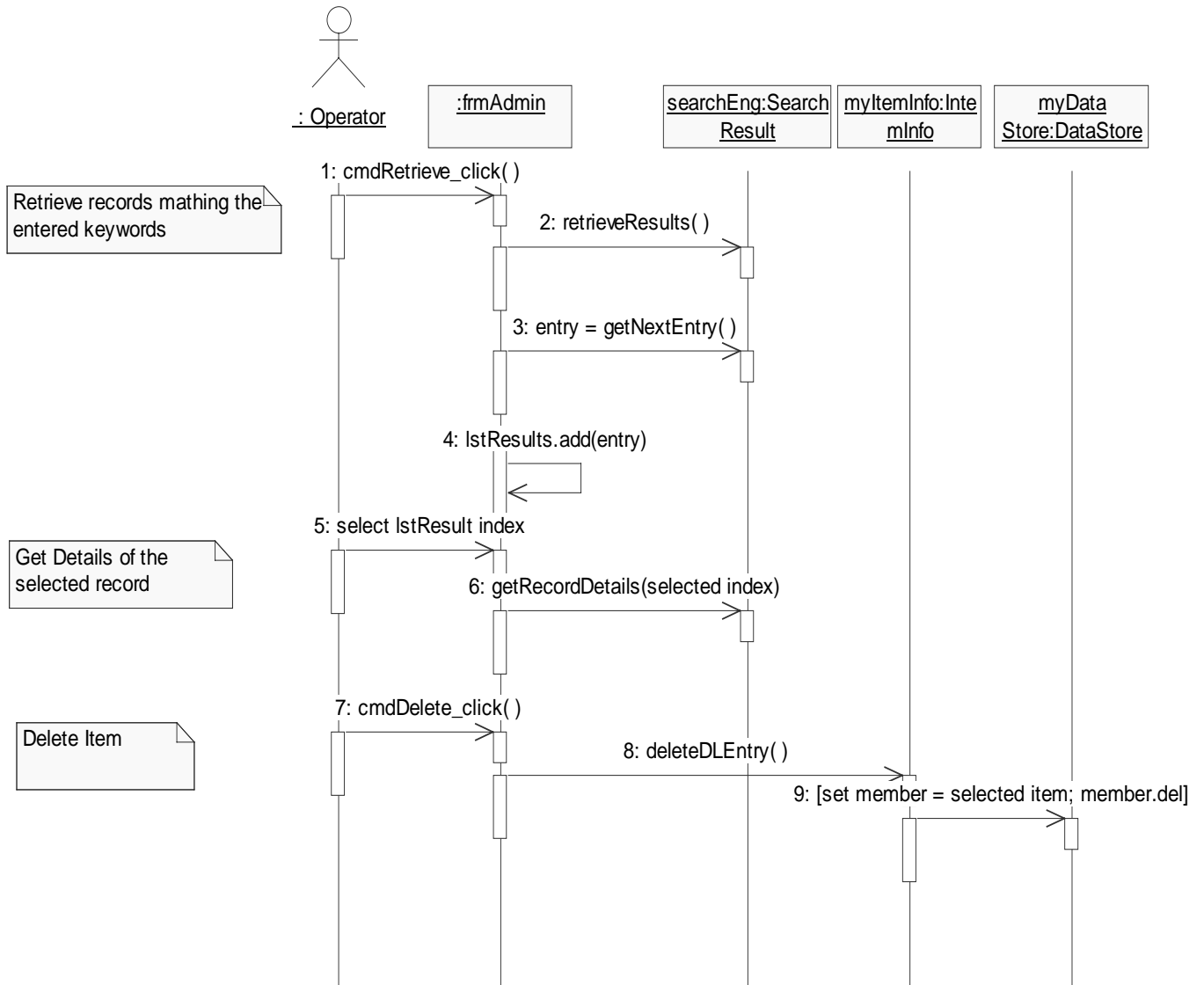


Figure 25 Operation OP – 10

OP – 11 Generate reports

| | |
|-----------------|---|
| <i>Event</i> | Manager requests summary info |
| <i>Exits</i> | Item summary information report printed |
| <i>Messages</i> | Print summary |

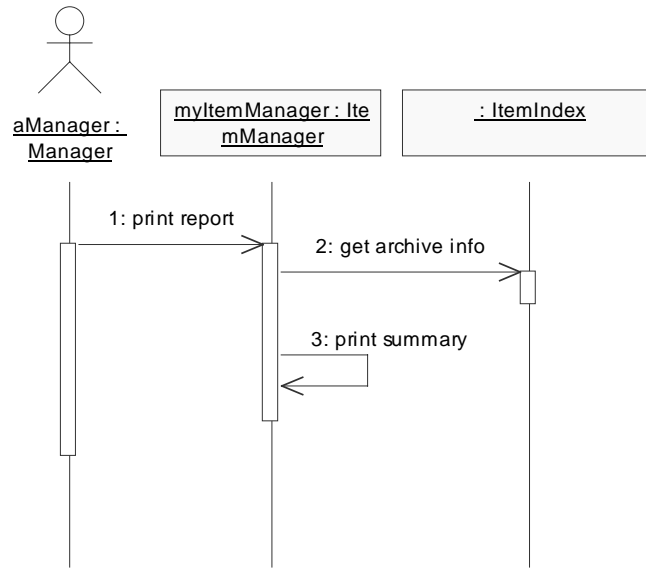


Figure 26 Operation OP – 11

OP – 12 Add Item Type

| | |
|-------------------|------------------------------|
| <i>Event</i> | Administrator adds item type |
| <i>Parameters</i> | Item type information |
| <i>Exits</i> | Item type is added |
| <i>Messages</i> | Add type |

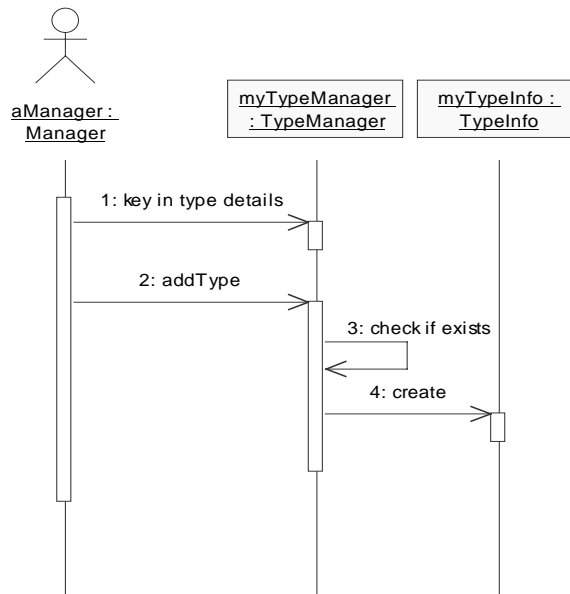


Figure 26 Operation OP – 12

OP – 13 Modify Type information

| | |
|-------------------|---|
| <i>Event</i> | Administrator modifies type information |
| <i>Parameters</i> | Type modification information |
| <i>Exits</i> | Modified item type list |
| <i>Messages</i> | Modify type |

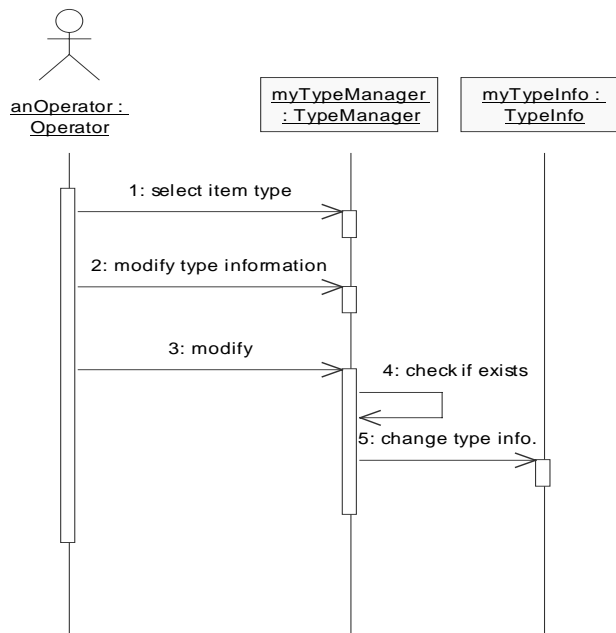


Figure 27 Operation OP – 13

OP – 14 Delete Type

| | |
|-------------------|---------------------------------|
| <i>Event</i> | Administrator deletes item type |
| <i>Parameters</i> | Item type |
| <i>Exits</i> | Modified item type list |
| <i>Messages</i> | Delete type |

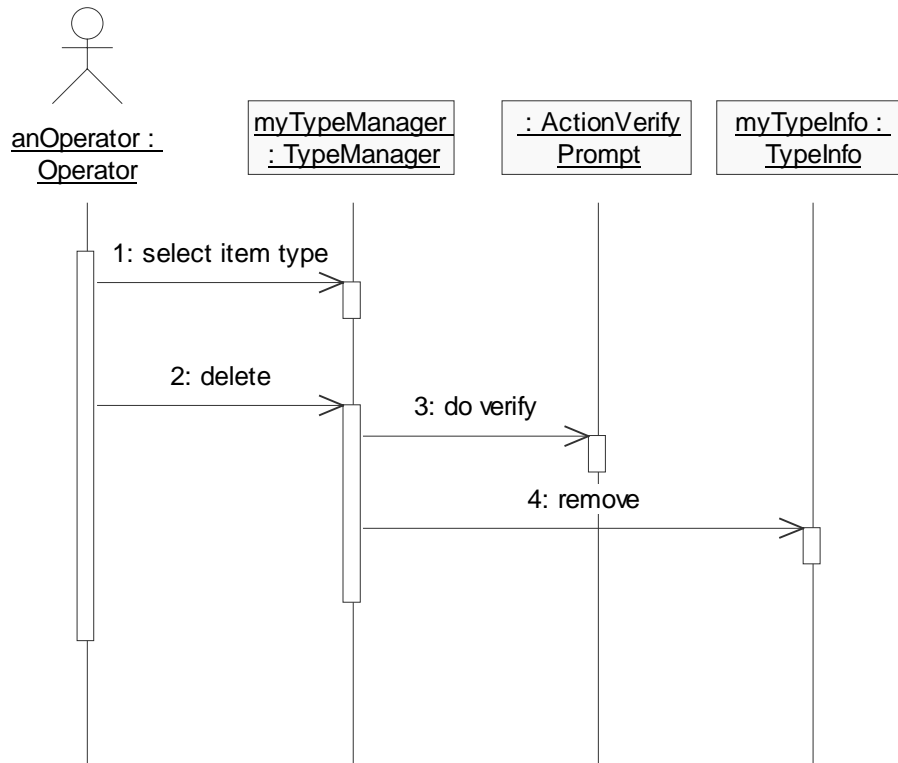


Figure 28 Operation OP – 14

OP – 15 Add field option

| | |
|-------------------|---------------------------------|
| <i>Event</i> | Administrator adds field option |
| <i>Parameters</i> | Field and option |
| <i>Exits</i> | Modified options |
| <i>Messages</i> | Add option |

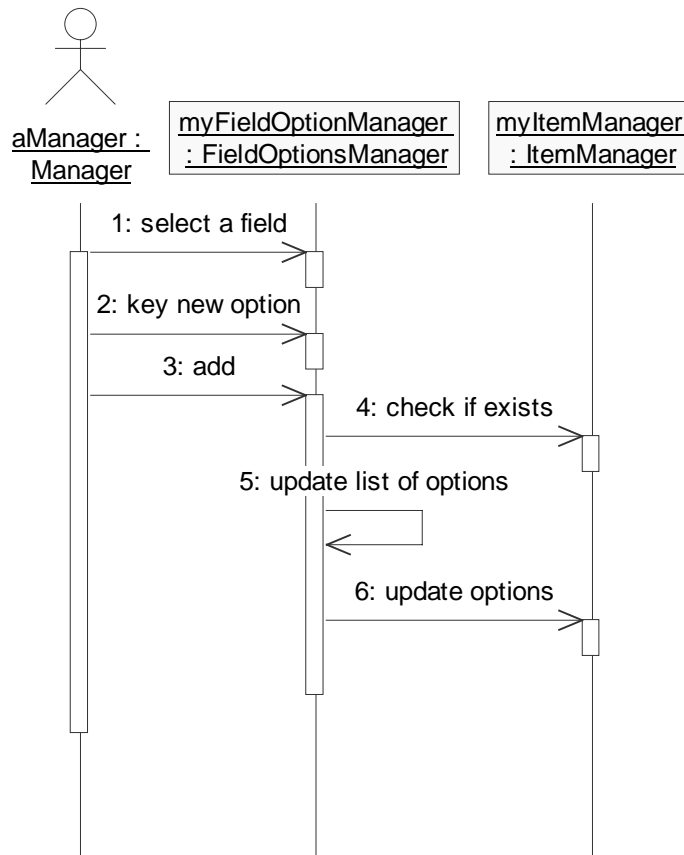


Figure 29 Operation OP – 15

OP – 16 Modify field option

| | |
|-------------------|-------------------------------------|
| <i>Event</i> | Administrator modifies field option |
| <i>Parameters</i> | Field and option |
| <i>Exits</i> | Modified options |
| <i>Messages</i> | Modify option |

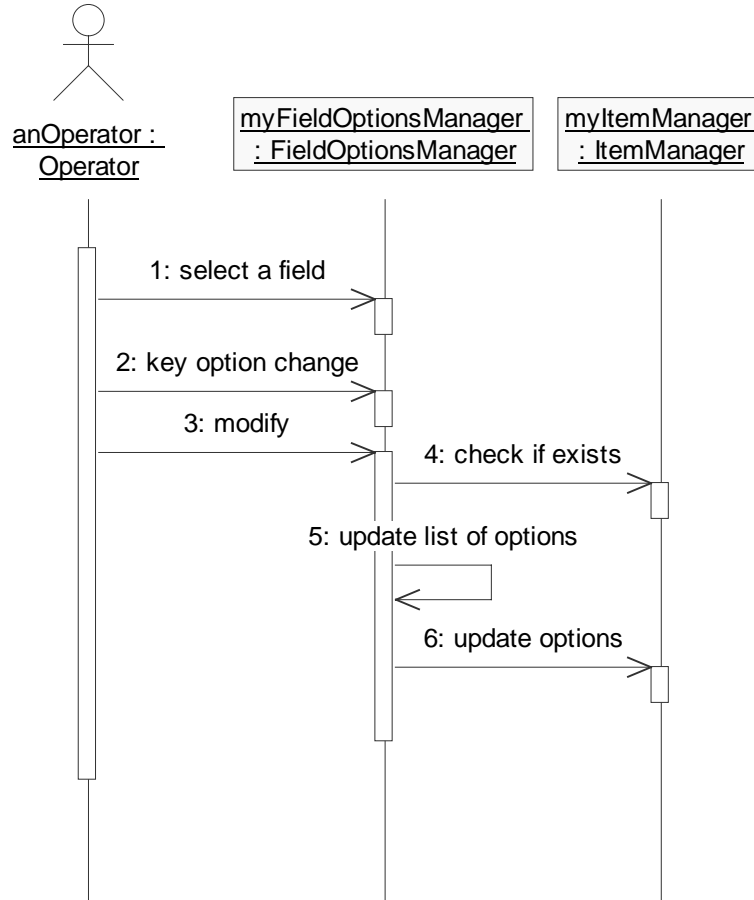


Figure 30 Operation OP – 16

OP – 17 Delete field option

| | |
|-------------------|------------------------------------|
| <i>Event</i> | Administrator deletes field option |
| <i>Parameters</i> | Field and option |
| <i>Exits</i> | Modified options |
| <i>Messages</i> | Delete option |

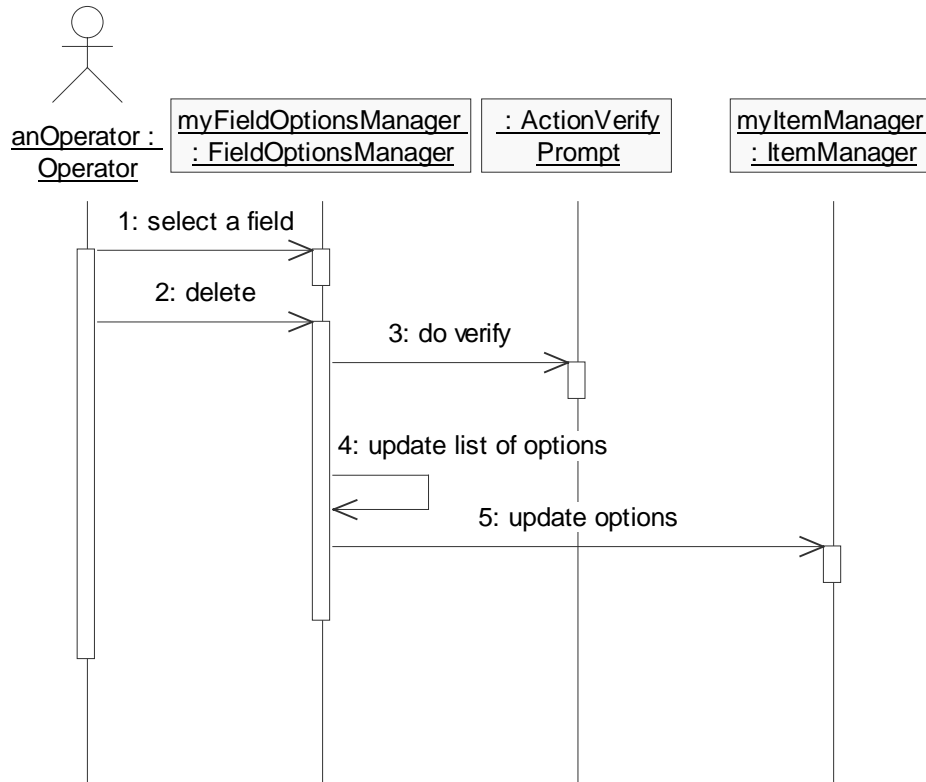


Figure 31 Operation OP – 17

3.4 Class Model

The class model is an elaboration of the enterprise model and also shows the additional classes required for implementing the design [SSRD 2.3]. The class model shows generalization of objects to form a common super class. It also shows the contained relationships for objects.

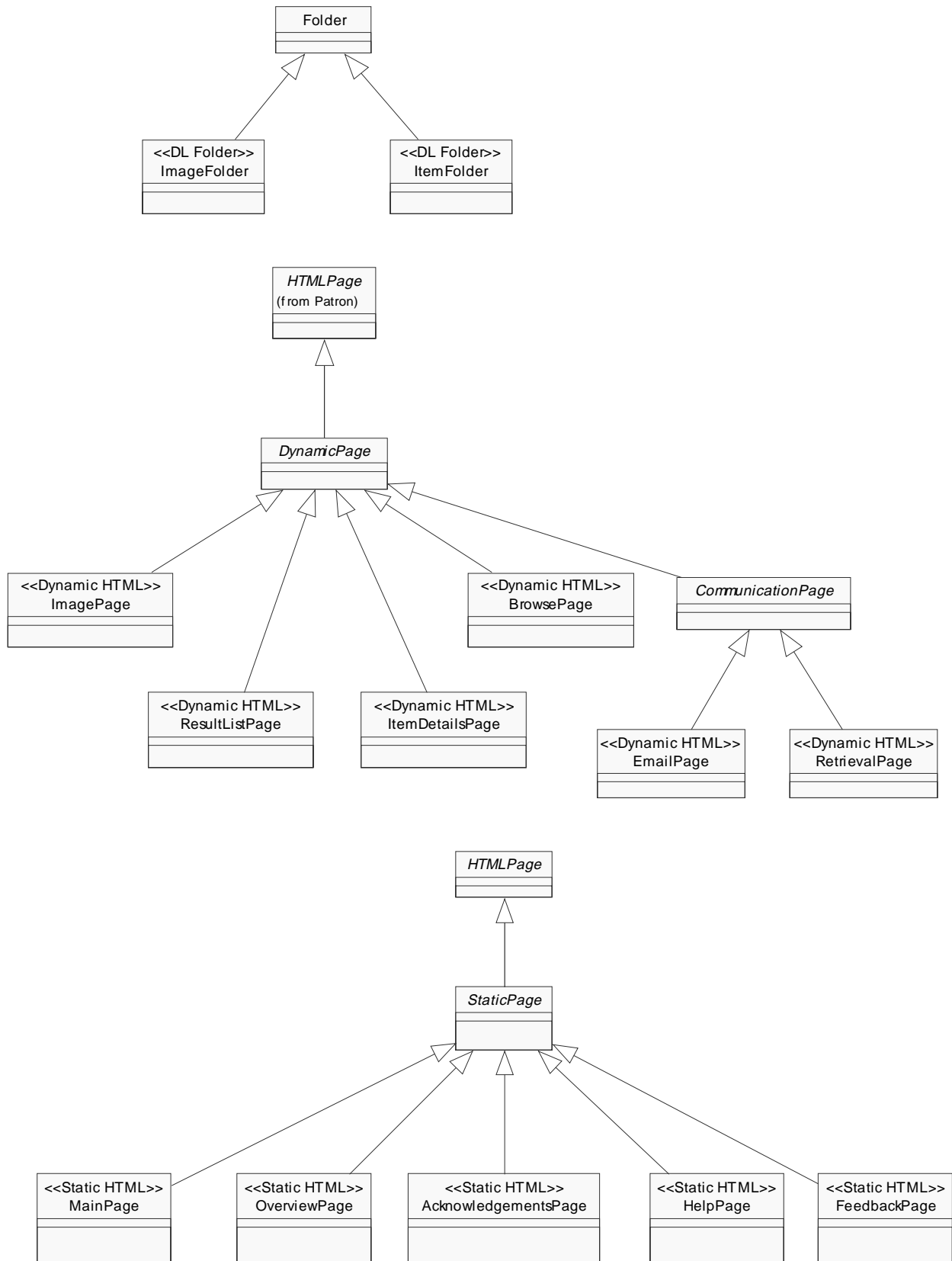


Figure 32 Class Model

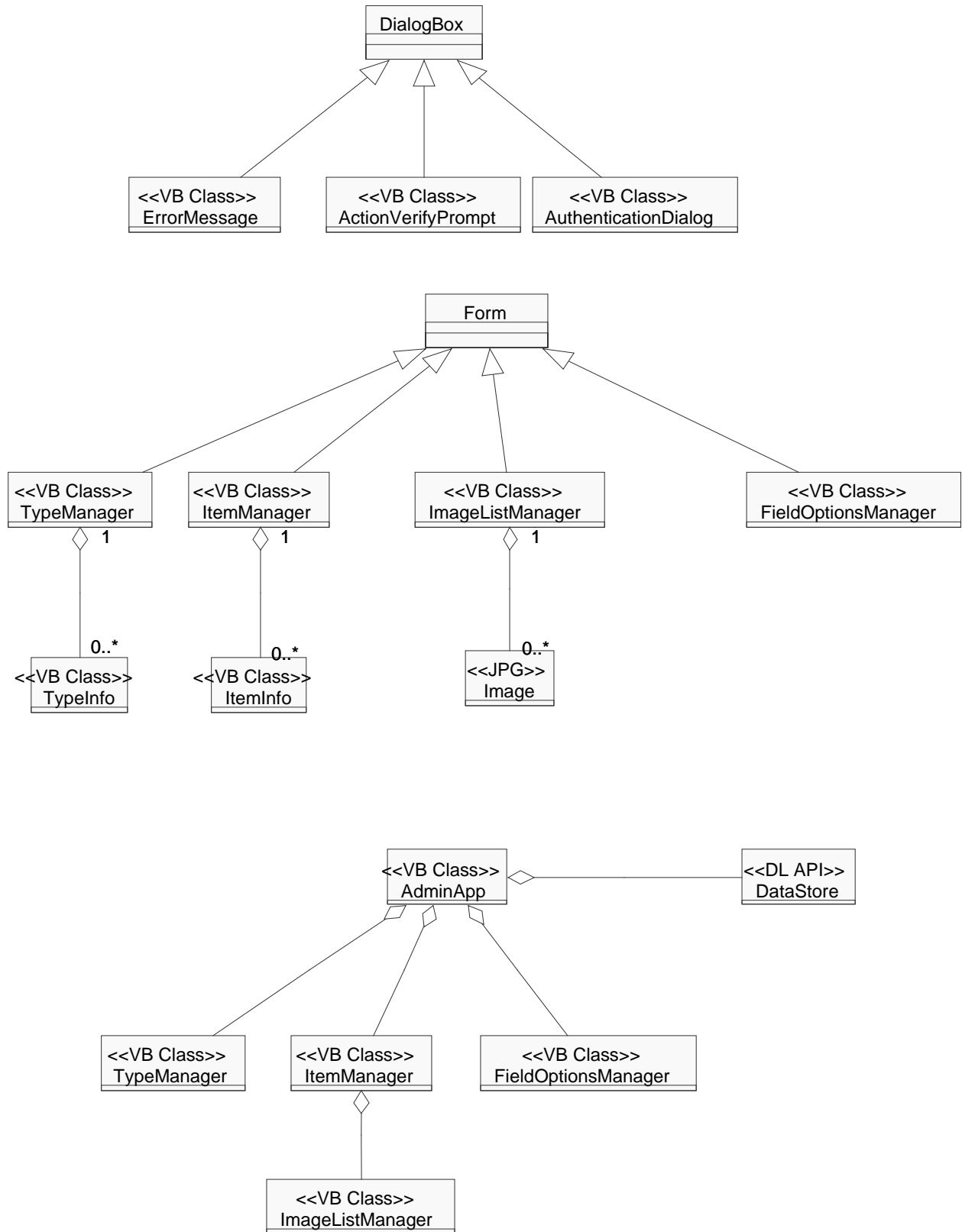


Figure 32 Class Model

3.5 Data Model

3.5.1 Development directory structure

Project artifacts would consist of documents, code and test plans and communications. The project artifacts would be stored in the following hierarchical directory structure:

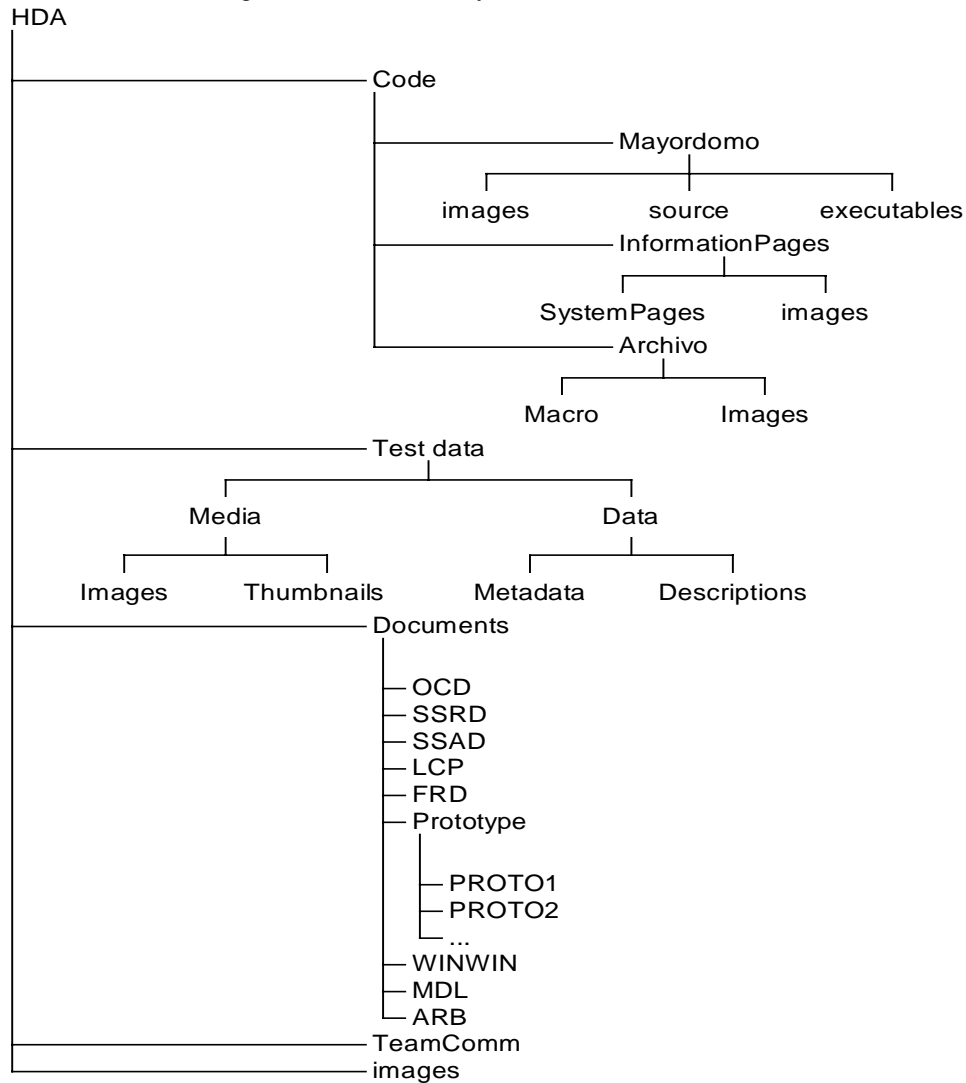


Figure 33 Development Directory Structure

3.5.2 Digital Library Data Schema

There will be two *Index Classes* to store the archived data and archive configuration. The first *Index Class* called *HispanicDigitalArchive* will contain the meta data about items and the different options that exist for the item fields. This configuration information is pulled out from the database to configure Mayordomo on startup. The second *Index Class* called *HDAImages* contains images of the items stored in the archive. Both index classes are searched by the patron interface.

3.5.2.1 HispanicDigitalArchive

This index class stores the production meta data about items. Each item has a unique record number and each time a new item is added, a new number is generated.

Key fields:

| Key field | Name | Required? | Type | Length |
|-----------|-----------------------|-----------|-----------------------------|----------|
| 1 | HDATitle | | Varchar (Extended alphanum) | 1-256 |
| 2 | HDACreator | | Varchar (Extended alphanum) | 1-256 |
| 3 | HDARecordNo | Yes | LongInt | 1-500000 |
| 4 | HDABoxNo | | Integer | 1-4096 |
| 5 | HDAFolderNo | | Integer | 1-1024 |
| 6 | HDAItemNo | | Varchar (Extended alphanum) | 1-32 |
| 7 | HDAType | | Varchar (Extended alphanum) | 1-64 |
| 8 | HDALocation | | Varchar (Extended alphanum) | 1-64 |
| 9 | HDACollection | | Varchar (Extended alphanum) | 1-128 |
| 10 | HDACountry | | Varchar (Extended alphanum) | 1-64 |
| 11 | HDADate | | Varchar (numeric) | 1-4 |
| 12 | HDARelation | | Varchar (Extended alphanum) | 1-128 |
| 13 | HDALanguage | | Varchar (Extended alphanum) | 1-32 |
| 14 | HDASubject | | Varchar (Extended alphanum) | 1-1024 |
| 15 | HDAResourceIdentifier | | Char (ext Alphanum) | 12 |
| 16 | HDASource | | Varchar (Extended alphanum) | 1-128 |
| 17 | HDACoverage | | Varchar (Extended alphanum) | 1-128 |
| 18 | HDARightsManagement | | Varchar (Extended alphanum) | 1-128 |
| 19 | HDAContributor | | Varchar (ext alphanum) | 1-256 |
| 20 | HDAPublisher | | Varchar (extalphanum) | 1-128 |
| 21 | HDAFormat | | Varchar | 1-32 |
| 22 | HDAItemState | | Char (numeric) | 1 |
| 23 | HDAItemCreatedBy | Yes | Char | 2 |
| 24 | HDAItemCreatedOn | Yes | Varchar (ext. alphanum) | 1-10 |
| 25 | HDAItemModifiedBy | Yes | Char | 2 |
| 26 | HDAItemModifiedOn | Yes | Varchar (ext. alphanum) | 1-10 |

Each folder in this index class contains the following *document parts*

1. Search Text (to be used with Text Miner)
2. Thumbnail (to be shown with search results)
3. Description (entered about each item)

3.5.2.2 HDAImages

Key fields:

| Key Field | Name | Required? | Type | Length |
|-----------|-----------------|-----------|---------|----------|
| 1 | HDARecordNo | Yes | LongInt | 1-500000 |
| 2 | HDAImageNo | Yes | Integer | 1-1000 |
| 3 | HDAImageCaption | | Varchar | 1-32 |

Each folder in this index class contains only one *document part*
Image data

3.5.2.3 HDAUsers

This index class in IBM Digital Library contains the details about administrators of the Hispanic Digital Archive.

Key fields:

| Key Field | Name | Required? | Type | Length |
|-----------|-----------------|-----------|-----------------------------|--------|
| 1 | HDAUserInitials | Yes | Char (Alphabetic) | 2 |
| 2 | HDAUserName | | Varchar (Extended Alphanum) | 1-64 |
| 3 | HDAuserLevel | Yes | Char (Numeric) | 1 |

3.5.2.4 HDAElements

This index class in IBM Digital Library contains the defined options for the fields of the archive.

Key fields:

| Key Field | Name | Required? | Type | Length |
|-----------|------------------|-----------|-----------------------------|--------|
| 1 | HDAElementName | | Varchar (Alphabetic) | 1-32 |
| 2 | HDAElementOption | | Varchar (Extended Alphanum) | 1-64 |

3.5.2.5 HDATypes

This index class is used to store Type configuration information for the archive.

Key fields:

| Key field | Name | Required? | Type | Length |
|-----------|------------------------|-----------|-----------------------------|--------|
| 1 | HDATypeName | Yes | Varchar (Extended alphanum) | 1-64 |
| 1 | HDATitle | | Character (Numeric) | 1 |
| 2 | HDACreator | | Character (Numeric) | 1 |
| 3 | HDABoxNo | | Character (Numeric) | 1 |
| 4 | HDATFolderNo | | Character (Numeric) | 1 |
| 5 | HDATItemNo | | Character (Numeric) | 1 |
| 6 | HDATType | | Character (Numeric) | 1 |
| 7 | HDATLocation | | Character (Numeric) | 1 |
| 8 | HDATCollection | | Character (Numeric) | 1 |
| 9 | HDATCountry | | Character (Numeric) | 1 |
| 10 | HDATDate | | Character (Numeric) | 1 |
| 11 | HDATRelation | | Character (Numeric) | 1 |
| 12 | HDATLanguage | | Character (Numeric) | 1 |
| 13 | HDATSubject | | Character (Numeric) | 1 |
| 14 | HDATResourceIdentifier | | Character (Numeric) | 1 |
| 15 | HDATSource | | Character (Numeric) | 1 |
| 16 | HDATCoverage | | Character (Numeric) | 1 |
| 17 | HDATRightsManagement | | Character (Numeric) | 1 |
| 18 | HDATContributor | | Character (Numeric) | 1 |
| 19 | HDATPublisher | | Character (Numeric) | 1 |
| 20 | HDATFormat | | Character (Numeric) | 1 |

3.5.2.6 HDATest

This index class stores the test/training meta data about items. Each item has a unique record number and each time a new item is added, a new number is generated.

Key fields:

| Key field | Name | Required? | Type | Length |
|-----------|----------------|-----------|-----------------------------|----------|
| 1 | HDATTitle | | Varchar (Extended alphanum) | 1-256 |
| 2 | HDATCreator | | Varchar (Extended alphanum) | 1-256 |
| 3 | HDATRecordNo | Yes | LongInt | 1-500000 |
| 4 | HDATBox | | Integer | 1-4096 |
| 5 | HDATFolderNo | | Integer | 1-1024 |
| 6 | HDATItemNo | | Varchar (Extended alphanum) | 1-32 |
| 7 | HDATType | | Varchar (Extended alphanum) | 1-64 |
| 8 | HDATLocation | | Varchar (Extended alphanum) | 1-64 |
| 9 | HDATCollection | | Varchar (Extended alphanum) | 1-128 |
| 10 | HDATCountry | | Varchar (Extended alphanum) | 1-64 |
| 11 | HDATDate | | Varchar (numeric) | 1-4 |
| 12 | HDATRelation | | Varchar (Extended alphanum) | 1-128 |

| | | | | |
|----|-------------------------|-----|-----------------------------|--------|
| 13 | HDAAtLanguage | | Varchar (Extended alphanum) | 1-32 |
| 14 | HDAAtSubject | | Varchar (Extended alphanum) | 1-1024 |
| 15 | HDAAtResourceIdentifier | | Char (ext Alphanum) | 12 |
| 16 | HDAAtSource | | Varchar (Extended alphanum) | 1-128 |
| 17 | HDAAtCoverage | | Varchar (Extended alphanum) | 1-128 |
| 18 | HDAAtRightsManagement | | Varchar (Extended alphanum) | 1-128 |
| 19 | HDAAtContributor | | Varchar (ext alphanum) | 1-256 |
| 20 | HDAAtPublisher | | Varchar (extalphanum) | 1-128 |
| 21 | HDAAtFormat | | Varchar | 1-32 |
| 22 | HDAAtItemState | | Char (numeric) | 1 |
| 23 | HDAAtItemCreatedBy | Yes | Char | 2 |
| 24 | HDAAtItemCreatedOn | Yes | Varchar (ext. alphanum) | 1-10 |
| 25 | HDAAtItemModifiedBy | Yes | Char | 2 |
| 26 | HDAAtItemModifiedOn | Yes | Varchar (ext. alphanum) | 1-10 |

Each folder in this index class contains the following *document parts*

1. Search Text (to be used with Text Miner)
2. Thumbnail (to be shown with search results)
3. Description (entered about each item)

3.5.2.7 HDAAtTestImages

This index class stores images for training/testing purposes.

Key fields:

| Key Field | Name | Required? | Type | Length |
|-----------|-------------------|-----------|-----------------------------|----------|
| 1 | HDAAtRecordNo | Yes | LongInt | 1-500000 |
| 2 | HDAAtImageNo | Yes | Integer | 1-1000 |
| 3 | HDAAtImageCaption | | Varchar (Extended Alphanum) | 1-32 |

Each folder in this index class contains only one *document part*

Image data

4 Analysis Common Definition Language

Advance Request

E-mail from the patron to archive manager for retrieving specified items in advance.

Credentials

Identification to be presented for authentication and authorization of administrator

Electronic Media

Electronic forms of information including video and CD-ROM

ersort

A prototype application for IBM Digital Library developed by ISD.

Front End

The interface of users and administrators with the HDA system

Full Size

A normal display of an image in its original size

HDA

Hispanic Digital Archive proposed system.

Item Summary Report

A report summarizing the number and types of items in the digital archive

Item Update

Any modification to the items in the archive or an addition of a new item to the archive

Literature

Textual or audio-visual representation of information or knowledge

Patron

A person interested in utilizing the HDA. This term may be used interchangeably with user.

Repository

A large store of information

Thumbnail

A miniature display of an image

Additional terms are presented in [OCD 7], [SSRD 7], and the WinWin negotiation terms.

5 System Design Common Definition Language

Active X

Microsoft component technology for object oriented custom controls.

Anchor

An incoming hyperlink into a section in an HTML document

Archivo

Name of archive server module

Database Persistence

Making entities in the archive persistent through tables in a database.

DL Dynamic Page Builder (DPB)

IBM Digital LibraryMacro scripting language for generating web pages on the fly using Net.Data.

Foundation Classes

A set of library classes that provide programming constructs and abstract data types

Mail Protocol

Simple Mail Transport Protocol used for e-mail

Mayordomo

Name of the Administrator Module means the field master.

Middleware

Software used to provide communication between collaborating software

Net.Data

Enables Internet access to relational data including DB2 on many platforms including AIX and NT.

Query

An instruction for accessing specific information from a database

SQL

Structured Query Language

Static HTML

A preset HTML document

UML

Unified Modeling Language

Visual Basic

Scripting language and development environment available on Windows platform.

Zaguán

Name of Patron module means the gateway.

A Appendix

A.1 Reference

- Terry Quatrani, *Visual modeling with Rational Rose and UML*, Addison-Wesley, 1997.
- F. C. Mintzer, et. al., “*Toward on-line, worldwide access to Vatican Library materials*,” in IBM Journal of Research & Development, 40(2), 1996.

A.2 Vendor Documents

- IBM Digital Library, Guide to Object-Oriented and Internet Application Programming, Version 2. (APG_OOI.pdf)
- IBM Digital Library, Application programming Reference, Version 2. (APR.pdf)
- Net.Data Home page - <http://www.software.ibm.com/data/net.data/>