Department of Computer Science
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Architectural Design Specification

Comp 496: Senior Design II

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Group 3
Annotext

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Revision History

Revision	Date	Author(s)	Description
0.1	10.12.2020	MN	document creation
0.2	10.17.2020	TB	created and added diagrams
0.3	10.22.2020	TB, MN, PCJ	complete draft
1.1	10.22.2020	TB	turned in final draft

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1 Introduction

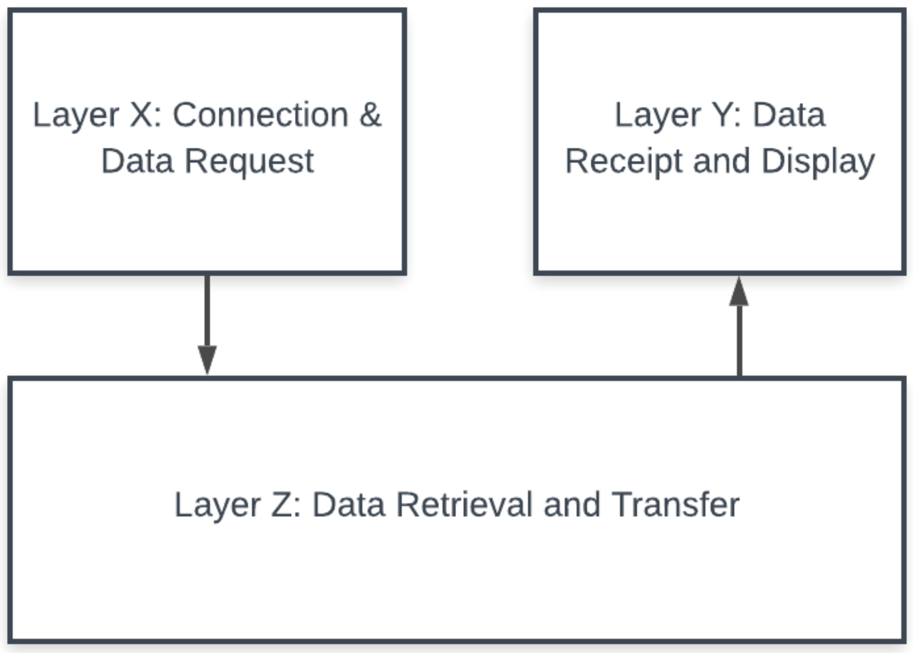
Annotext is a web based application that allows users to access PDF files through our system and annotate them. Annotations capabilities will consist of highlights, footnotes, and summaries. Annotext uses a multi-threaded server connection process to allow for many users to constantly connect to the website and use the features that we offer. Each group and/or individual will be given a specific port on our domain to work from while they are annotating the PDF files they choose. When a user connects they will be given a View to work from. In this View they will be able to annotate the document and see other annotations from other users. Our product has four major inputs: account holder individual annotations, up votes for specific annotations from account holders and down votes for specific annotations from account holders. Our product will have two major outputs: textbook files and collective annotations per PDF sorted by relevance.

Our end user will be able to log into our website and scroll through digital textbooks separated by topic, after clicking on a PDF an account holder will have the option to enter an annotation for the page they are viewing. Annotations are logged with account username, section referenced, and voter count. When viewing a page the user can scroll through previous annotations through a side tab. These annotations will be ordered by relevance based on other users using the up and down voting mechanic.

Our core requirements include: account creation, making and posting annotations, commenting on other user's annotations, toggling on and off annotations, controlling which annotations are viewed and rating annotations.

2 System Overview

We are utilizing Asp.Net's MVC model.



Layer X: Connection & Data Request
Layer Y: Data Receipt and Display
Layer Z: Data Retrieval and Transfer

Figure 1: Simple Architectural Layer Diagram for Annotext

2.1 Layer X Description

This layer is about setting up a connection with the server and sending the request to the appropriate party. Once the HTTP request is sent from the client's system, a connection is made with our server to accept the request. The request is then transported to it's intended location via the Router. The information required to send the data request to its destination is embedded in the HTTP request.

2.2 Layer Y Description

This layer is about viewing the data the client requested. Once the request has been processed and returned, the View class then formats the information in a format conducive for user interaction and use. The View is displayed on our web application, Annotext and the data cycle will begin again when the user makes another request.

2.3 Layer Z Description

This layer is about retrieving the data and transferring it back to the client in a user friendly format. The controller handles the HTTP request of the user. The specific Controller is based upon the HTTP request. Once the Controller is chosen it then utilizes the Model layer to search and pull the data from the database. Once the data has been retrieved, the Model returns this information to the Controller and the Controller routes it to the appropriate View.

3 Subsystem Definitions & Data Flow

Definitions:

- Server: Connects user with application
- Router: Transports user's request to the Controller
- Controller: Handles HTTP requests
- Model: Application data and and behavior in terms of its problem domain
- Database: Organized collection of data
- View: HTML markup that is displayed to the user
- Annotext Web App: Our web application

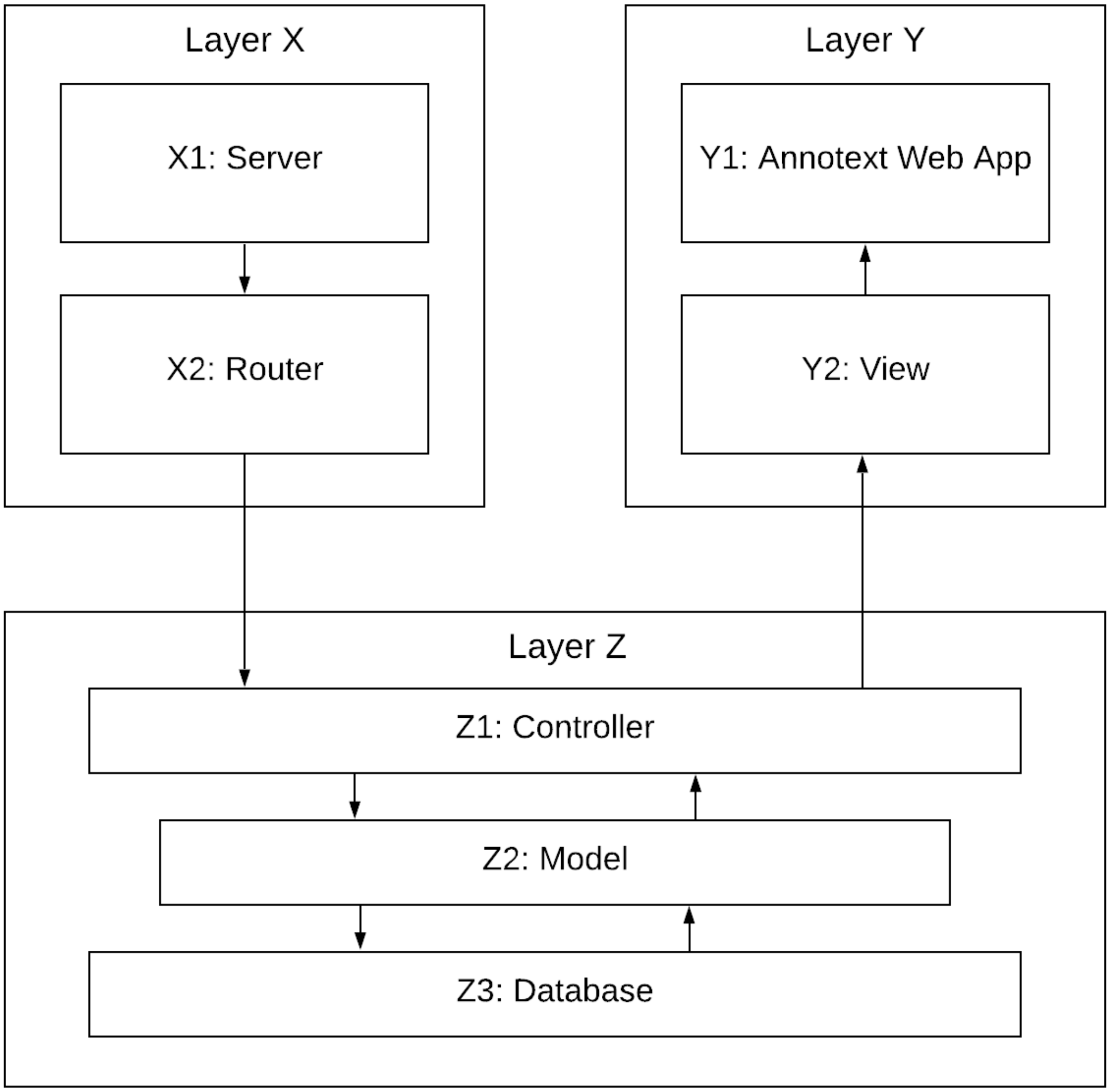


Figure 2: Simple Data Flow Diagram for Annotext

4 X Layer Subsystems

4.1 Subsystem 1: Server

Once the client makes an HTTP request, it is sent from the client's system and a connection is made with our server to accept the request.

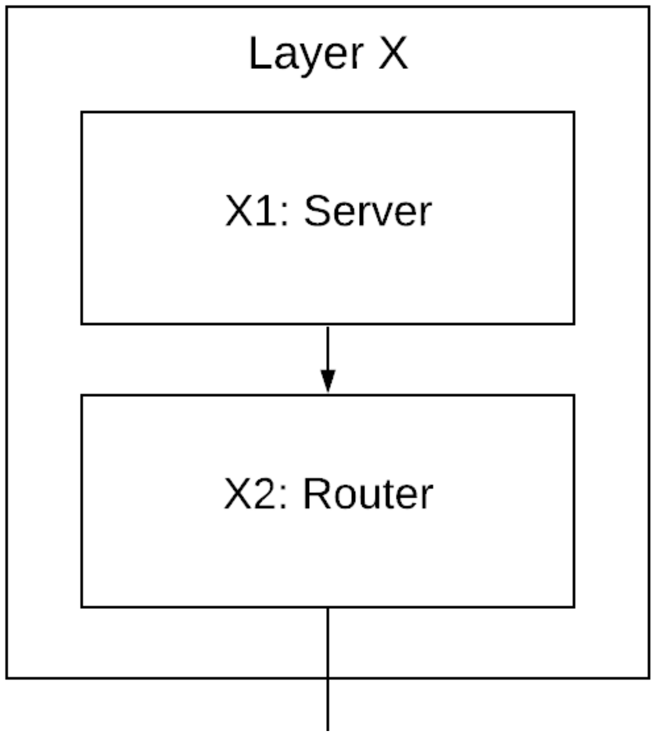


Figure 3: X Layer Subsystem Diagram

4.1.1 Assumptions

Server must be up physically running at all times to service all querys

4.1.2 Responsibilities

Server must host the database and store the html and asp.net code that we will use to implement our Annotext webapp.

4.1.3 Subsystem Interfaces

Table 2: Subsystem interfaces

ID	Description	Inputs	Outputs
#x1	Server	Http request from web application	User Information

4.2 Subsystem 2: Router

The request is then transported via the Router. The HTTP request tells the Router not only where the data needs to go (using the IP address) but who specifically to send the information to on the server (using the port number). Once contact is made with the Server the Router routes the information to not only the appropriate Controller, but the appropriate Action within that Controller.

4.2.1 Assumptions

Router is up and running physically. Router has available ports and is not overflown with traffic from oncoming connections.

4.2.2 Responsibilities

Make host to host connections and allow for http requests to reach the server, along with outgoing http responses to be routed to the appropriate clients.

4.2.3 Subsystem Interfaces

Table 3: Subsystem interfaces

ID	Description	Inputs	Outputs
#x2	Router	User Information	Secure Connection to Controller

5 Y Layer Subsystems

5.1 Subsystem 1: Annotext Web App

This layer is about viewing the data the client requested. Once the request has been processed and returned, the View class then formats the information in a format conducive for user interaction and use.

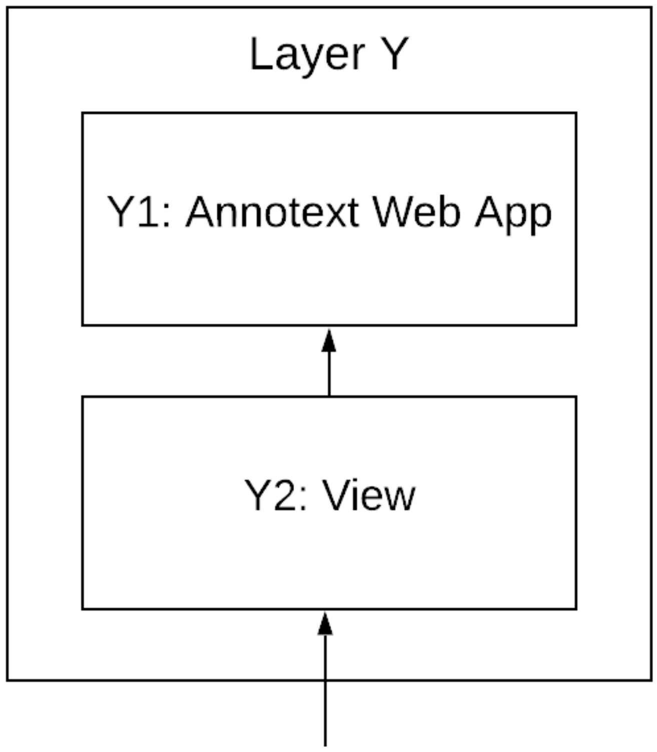


Figure 4: Y Layer Subsystem Diagram

5.1.1 Assumptions

Appropriate view elements are submitted to fill the formatted request by the client.

5.1.2 Responsibilities

Annotext Web App is the interface that the client will see. It is responsible for delivering a feasible navigation of the pdf library as well as allowing users to view and submit annotations to the pdf of their choice.

5.1.3 Subsystem Interfaces

Table 4: Subsystem interfaces

ID	Description	Inputs	Outputs
#x1	Annotext Web Application	database information from view	http post information

5.2 Subsystem 2: View

The View is displayed on our web application, Annotext and the data cycle will begin again when the user makes another request.

5.2.1 Assumptions

Appropriate fields are submitted to view by the controller so to not return information that was not requested.

5.2.2 Responsibilities

We will be using views for displaying pdfs from the database as well as showing past annotations to any given pdf. The view subsection allows for the appropriate information to be displayed on the web app

5.2.3 Subsystem Interfaces

Table 5: Subsystem interfaces

ID	Description	Inputs	Outputs
#x1	View	Information from the DB model through a controller	Specific Data from DB

6 Z Layer Subsystems

6.1 Subsystem 1: Controller

This layer begins with the Controller. The controller handles the HTTP request of the user. More specifically the Action or method within the Controller handles the request of the user. For example, if the user chose to visit annotext.ncat.edu/library, the library controller would be selected to handle this request. Within the LibraryController's class, an Action method would be chosen depending on the specific request of the user, in this case, they chose to view a textbook.

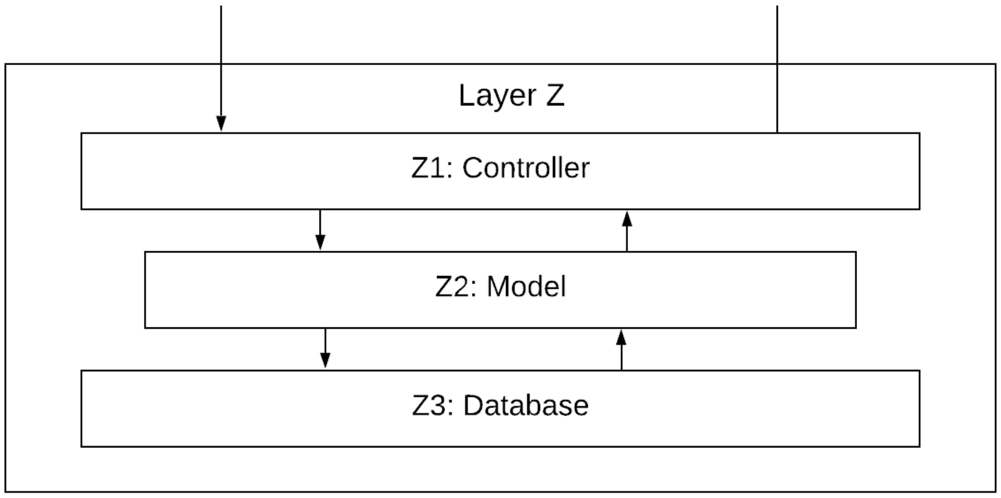


Figure 5: Z Layer Subsystem Diagram

6.1.1 Assumptions

Appropriate fields and action methods to process the http request from the web application.

6.1.2 Responsibilities

Process http request and send the correct query to the model. Action methods in the controller are called depending on the actions that the user takes on the web application.

6.1.3 Subsystem Interfaces

Table 6: Subsystem interfaces

ID	Description	Inputs	Outputs
#x1	Controller	User Requests	Specific textbook request

6.2 Subsystem 2: Model

The library Controller would then utilize the Model layer to search and pull the specified textbook from the database.

6.2.1 Assumptions

Action methods refer to the correct model objects, and model object refer to the correct database entries. Database is already loaded with the appropriate pdfs for querys.

6.2.2 Responsibilities

The model is responsible for providing reference objects so that the view can display information from the database.

6.2.3 Subsystem Interfaces

Table 7: Subsystem interfaces

ID	Description	Inputs	Outputs
#x1	Model	Textbook Request	Database Search

6.3 Subsystem 3: Database

Once the textbook has been pulled from the database the Model returns this information to the Controller and the Controller routes it to the appropriate View.

6.3.1 Assumptions

Database is already loaded with pdfs to fill library, log in and accout registration tables contain the appropriate fields for authentication.

6.3.2 Responsibilities

Hold all annotations, comments, and pdf files to be referenced by the model and shown in the view.

6.3.3 Subsystem Interfaces

Table 8: Subsystem interfaces

ID	Description	Inputs	Outputs
#x1	Database	Database search	requested book file

References

Youtube.Com, 2020, https://www.youtube.com/watch?v=E7Voso411Vsfeature=emb$_{l}ogoab_{c}hannel = ProgrammingwithMosh.Accessed8Dec$2020.