VIRTUAL COUNSELOR

Final Project

ABSTRACT

A virtual counselor to help Pasadena City College's counseling office with CS students' requests.

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Problem Statement

Students needs guidance for their questions related to their options for transfer requirements.

Every school has their own requirements for allowing college students transferring to their programs.

A counselor is a person that advice students about their options and help them navigate the educational system.

Ideally the student will get after scheduling with a counselor a clear path of the courses he needs to take to reach the desired transfer to the school of choice. The transfer will consist of a list of requirements or courses to take. A virtual counselor can be a great solution for students to get to the help they need giving them the opportunity to get their questions answered at any time.

To be able to ask questions the student will input data such as student's name, student's id, and the student's major in the system. Then the system will prompt the student to ask his/her question. On the other hand, system administrator, input the possible questions and their answers in the system backend (database). When the student asks his/her question, the system will look for the exact match of the question in the questions that was input by the system administrator and if it's found, the answer will be retrieved and showed on the screen.

If the question is not found, the application will break the input question to find its keywords. Keywords are all the words that are not "auxiliary verb", "conjunction", and etc. Then the system will run the same process on the indexed questions available in the system to find the best match. The question can be about transfer. For that student will select the school he/she wants to go, and major to show the course ID, course name, and course match.

If a match is not found, an email will be sent to the system administrator to ask for help. Then system administrator can submit the answer by replying to that email.

After that, if user has no more questions, a short survey will pop up on the screen that asks if the answers were helpful or not and this information will later be available for the system administrator. If an answer was not relevant, the question and answer will get a flag for further review. Also at the end of the survey, the student will rate the interaction.

Bottom up Design

List of nouns and verbs

Noun	Verbs
1. Virtual Counselor (Avatar)	1. Ask Question
2. Student	2. Show Answer
3. Student's ID	3. Identifying
4. Student's Major	4. Send Request
5. Student's Name	5. Ask Help
6. Question ID	6. Retrieve previous requests
7. Question Desc	7. Indexing
8. Answer ID	8. Send Email
9. Answer Desc	9. Adding to Database
10. Flag Question	10. Edit an Entry
11. Previous requests	11. Reading
12. Rate Interaction	12. Finding
13. Survey	13. Prompt and Error
14. Previous requests	14. Scheduling
15. Administrator	
16. Requirement ID	
17. Requirement Desc	
18. School ID	
19. School Desc	
20. Email Address	
21. Course ID	
22. Course Name	
23. Course Match	
24. Transfer date	
25. Survey	
26. Administrator	

Classes base on bottom up

VirtualCounselor		
-	-	init_window
-	-	makeLabel
-	-	makeLabelSub
-	-	clientAdmin
-	-	addQuestionPage
-	-	submitQuestion
-	-	removeQuestion
-	-	editQuestion
-	-	retrieveSurvey
-	-	retrieveStudentPage
-	-	studentInfoPage
-	-	submitStudentInfo
-	-	clientStudent
-	-	showTransferWindow
-	-	showTransferInfo
-	-	showQuestion
-	-	sendEmail
-	-	mailSent
-	-	getAnswer
-	-	createExitButton
-	-	createMenu
-	-	clientExit
+	+	master
+	+	answerdb
+	+	surveyDB
+	+	studentdb
+	+	adminTk
+	+	addQuestionTk
+	+	retrieveSurveyTk
+	+	retrieveStudentTk
+	+	studentTk
+	+	transferWindowTk
+	+	sendEmailTk

EmailHandler

- __msg
- __server

+ sendMail

Survey

- - __surveydb

- addSurveyResultUpdate

DatabaseHandler

- - insertQuestion
- - retrieveAnswer
- - updateQuestion
- - deleteQuestion
- - insertStudentInfo
- - retrieveStudentInfo
- - updateStudentInfo
- - insertSurvey
- - retrieveSurveyResults

+ _dbName

+ _conn
+ _cursorObj
+ _dbtype

StudentInfo

- + get
- + post
- + put

VirtualCrawler

- - __fromCollege
- - __toCollege
- - __major

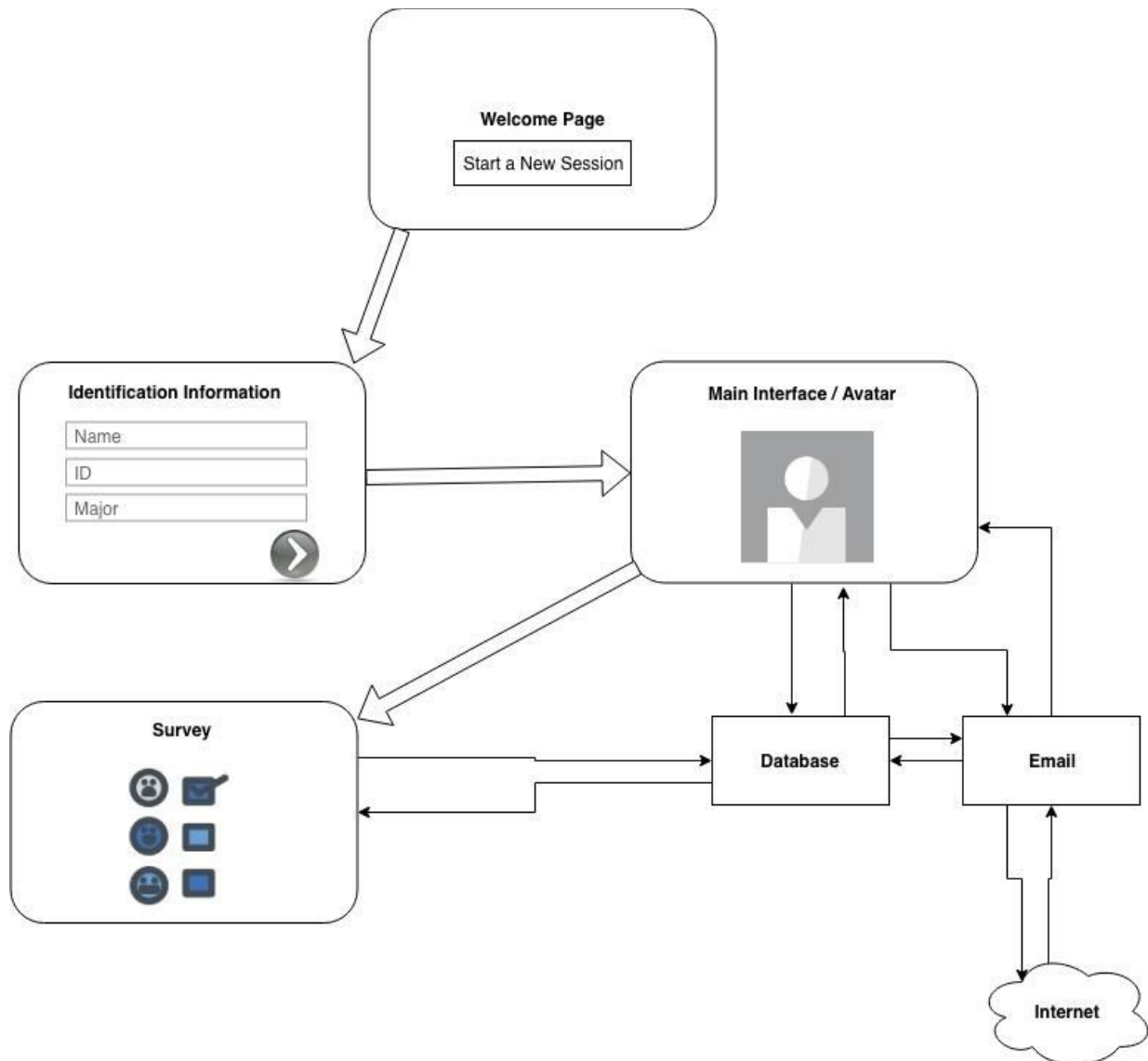+ getiFrameLink
+ getText

StudentApi

+ get

AdminApi

+ get
+ put
+ post
+ delete

EmailApi

- + post

CrawlerApi

+ get

SurveyApi

+ get

+ post

Top down design

VIRTUAL COUNSELOR

Student ID	⌄

Evan

Marco|

Major

Password

Guest?	Start Session

X

VIRTUAL COUNSELOR - WELCOME

Administration

Virtual Counselor

Transferring Info

VIRTUAL COUNSELOR

X

What classes I need to take before Python CS003?

Ask a question...   Send

VIRTUAL COUNSELOR

X

Current School

Transfer School

Search

Requirements

X

VIRTUAL COUNSELOR

Did the answers where useful to your inquiries?

How do you rate the experience?

Your Answer

Send

X

VIRTUAL COUNSELOR

Your Email Address

Subject

Send

CRC Cards

Classes based on CRC cards
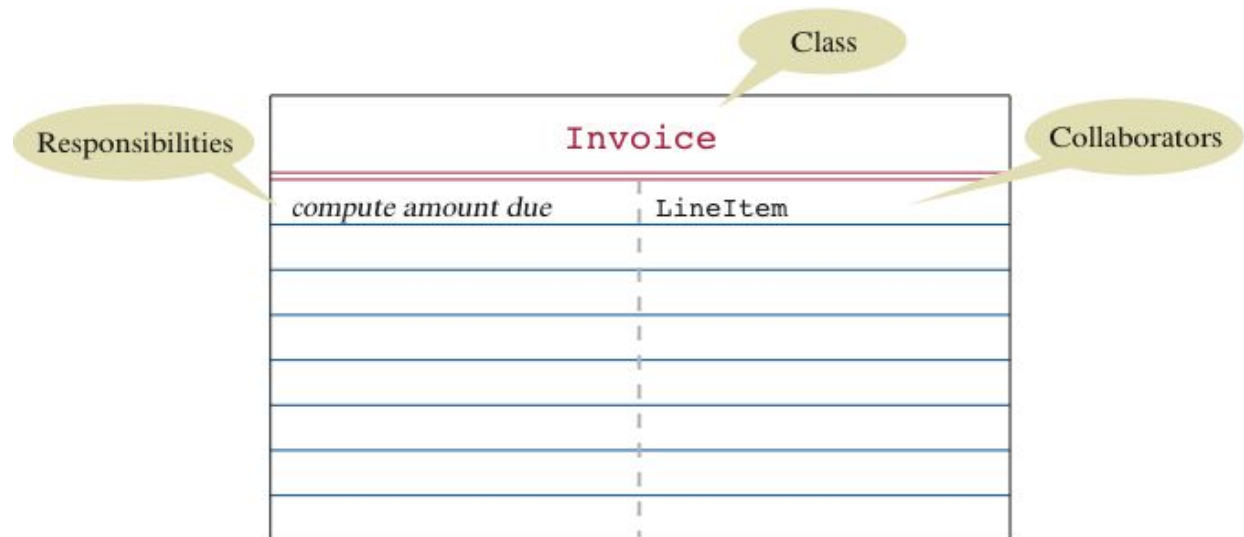
Student	
Gather information about Student	DatabaseHandler
Create a profile for Student	
Create a plan for Transferring	Course, Requirement

Requirements	
Gather Requirements for Transferring	DatabaseHandler, Course
Updates Requirements per school	Course
Update Transferring dates	

Course	
Matching courses per schools	DatabaseHandler, Course
Updates courses information	Requirement
Create a path per Major	Requirement, Student

Main	
Start the Virtual Counselor	
Welcome Screen	
Ask for Student or Guess info	Student, DataBase Handler
Parse an Inputs	Student, DataBase Handler

DataBase	
Add information to the Database	Question, Answer, Student, Requirement, Course, Survey
Retrieve Data	Question, Answer, Student
Edit Entry	Question, Answer, Student, Requirement, Course, Survey
Indexing Data	
Previous Request	Student, Question
Finding Information	Student, Question, Answer, Course, Survey, Requirement

Survey	
Show Survey	DatabaseHandler
Update Answers	Answers, DatabaseHandler
Rating	
Flag Answers	Answers, DatabaseHandler

Email	
Send Email	Student, DatabaseHandler
Receive Email	Student, DatabaseHandler
Update Answer	Answer
Compare Questions and Answers	Question, Answer, DatabaseHandler

Question	
Create new question	DatabaseHandler
Update Question	DatabaseHandler
Relate Question	
Flag Question	DatabaseHandler

Answer	
Response Question	DatabaseHandler, Question
Update Answers	DatabaseHandler
Alternative Answers	
Create Answers	DatabaseHandler

Merged list

Merge 2 designs together- **<u>Need to have at least 5 classes</u>**

Look for classes which are the same with different names and classes which have same name but they are different. If your top down and bottom up list of classes are the same you are not creating them correctly

Bottom up Design	Top down Design
Student	Identification Information
Answer	Database
Question	Database
Survey	Survey
Virtual Counselor	Main Menu
Database Handler	Course
Requirement	Requirements
Email Handler	Emailing

Second look at list of classes

Go through your classes.

Do you need to add anything to them for future use?

Do you have good names for your classes?

Do you ONLY have data related to the name of the class (cohesion)?

Cohesion:

- ❑ A class should represent a single concept

- ❑ The public interface of a class is **cohesive** if all its features are related to the concept that the class represents

Inheritance – If classes have anything in common remove common part and create a new class
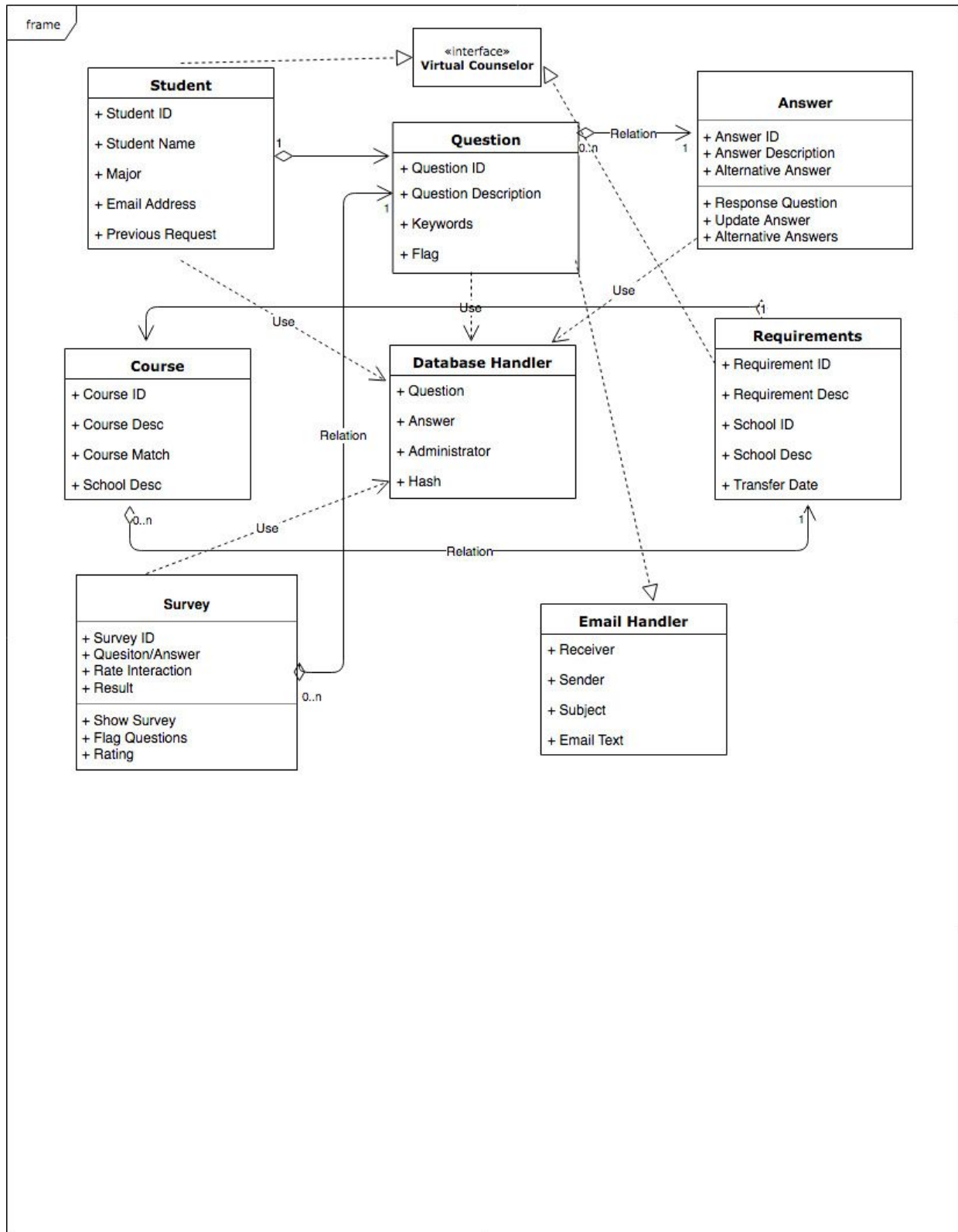
Table of domain and range

Name	Data type	Size	Domain/Range	What if?
Student's ID	Integer	10	Up to 10 Numbers	Must Have
Student's Name	String	35	Up to 35 Characters	Must Have
Student's Major	String	50	Up to 50 Characters	Continue
Email Address	String	30	Must have @	Continue
Question ID	Integer	10	Up to 10 Numbers	Must Have
Question Desc	String	Long	As much is needed	Must Have
Answer ID	Integer	10	Up to 10 Numbers	Continue
Answer Desc	String	Long	As much is needed	Continue
Previous Request	Integer	10	Up to 10 Numbers	Default
Survey ID	Integer	10	Up to 10 Numbers	Must Have
Rate Survey	Integer	1	1 Number 1-10	Must Have
Flag Question	Boolean	1	False	Continue
Administrator	String	20	Up to 20 Characters	Must Have
Requirements ID	Integer	10	Up to 10 Numbers	Continue
Requirements Desc	String	50	Up to 50 Characters	Continue
School ID	Integer	10	Up to 10 Numbers	Continue
School Name	String	30	Up to 30 Characters	Continue
Course ID	Integer	10	Up to 10 Numbers	Continue
Course Name	String	50	Up to 50 Characters	Continue
Course Match	Integer	10	Up to 10 Numbers	Continue
Transfer Date	Date	8	5 years	Continue

UML diagram

How your classes are related to each other

Has-a (aggregation/composition) and is-a (inheritance) relationship

- ❑ A class **depends** on another if it uses objects of that class

    - • "knows about" relationship

- ❑ CashRegister depends on Coin to determine the value of the payment

- ❑ To visualize relationships, draw class diagrams

- ❑ **UML**: Unified Modeling Language

    - • Notation for object-oriented analysis and design

frame

Student
+ Student ID
+ Student Name
+ Major
+ Email Address
+ Previous Request

«interface»
Virtual Counselor

Question
+ Question ID
+ Question Description
+ Keywords
+ Flag

Relation

Answer
+ Answer ID
+ Answer Description
+ Alternative Answer

+ Response Question
+ Update Answer
+ Alternative Answers

Use

Use

Course
+ Course ID
+ Course Desc
+ Course Match
+ School Desc

Database Handler
+ Question
+ Answer
+ Administrator
+ Hash

Requirements
+ Requirement ID
+ Requirement Desc
+ School ID
+ School Desc
+ Transfer Date

Relation

Use

Relation

Survey
+ Survey ID
+ Quesiton/Answer
+ Rate Interaction
+ Result

+ Show Survey
+ Flag Questions
+ Rating

Email Handler
+ Receiver
+ Sender
+ Subject
+ Email Text

Addition Topic

Replace this name with your topic

DocString

3 level Module Class and method

Test plan

References

Notes