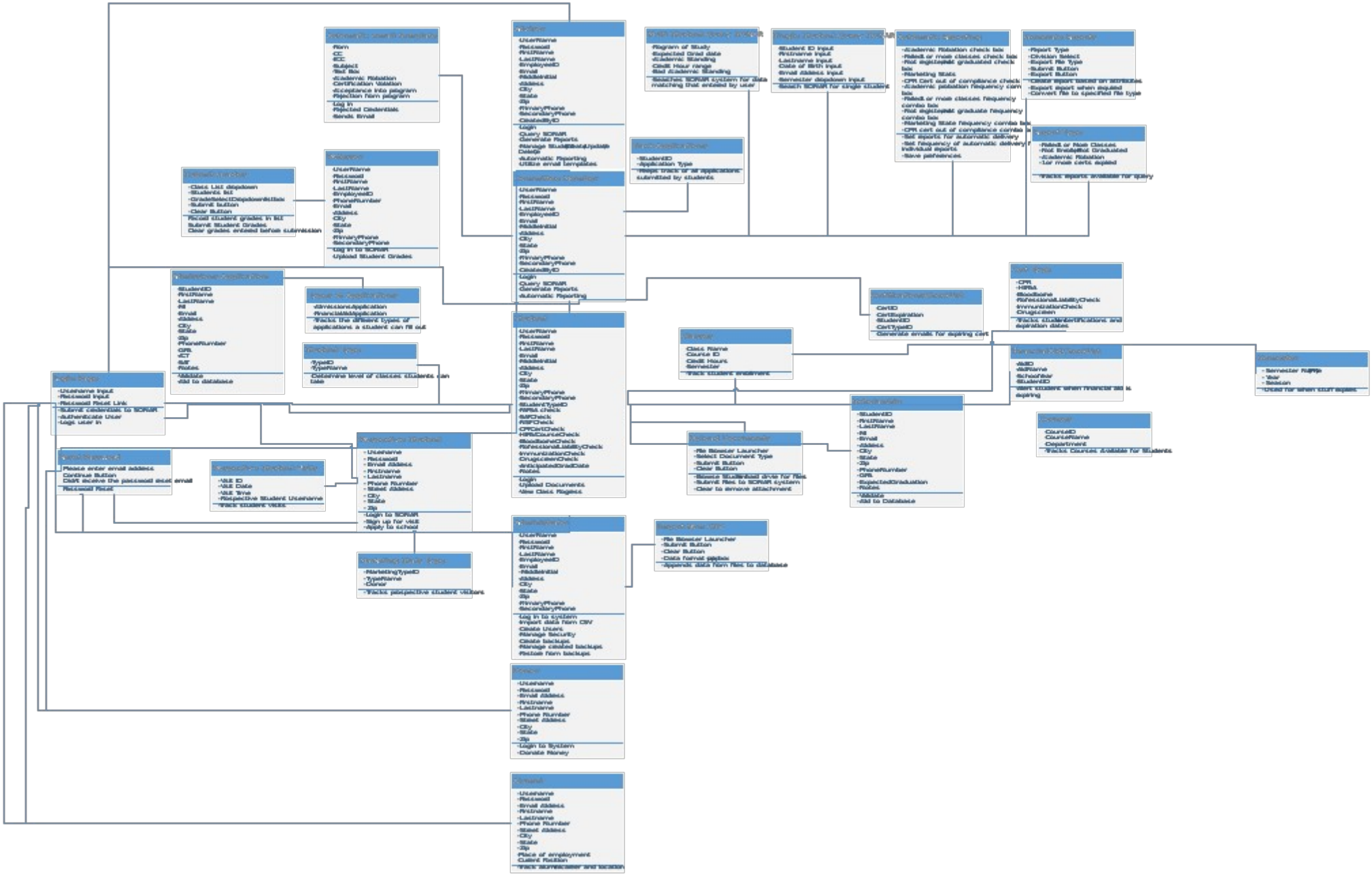
Class Diagram

This is a visual representation of all the classes our system will include. A class is essentially the blueprint for an object (objects would be things like students, professors, admissions applications and so on). This blueprint lists every attribute an object can have, and is used directly to create objects when the system is running. The classes within a class diagram list the class name at the top, followed by the attributes in the next section, and in the last section each class lists the methods (actions) available to each object of a particular class. The following is the class diagram we have put together for the SONAR system:

RATC Group

SONAR



ERD

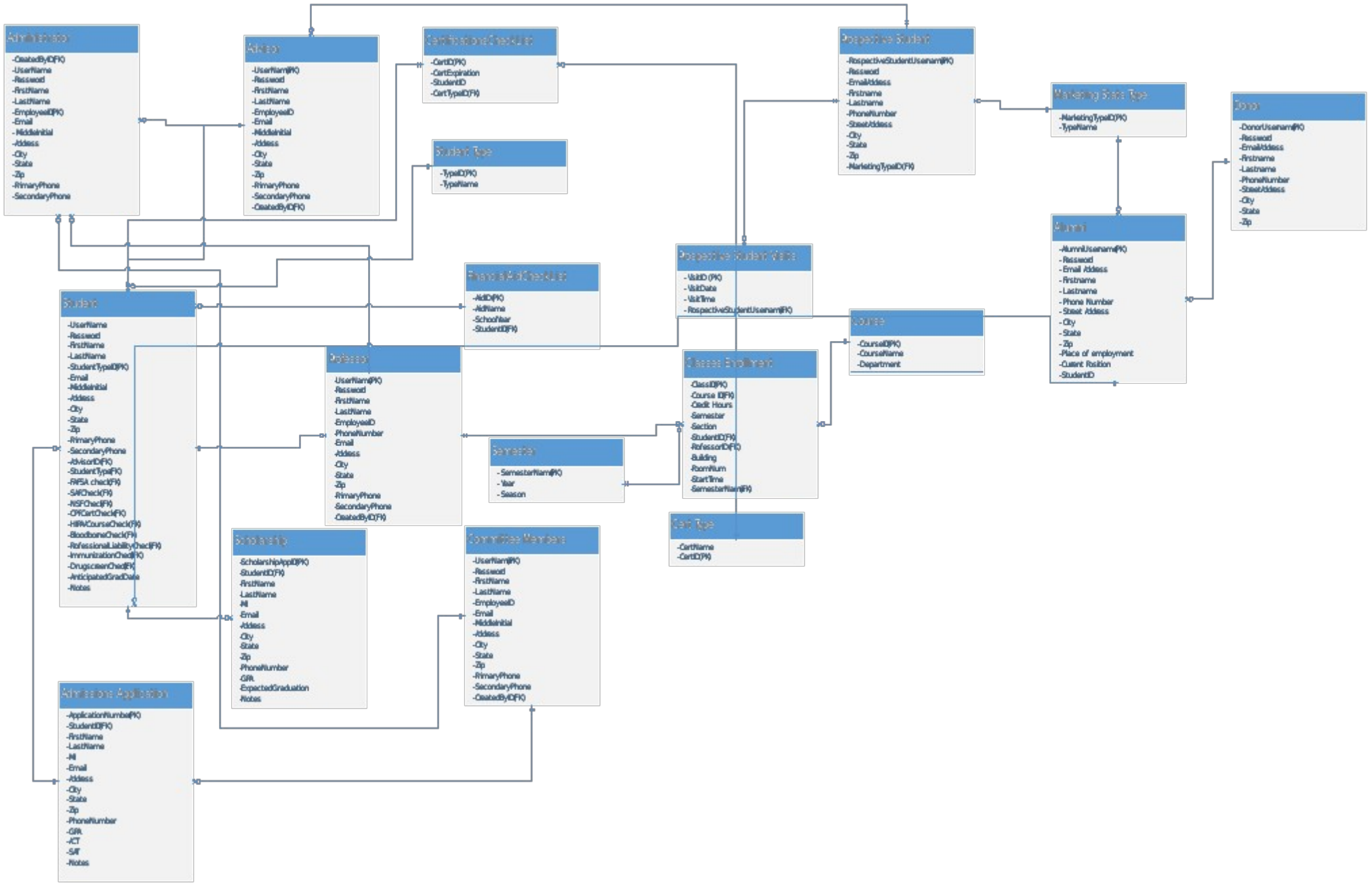
An Entity Relationship Diagram represent all the tables that will be present within the database of our system. Each table in the diagram contains the table name, as well as the attributes for each class. The difference between an ERD and a Class Diagram is that an ERD does not list the actions an object of a certain class will be able to take, but rather the keys (primary and foreign) within each table of the database. A primary key (denoted with PK) is the unique identifier for a specific table. A foreign key (denoted with FK) is a unique identifier (primary key) in another table. By giving each table a uniquely identifiable attribute, and placing the same attribute in other tables, we create relationships among the tables. The relationships created with these keys can vary. If you look at a table, and follow a line coming out of it (representing the relationship with another table) to the connecting table, you will see one of several things:

- 
  - This represent a zero to many relationship, think of it this way, a professor may teach zero to many students in a semester depending on what they are doing.
- 
  - This represent a 1 and only 1 relationship, think of it this way, a student can be one, and only one, kind of student (an example would be a lower division student, a student cannot be both an upper division student AND a lower division student at the same time.)

The following is our ERD for the SONAR system.

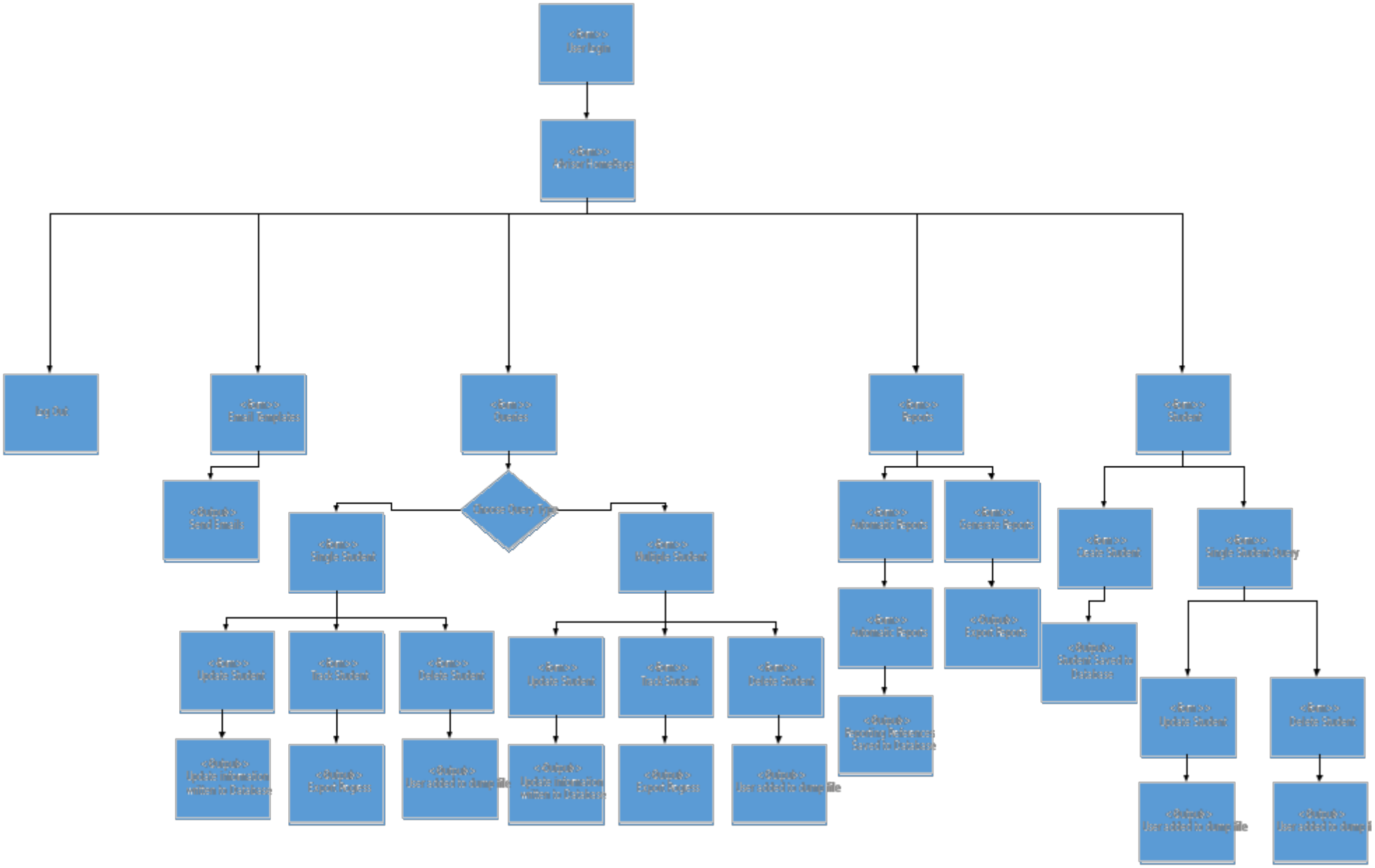
RATC Group

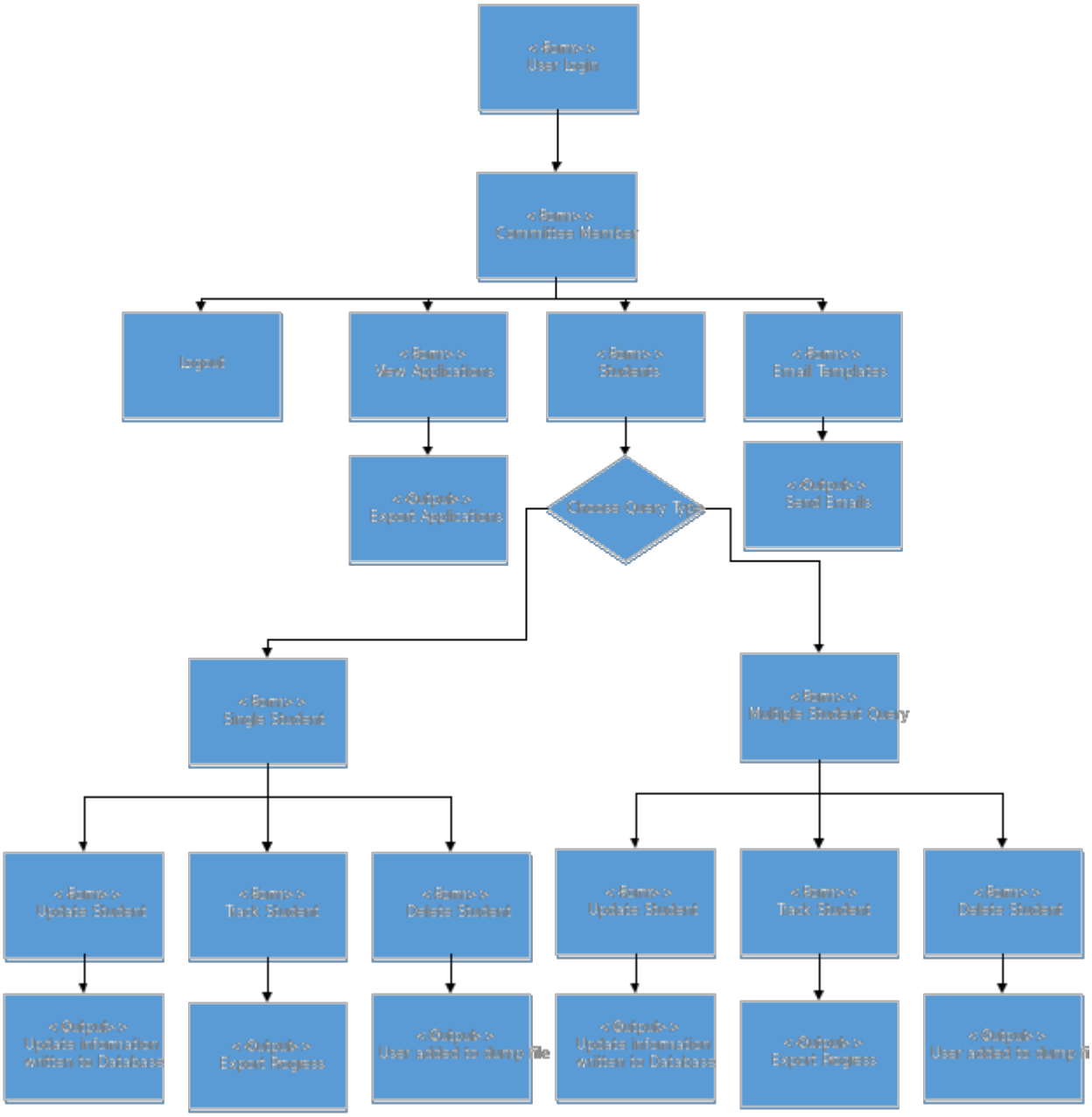
SONAR

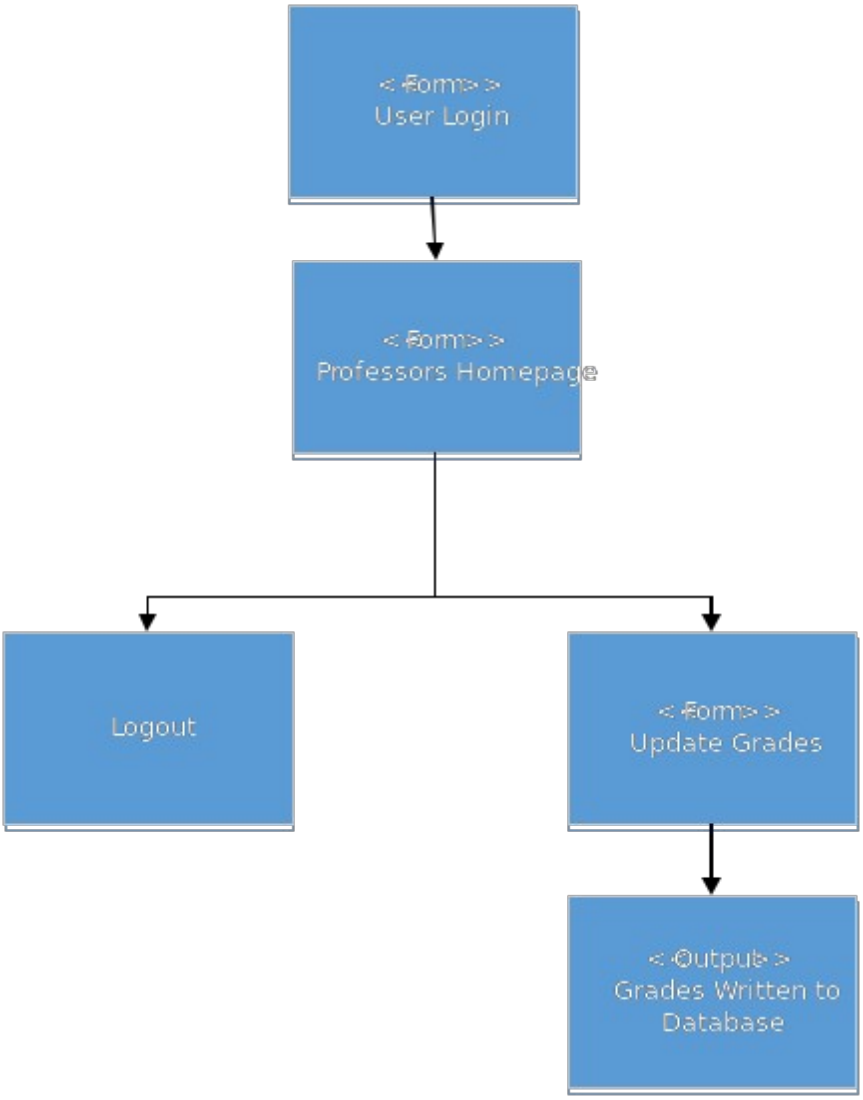


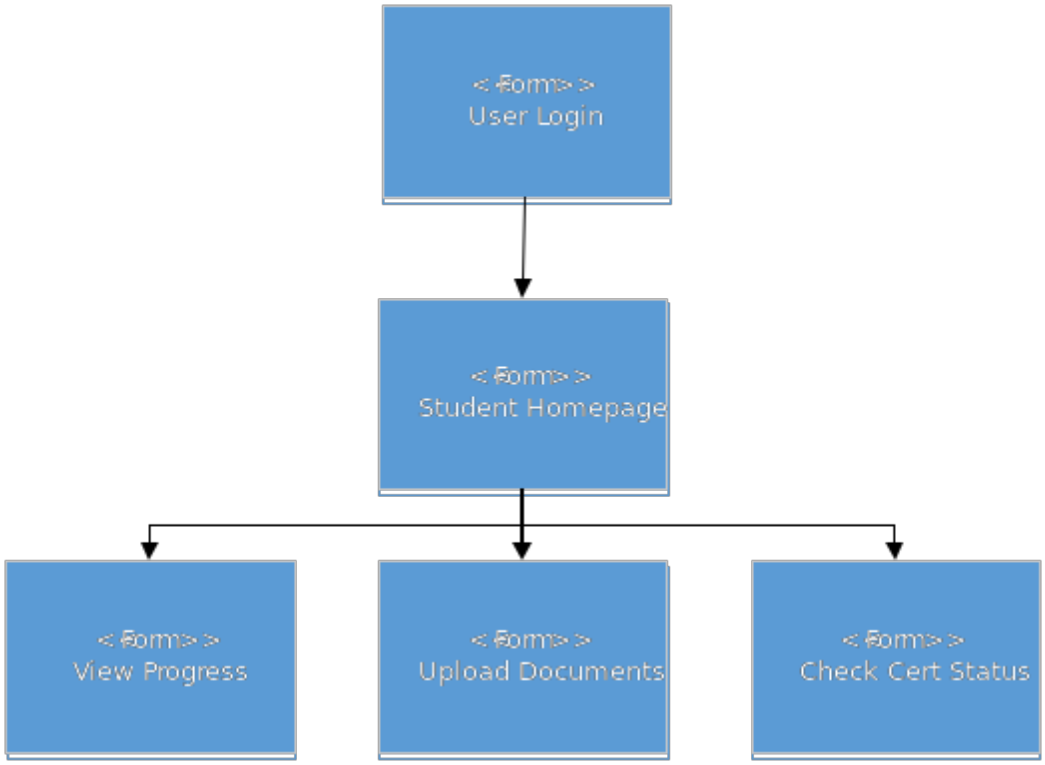
WND

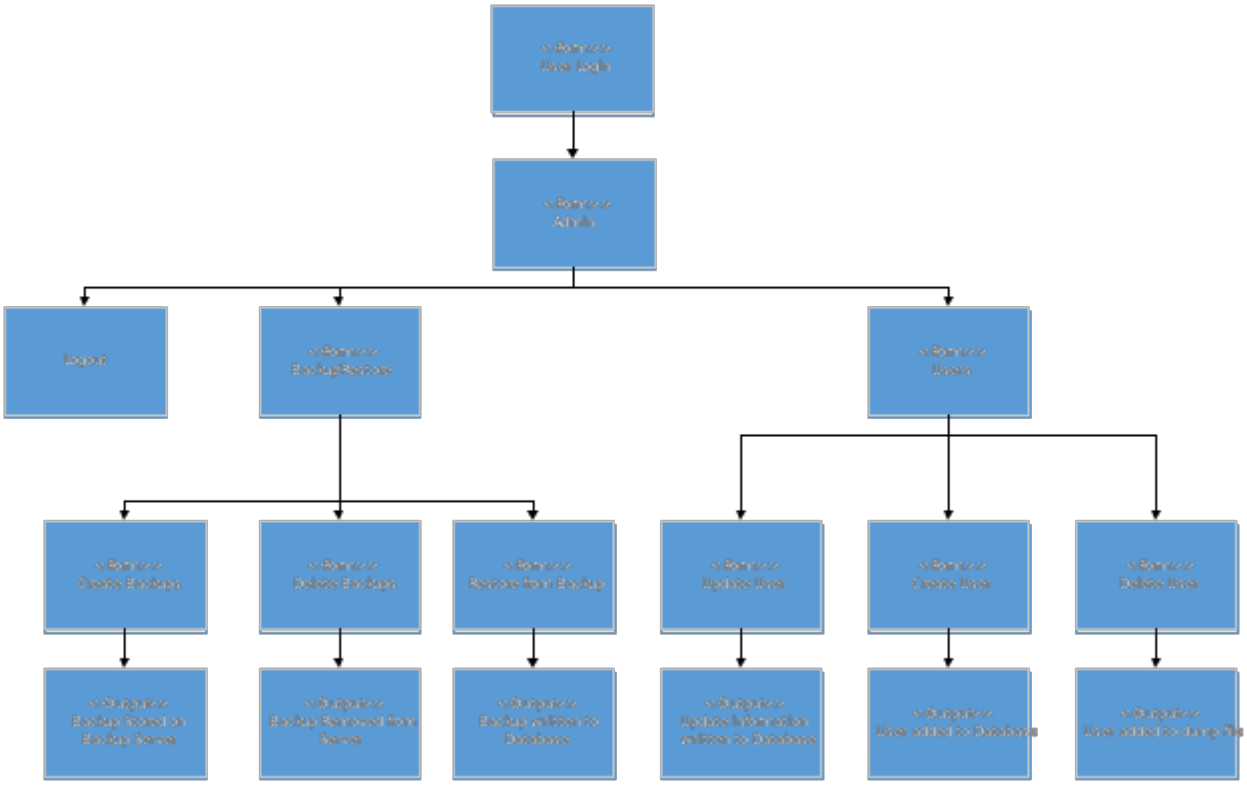
The Window Navigation Diagram is a simple layout of the navigation options possible for a user of the system. Our diagram shows forms, which would be actual web pages (see the prototypes section for examples) that accept input, and the act on it. The outputs are the results of users such as advisors using the forms within the system. The following is a simple Window Navigation Diagram for the different kinds of users of out SONAR system:

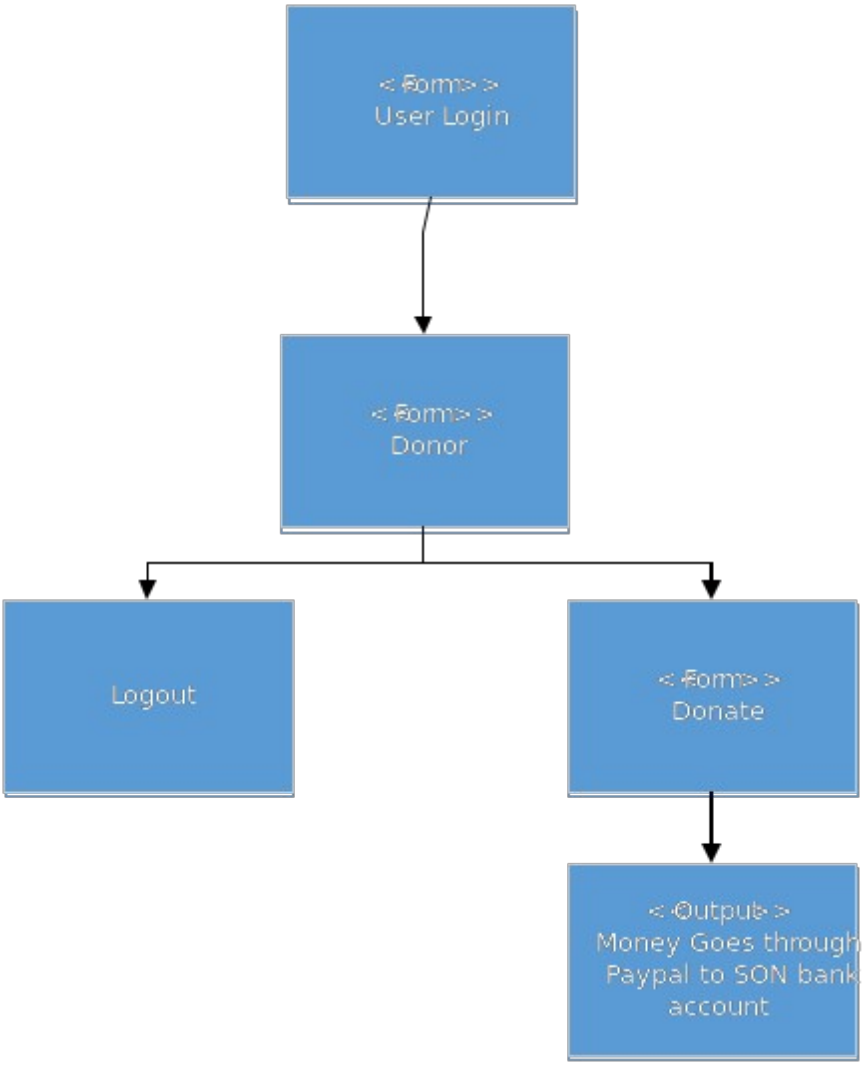


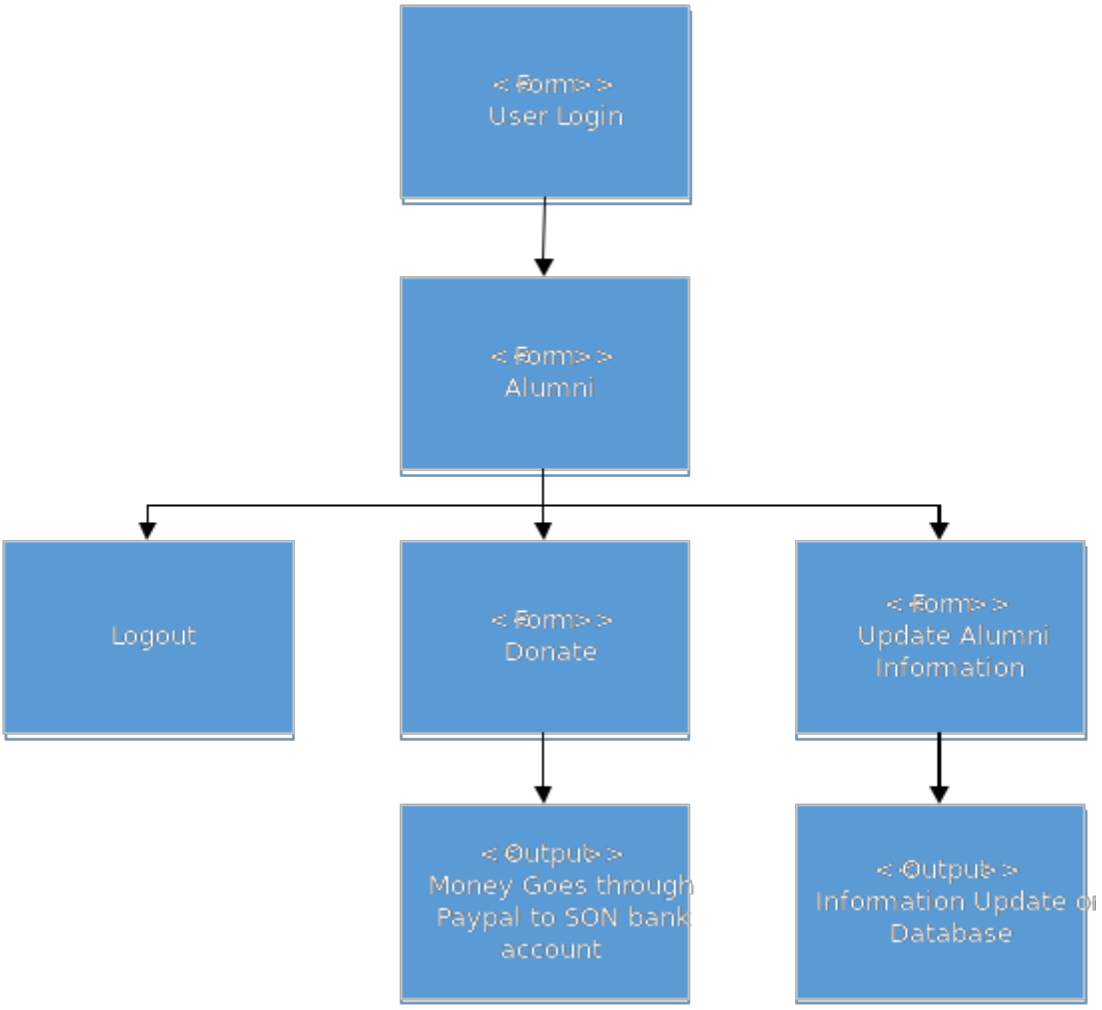

«Form»
User Login
«Form»
Committee Member
Logout
«Form»
View Applications
«Form»
Students
«Form»
Email Templates
«Output»
Export Applications
Choose Query Type
«Output»
Send Emails
«Form»
Single Student
«Form»
Multiple Student Query
«Form»
Update Student
«Form»
Track Student
«Form»
Delete Student
«Form»
Update Student
«Form»
Track Student
«Form»
Delete Student
«Output»
Update information written to Database
«Output»
Export Progress
«Output»
User added to dump file
«Output»
Update information written to Database
«Output»
Export Progress
«Output»
User added to dump file


<<Form>>
User Login
<<Form>>
Professors Homepage
Logout
<<Form>>
Update Grades
<<Output>>
Grades Written to Database


<<form>>
User Login
<<form>>
Student Homepage
<<form>>
View Progress
<<form>>
Upload Documents
<<form>>
Check Cert Status




<<Form>>
User Login
<<Form>>
Donor
Logout
<<Form>>
Donate
<<Output>>
Money Goes through
Paypal to SON bank
account


<<Form>>
User Login
<<Form>>
Alumni
Logout
<<Form>>
Donate
<<Form>>
Update Alumni
Information
<<Output>>
Money Goes through
Paypal to SON bank
account
<<Output>>
Information Update o
Database

Data Dictionaries

Data dictionaries are simply used to list the fields (columns) a table will have as well as the information regarding each field. In the following dictionaries, we include the field name, a brief description of what the field represents, the size of the field (for calculating storage requirements), and finally whether a field is the unique identifier (primary key, or PK) in the table and/or whether the field is a unique identifier (foreign key, or FK) in another table.

Admissions Application

Attribute Type	Definition	Type of Attribute	Size	PK/FK
Application Number	Unique identifier for admissions application submitted	int	4	Pk
StudentID	Identifier to identify individual students saved in the database.	uint	4	FK
First Name	Common Name for the user	varchar	10	
MI	Middle initial of user. Can be used to identify users who might have the same first and last name.	varchar	1	
Last Name	Surname of the user	varchar	10	
Email	Primary email that can be used for sending out notifications	varchar	30	
Address	Physical address of the user for mailing purposes.	varchar	30	
City	City in which the donor resides.	varchar	20	
State	2 letter abbreviation for the state that user resides in.	varchar	2	
Zipcode	Zip code for the physical address of the user	uint	4	
Phone Number	Primary phone number where student can be reached.	uint	4	
GPA	Grade point average for the student that will be used in the decision making process.	decimal	16	
ACT Score	ACT score for the student	short	2	
SAT Score	SAT score for student	short	2	
Notes	Field to enter details on anything else not listed in the preceeding attributes.	varchar	500	

Scholarship Application

Attribute Type	Definition	Type of Attribute	Size	PK/FK
ScholarshipApID	Identifier for each application submitted by the student	int	4	PK
StudentID	Identifier to identify individual students saved in the database.	uint	4	FK
First Name	Common Name for the user	varchar	10	
MI	Middle initial of user. Can be used to identify users who might have the same first and last name.	varchar	1	
Last Name	Surname of the user	varchar	10	
Email	Primary email that can be used for sending out notifications	varchar	30	
Address	Physical address of the user for mailing purposes.	varchar	30	
City	City in which the donor resides.	varchar	20	
State	2 letter abbreviation for the state that user resides in.	varchar	2	
Zipcode	Zip code for the physical address of the user	uint	4	

Phone Number	Primary phone number where student can be reached.	uint	4
GPA	Grade point average for the student that will be used in the decision-making process.	decimal	16
Expected Graduation	Expected graduation date for the student	date	4
Notes	Field to enter details on anything else not listed in the preceding attributes.	varchar	500

Marketing type

Attribute Type	Definition	Type of Attribute	Size	PK/FK
MarketingTypeID	Unique number to identify each marketing type	Short	2	PK
TypeName	Descriptive name of each marketing type.	varchar	15	

Student Type

Attribute Type	Definition	Type of Attribute	Size	PK/FK
Student Type ID	Unique number to identify each student type	Short	2	PK
Student type name	Name of the student type	varchar	15	
Description	Brief description of the Student type	varchar	100	

Courses

Attribute Type	Definition	Type of Attribute	Size	PK/FK
CourseID	Unique number to identify each course	Short	2	PK
Course Name	Descriptive Name of the course	varchar	15	
Department	Name of the department the course will be listed under	varchar	15	

Email template Type

Attribute Type	Definition	Type of Attribute	Size	PK/FK
EmailTemplateID	Unique number to identify each email template	Short	2	PK
Email Template Namee	Name of the email template	varchar	15	
Description	Brief description of the email template and possible use scenarios.	varchar	100	

Alumni Member

Attribute Type	Definition	Type of Attribute	Size	PK/FK

Username	This is the identifier used to log users in to the system	Varchar	20	PK
Password	This is the key used to log users in to the system	Varchar	20	
Email Address	Used to contact he Donor in the future	Varchar	30	
Firstname	The common name of the user	Varchar	20	
Lastname	Surname of the user	Varchar	25	
Phone number	Telephone/cellphone contact of the user	Varchar	15	
Street Address	The physical address of the users residence	Varchar	30	
City	City in which the donor	Char	15	
State	State in which the donor currently resides	Char	2	
Zip Code	Zip code where the donor currently resides	Varchar	5	
Place of Work	Helps University keep track of where their student go to work after graduating	Varchar	20	
Current		Int	15	FK

Position StudentID	Title of the current position held by the alumni Identifier to uniquely identify student in the system			

Committee Member

Attribute Type	Definition	Type of Attribute	Size	PK/FK
Username	This is the identifier used to log users in to the system	Varchar	20	PK
Password	This is the key used to log users in to the system	Varchar	20	
EmployeeID	Identifier for each employee	int	4	
Email Address	Used to contact he Member in the future	Varchar	30	
Firstname	The common name of the user	Varchar	20	
Middle Initial	Middle name intial for the committee member	Char	1	
Lastname	Surname of the user	Varchar	25	
Primary Phone number	Telephone/cellphone contact of the user	Varchar	10	
Secondary Phone number	Telephone/cellphone contact of the user	varchar	10	
Street Address	The physical address of the users residence	Varchar	30	
City	City in which the	Varchar	15	
		Char	2	

	member			
State	State in which the member currently resides	Char	5	
Zip Code	Zip code where the member currently resides	Varchar	15	FK
CreatedByID	Information about the admin responsible for creating the user			

Donor Class

Attribute Type	Definition	Type of Attribute	Size	PK/FK
Username	This is the identifier used to log users in to the system	Varchar	20	PK
Password	This is the key used to log users in to the system	Varchar	20	
Email Address	Used to contact he Donor in the future	Varchar	30	
Firstname	The common name of the user	Varchar	20	
Lastname	Surname of the user	Varchar	25	
Phone number	Telephone/cellphone contact of the user	Varchar	15	
Street Address	The physical address of the users residence	Varchar	30	
City	City in which the donor	Char	15	
State	State in which the donor currently resides	Char	2	
Zip Code	Zip code where the donor currently resides		5	

Professor

Attribute Type	Definition	Type of Attribute	Size	PK/FK
Username	This is the identifier used to log users in to the system	Varchar	20	PK
Password	This is the key used to log users in to the system	Varchar	20	
EmployeeID	Identifier for each employee	int	4	
Email Address	Used to contact he professor in the future	Varchar	30	
Firstname	The common name of the user	Varchar	20	
Middle Initial	Middle name intial for the professor	Char	1	
Lastname	Surname of the user	Varchar	25	
Primary Phone number	Telephone/cellphone contact of the user	Varchar	10	
Secondary Phone number	Telephone/cellphone contact of the user	varchar	10	
Street Address	The physical address of the users residence	Varchar	30	
City		Char	15	
			2	

	City in which the professor resides			
State	State in which the professor currently resides	Char	5	
Zip Code	Zip code where the professor currently resides	Varchar	15	FK
CreatedByID	Information about the admin responsible for creating the user			

Prospective Students

Attribute Type	Definition	Type of Attribute	Size	PK/FK
Username	This is the identifier used to log users in to the system	Varchar	20	PK
Password	This is the key used to log users in to the system	Varchar	20	
Email Address	Used to contact he Student in the future	Varchar	30	
Firstname	The common name of the user	Varchar	20	
Lastname	Surname of the user	Varchar	25	
Phone number	Telephone/cellphone contact of the user	Varchar	15	
Street Address	The physical address of the users residence	Varchar	30	
City	City in which the student	Char	15	
State	State in which the student currently resides	Char	2	
Zip Code	Zip code where the student currently resides	Varchar	5	
MarketingTypeID	Form of marketing responsible for	Varchar	10	FK

	bringing in prospective student			

Semester

Attribute Type	Definition	Type of Attribute	Size	PK/FK

SemesterName	This identifies which semester we're talking about, it will be denoted by a scheme similar to F16 for Fall 2016, or SU17 for Summer 2017	Varchar	4	PK
Year		Char	4	
Season	Year the Semester takes place Season the semester will take place in.	Varchar	6	

Certs Check List

Attribute Type	Definition	Type of Attribute	Size	PK/FK

CertID	Unique Identifer for specific instances of certifications tracked in the database	Int	4	PK
CertExpiration	Date the Certification Expires	Date/time		
StudentID (username)	Unique identifier for tying students to the certifications they upload			FK
CertTypeID	Unique Identifier that indicates the type of certificate a student has uploaded.			FK

Attribute Type	Definition	Type of Attribute	Size	PK/FK
UserName	This is the identifier used to log users in to the system	Varchar	20	PK
Password	Used to authenticate users when they log into the system	Varchar	20	
Firstname	The common name of the user	Varchar	20	
Lastname	Surname of the user	Varchar	20	
EmployeeID	Identifier for each employee	Int	4	
Email	Used to log users in and contact them when necessary	Varchar	30	
MiddleInitial	Middle name intiial for the advisor	Char	1	
Address	The physical address of the users residence	Varchar	30	
City	City in which the student	Varchar	15	
State	State in which the student currently resides	Char	2	
Zip	Zip code where the student currently resides	Uint	4	

PrimaryPhone	Telephone/cellphone contact of the user	Varchar	15	
SecondaryPhone	Secondary telephone/cellphone contact of the user	Varchar	15	
CreatedByID	Administrator that created the advisor	Varchar	30	FK

FinancialAidCheckList

Attribute Type	Definition	Type of Attribute	Size (Bytes)	PK/FK
AidID	Identifier of the the specific type of aid	Char	8	PK
AidName	Descriptive name of financial aid	Varchar	36	
SchoolYear	Year that aid is offered	Char	8	
StudentID	Unique identifier given by university	Char	14	FK

Prospective Student Visits

Attribute Type	Definition	Type of Attribute	Size (Bytes)	PK/FK
VisitID	6 digit code of that will uniquely identify date	Char	12	PK
VisitDate	Date that the visit will take place	Date	3	
VisitTime	Time that the visit will take place	Time	5	
ProspectiveStudentUsename	User name of the prospective student that will be vistiting	Varchar	36	FK

Classes Enrollment

Attribute Type	Definition	Type of Attribute	Size (Bytes)	PK/FK
ClassID	4 character ID that is used on the ‘Schedule of Classes’ in ULINK	Char	8	PK
CourseID	Code that is used to describe course type, ex: CIS300	Varchar	14	FK
CreditHours	Number of hours that the course is worth	Int	4	
Section	Number of the section as used in ULINK and Blackboard	Char	8	
StudentID	University ID given to student	Char	14	FK
ProfessorID	ID assigned to professor	Char	14	FK
Buidling	Building the class takes place	Varchar	45	
	Room number where class takes place			
	Time class starts			
	The semester that the class will			

RoomNumber	take place, ex: Fal2017	Varchar	15	
StartTime		Time	8	
SemesterName		Varchar	14	FK

Attribute Type	Definition	Type of Attribute	Size (Bytes)	PK/FK
CreatedByID	ID created to uniquely identify each administrator	Char	12	PK
UserName	Unique identifier created so each admin can log in	Varchar	36	
Password	Unique password created so each admin can log in	Varchar	36	
FirstName	Admin’s first name	Varchar	36	
MiddleInitial	Admin’s middle initial	Char	2	
LastName	Admin’s last name	Varchar	36	
EmployeeID	Admin’s UofL employee ID	Char	14	
Email	Admin’s email address	Varchar	90	FK
Address	Admin’s address	Varchar	90	
City	Admin’s city	Varchar	45	
State	Admin’s state	Char	4	
	Admin’s zip code			
	Admin’s phone number			

Zip		Char	10	
PrimaryPhone	Admin’s secondary phone number	Char	20	
SecondaryPhone		Char	20	

CertType

Attribute Type	Definition	Type of Attribute	Size (Bytes)	PK/FK

CertTypeID	Identifies category that certification falls under	Char	4	PK
CertTypeName	Name of the type of certification	Varchar	30	

Students

Attribute Type	Definition	Type of Attribute	Size	PK/FK

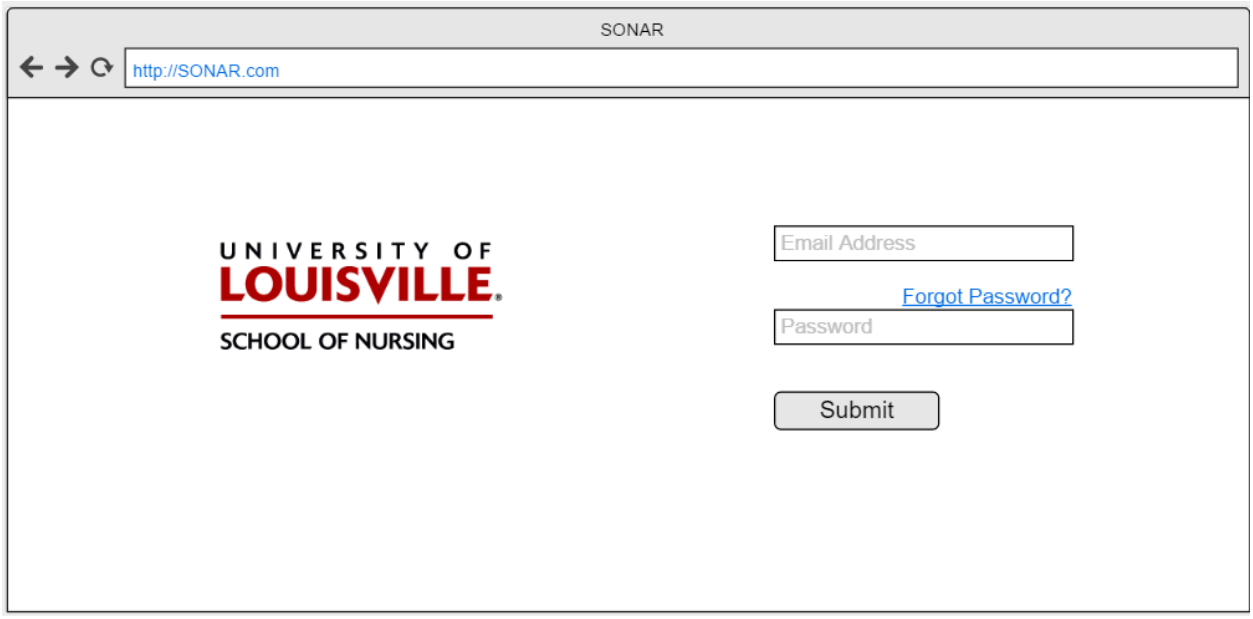
Username	This is the identifier used to log users in to the system	Varchar	20	PK
Password	This is the key used to log users in to the system	Varchar	20	
Email Address	Used to contact he Student in the future	Varchar	30	
Firstname	The common name of the user	Varchar	20	
Lastname	Surname of the user	Varchar	25	
Phone number	Telephone/cellphone contact of the user	Varchar	15	
Street Address	The physical address of the users residence	Varchar	30	
City	City in which the student	Char	15	
State	State in which the student currently resides	Char	2	
Zip Code	Zip code where the student currently resides	Varchar	5	FK
Student Type	Options like Upper division, lower division, etc. that help determine the program of study	Varchar	20	FK
Advisor				

	Assigns student to a particular advisor			

Prototypes

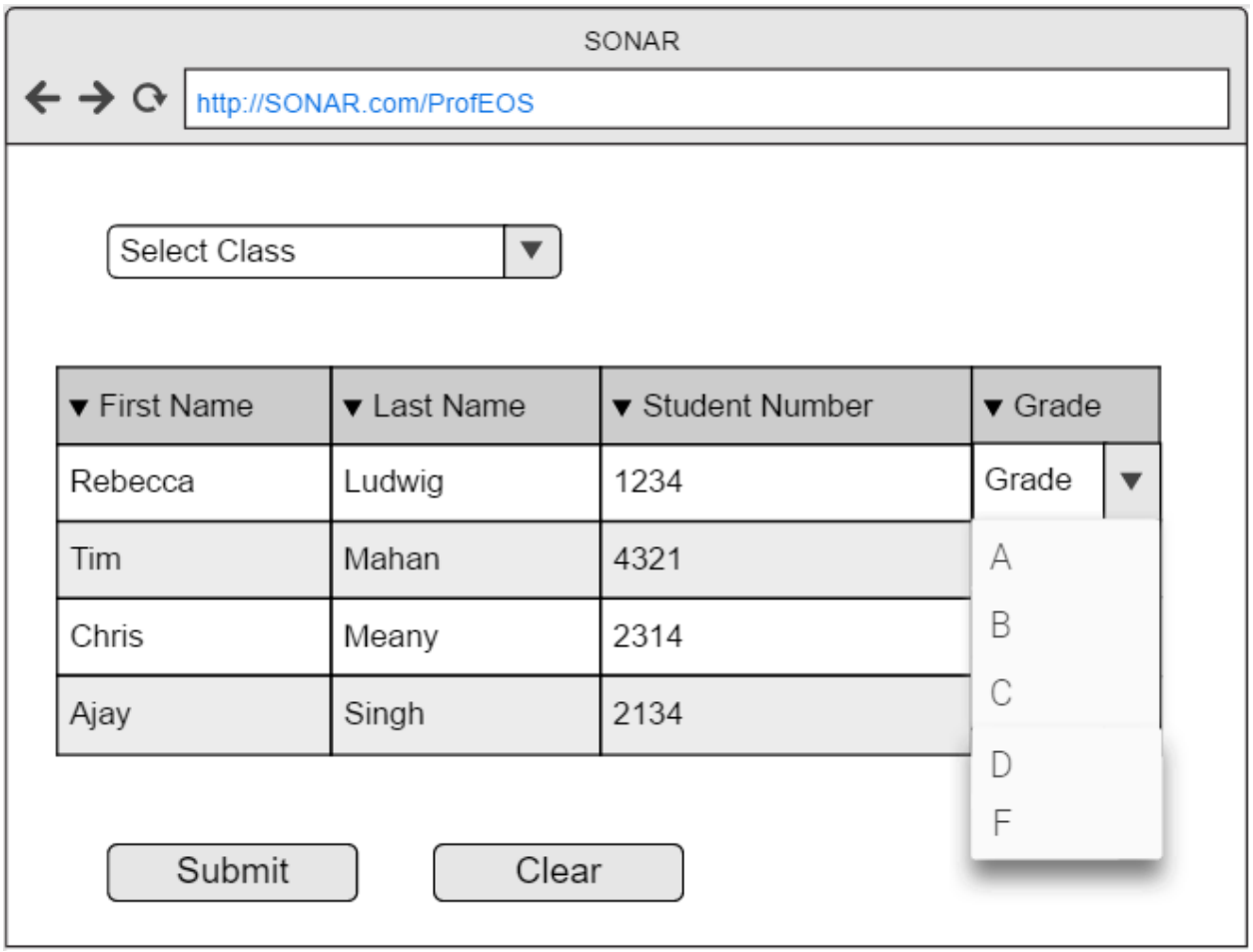
1-4 Login

This prototype is a simply mock-up of how the SONAR system's login page will appear for all users. Users will simply enter their university email (as that will be the standard username for ALL users) along with the password unique to this system.

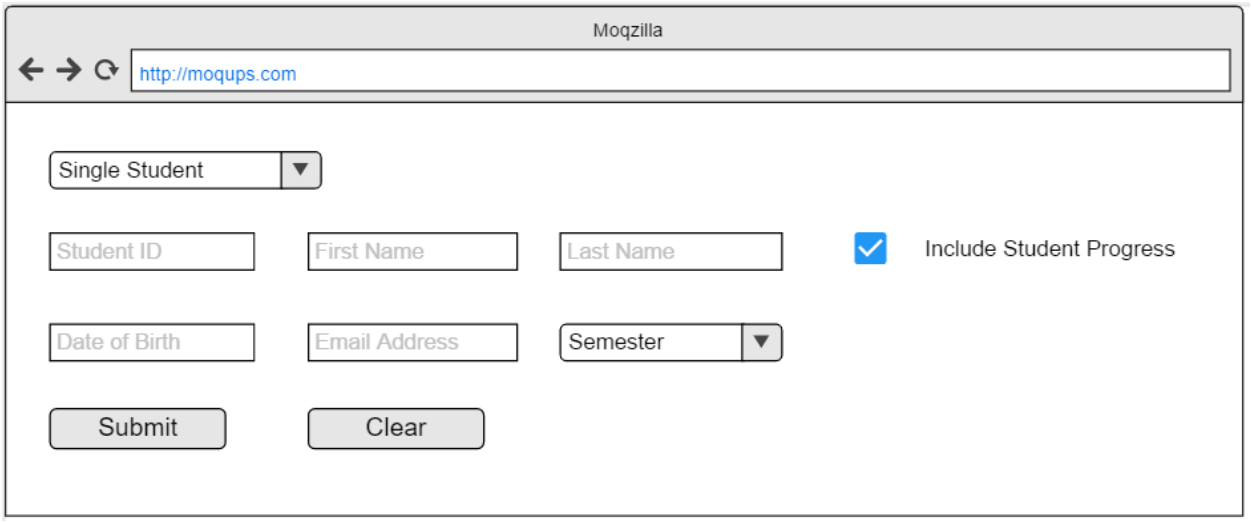


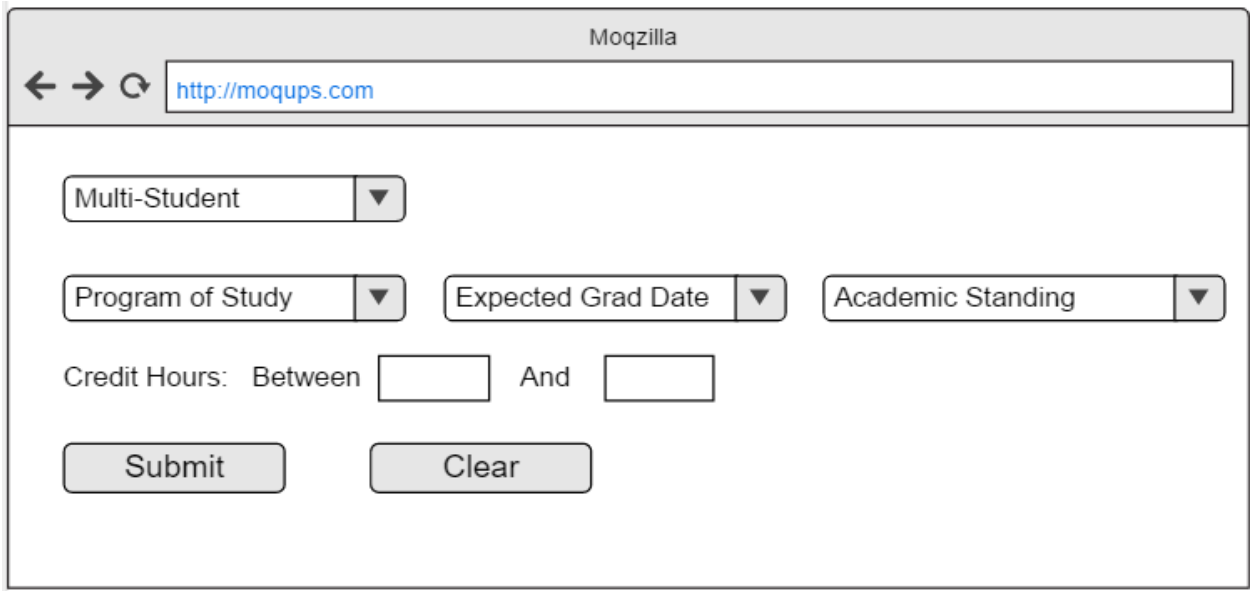
5) Submit Grades

The Professor will submit the grades of each student in each class they teach in a given semester. After successfully logging on to the system, Professors will be able to select the class from a list of classes assigned to them for the current semester, and then manually go through and select the grade of each student. Once this has been completed for a class, the professor will submit the grades. If the professor needs to clear the data entered for some reason, they will have the option to do so.



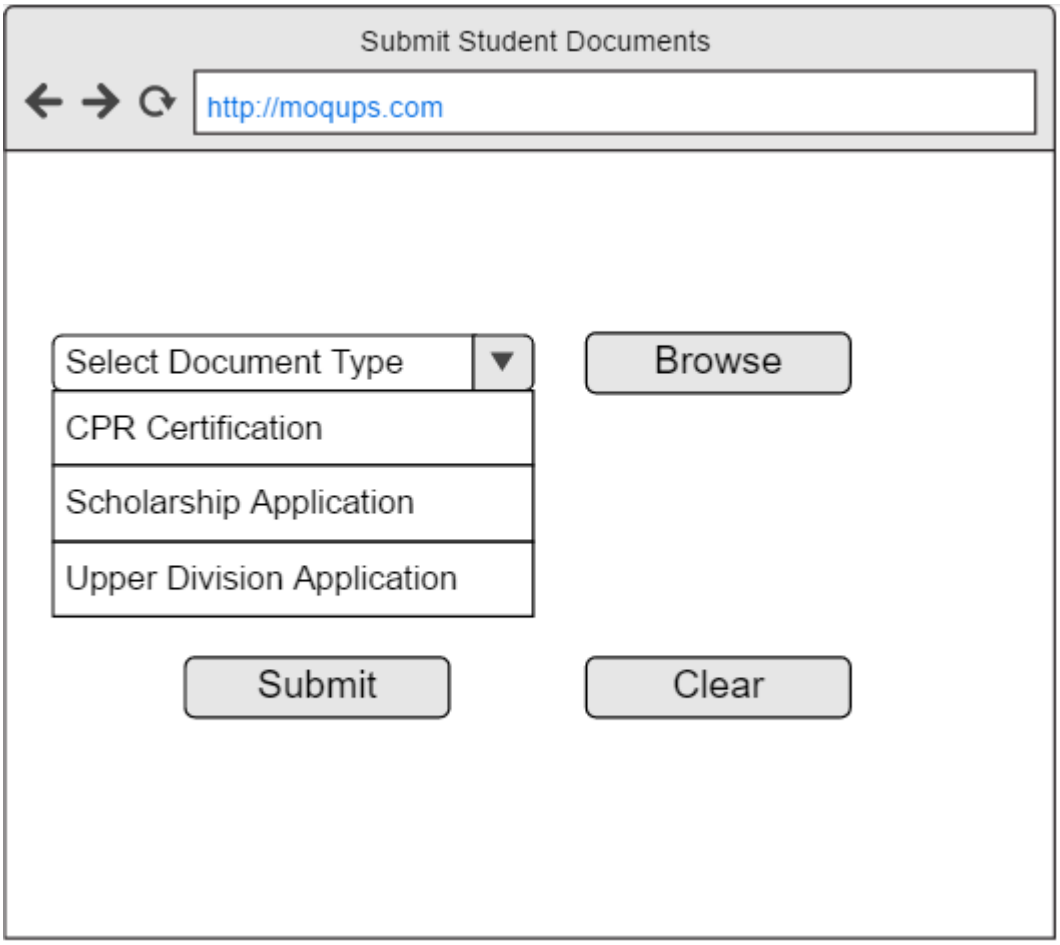
The user will run many searches (queries) against the database in order to gain information about not just individual students, but groups of students that participate in the programs offered by the School of Nursing. These searches will be used to generate reports about students, and with these reports advisors will be able to reach out to students who may have decided to not enroll in a particular semester without graduating, or reach out to students that may be on academic probation or failed a course. This will also allow Advisors to track the progress of individual students for advising appointments, with an easy-to-view report generated from a simple query.





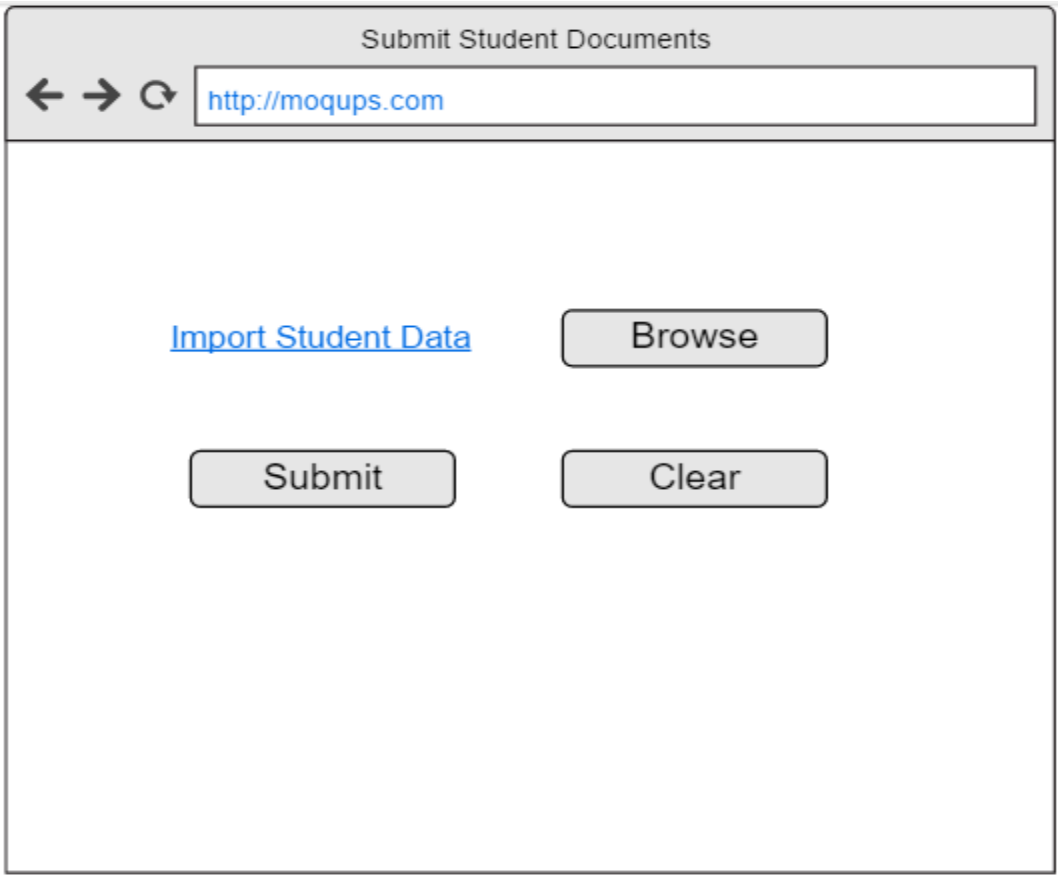
8) Document Upload

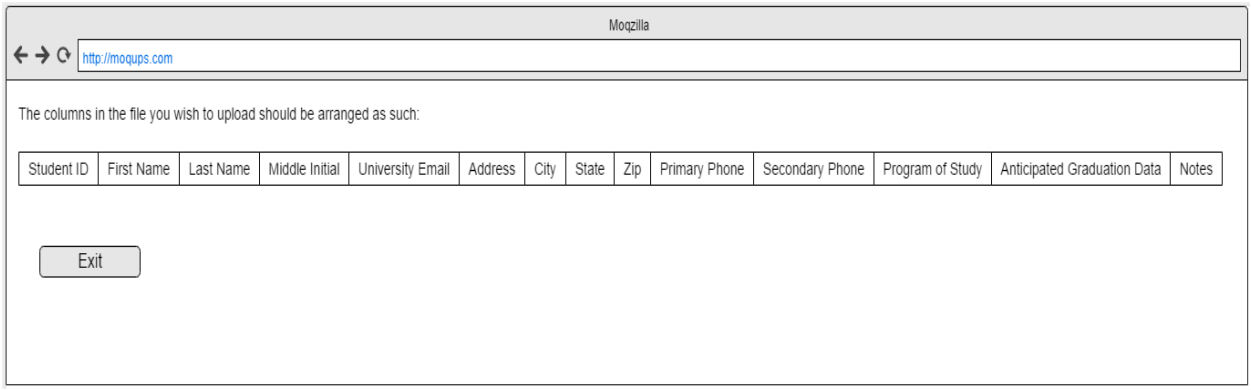
Students will have the ability to submit documentation for the review of advisors. The system will provide student users with an easy to use page that simply allows them to submit PDFs, PNGs, and JPEGs to the system so that Advisors may review and approve, not edit the documentation. When the Student selects the Document type, it lets the Advisor know what they're looking at for approval. When the Document is selected, students can select Clear to remove it, or Submit to send it to the Advisors.



9) Import from CSV

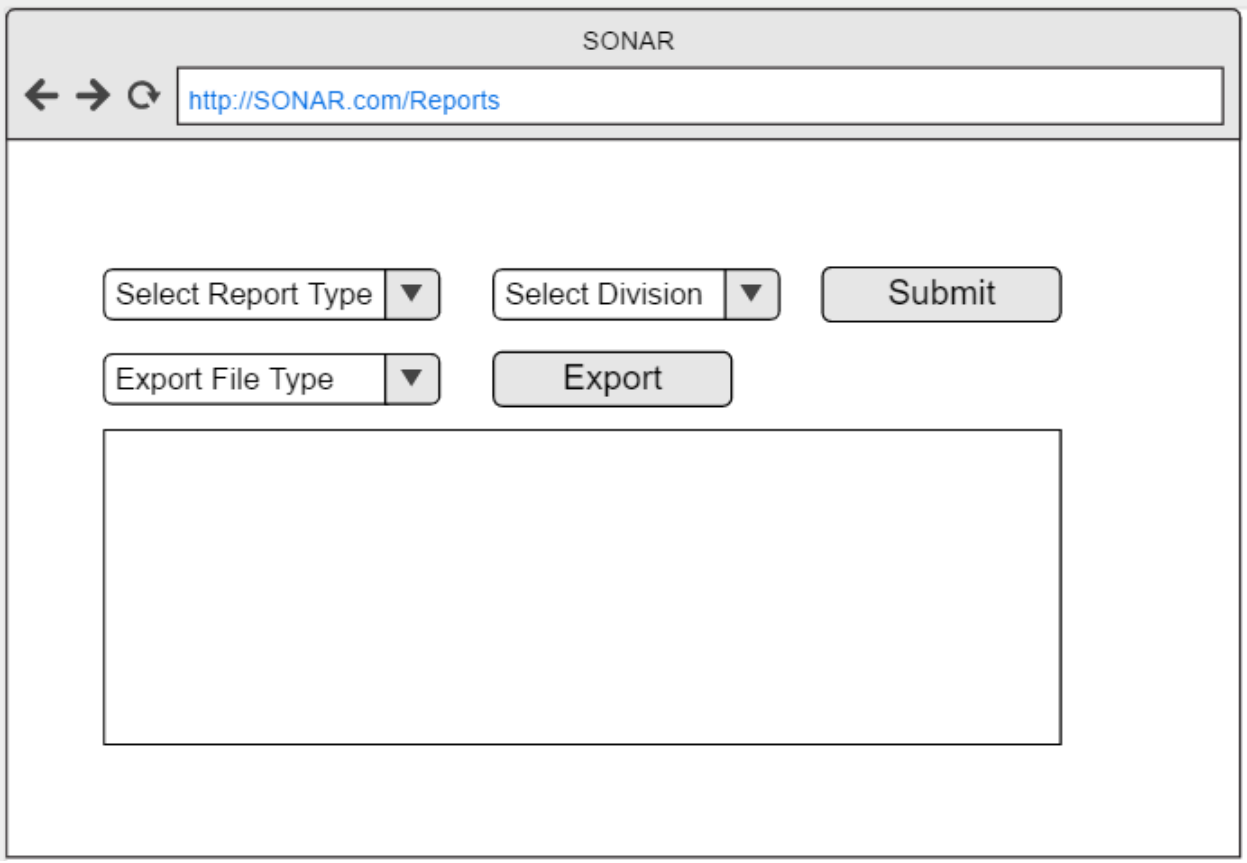
If the need should ever arise a need for data to be imported into the database, the system administrator will have the ability to do so. This allows the system to have more robust functionality, while limiting this privilege to a group that also has the ability to restore the system from a backup should anything go wrong. These excel files (in csv format) can be used to populate the database with information it previously did not contain in a quick, efficient manner. All an Administrator would need to do is Arrange the CSV file columns according to how the Import Student Data link specifies, browse to the file, and hit submit.





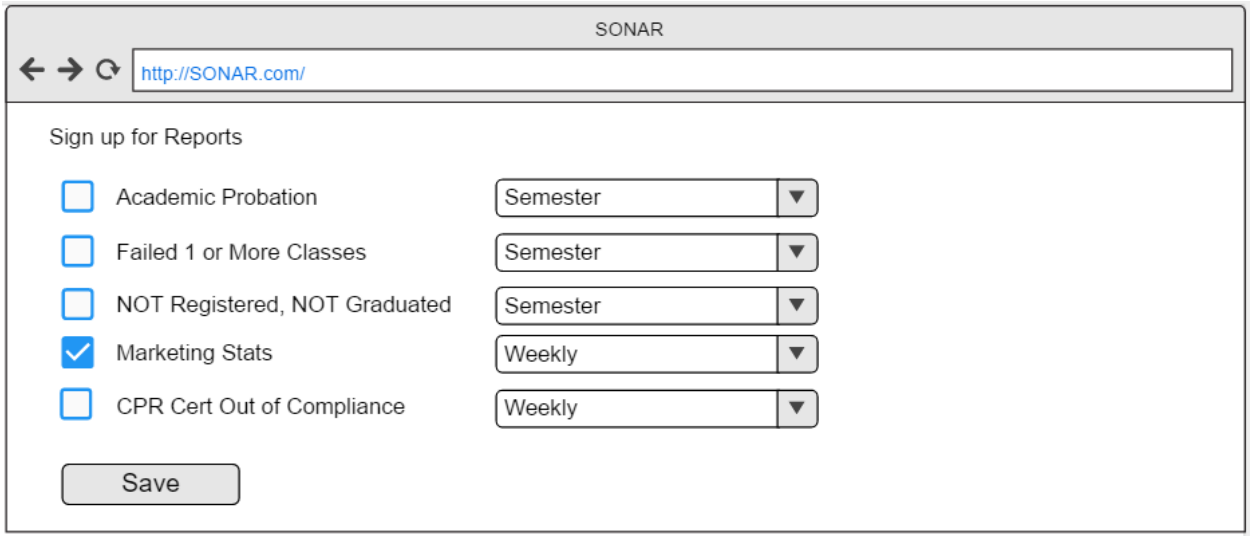
10-11 Reports

Some users such as Advisors and Committee Members would benefit greatly from having the ability to run reports and export those reports to files that they can manipulate on their computers individually, without making any changes to the data stored on the system. To provide this functionality, we'll have premade reports for advisors and committee members to select from, as well as the division of student should they wish to be so specific. They will then be able to export the data to excel file types or in PDF format to meet their manipulation/viewing needs.



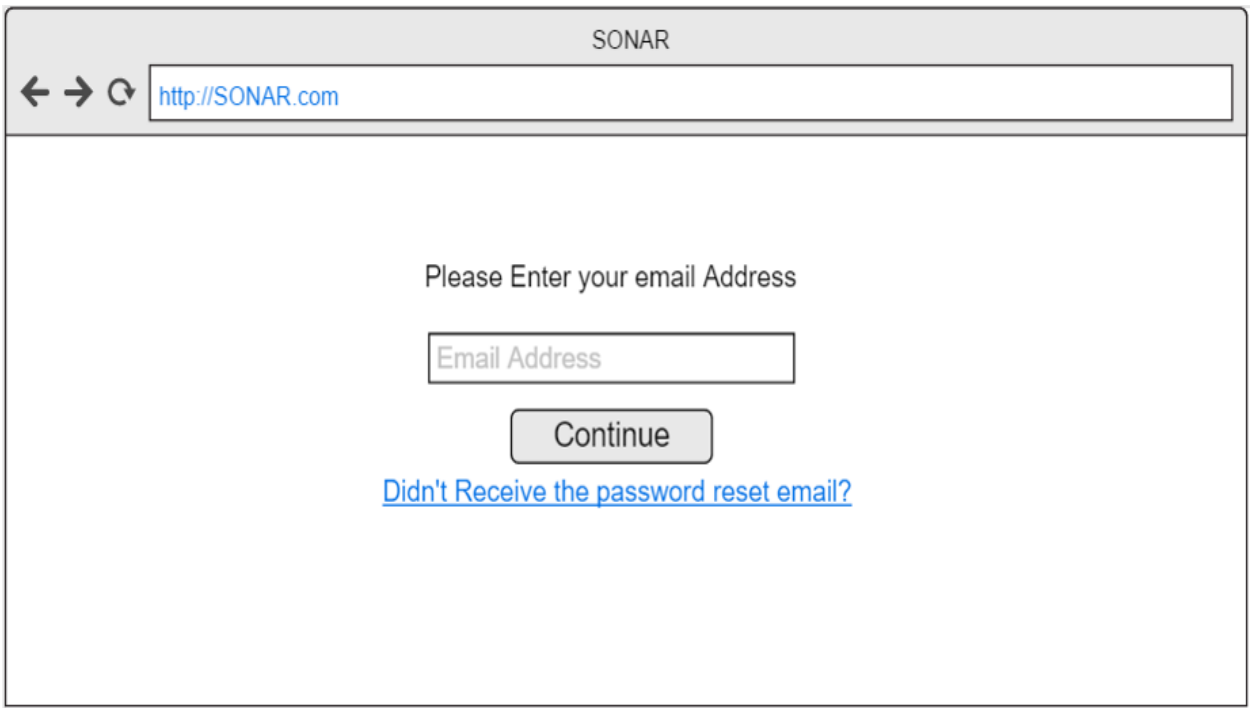
12) Automatic Reporting

Some reports can be generated and delivered automatically. On this page, users will be able to sign up for weekly, monthly, or semester reports. These will be the built in reports that are available on the reports page for users to export. All an Advisor would need to do is check the box next to the report they wish to receive on regular intervals. Once this is complete, they only need hit Save and the changes will take effect.



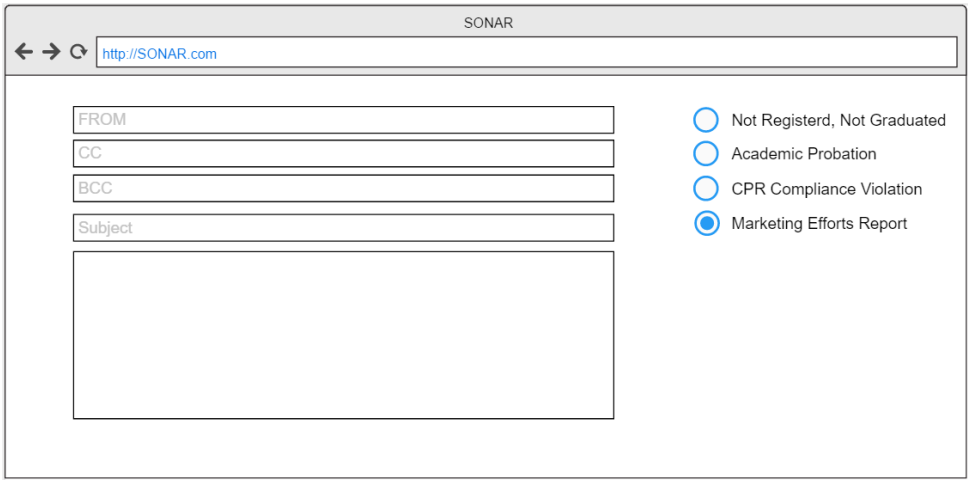
13) Reset password via email

This prototype will allow any user to reset their password. They will select reset password button and enter their email address. An email with a link will be sent to them to allow them to enter their old password followed by entering a new password twice to confirm that it’s the same and meets the standards for the program.



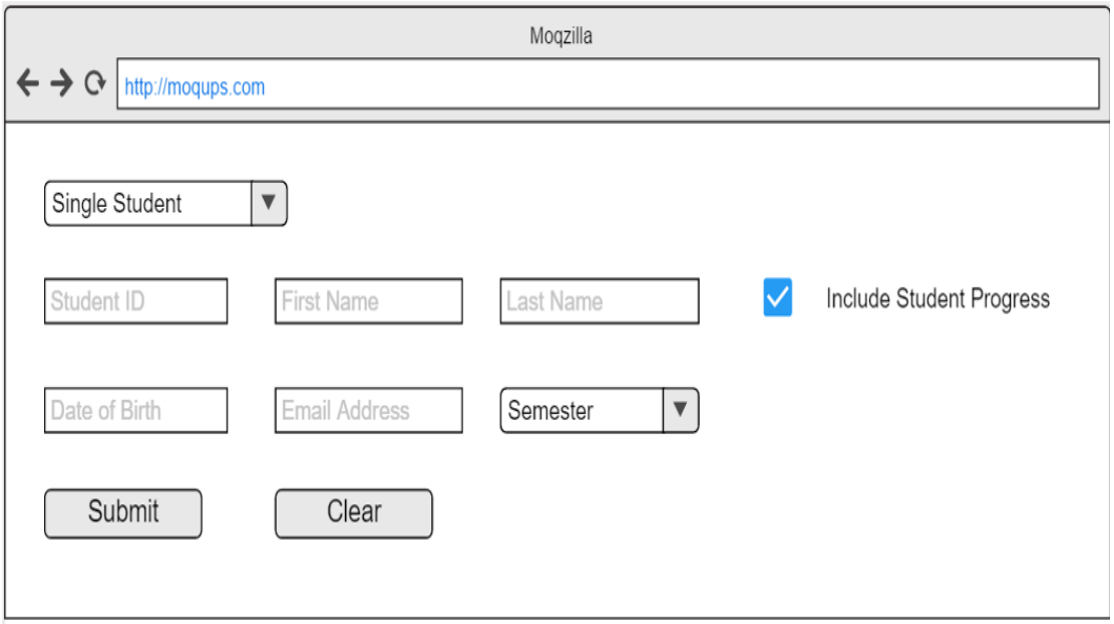
14) Generate automatic email templates

This will allow professors, advisors and committee members to choose a pre written template to send as an email to save them time. They will log in with their username and password then select the email tab. They will be brought to a blank email with pre-loaded email templates they can click on to be automatically dropped into a blank email. This will cut down on the time spent to type emails.



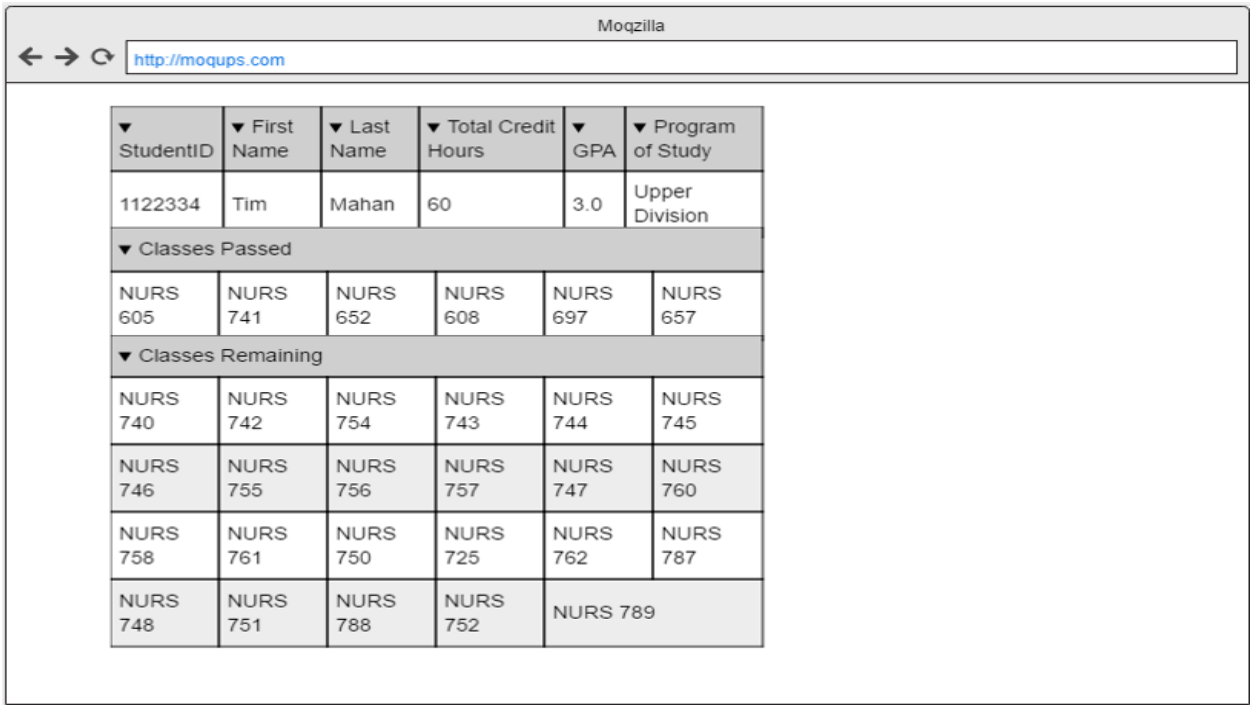
15 Track Students progress

This prototype will allow an advisor to track a student's progress through the program by running a simple query or report.



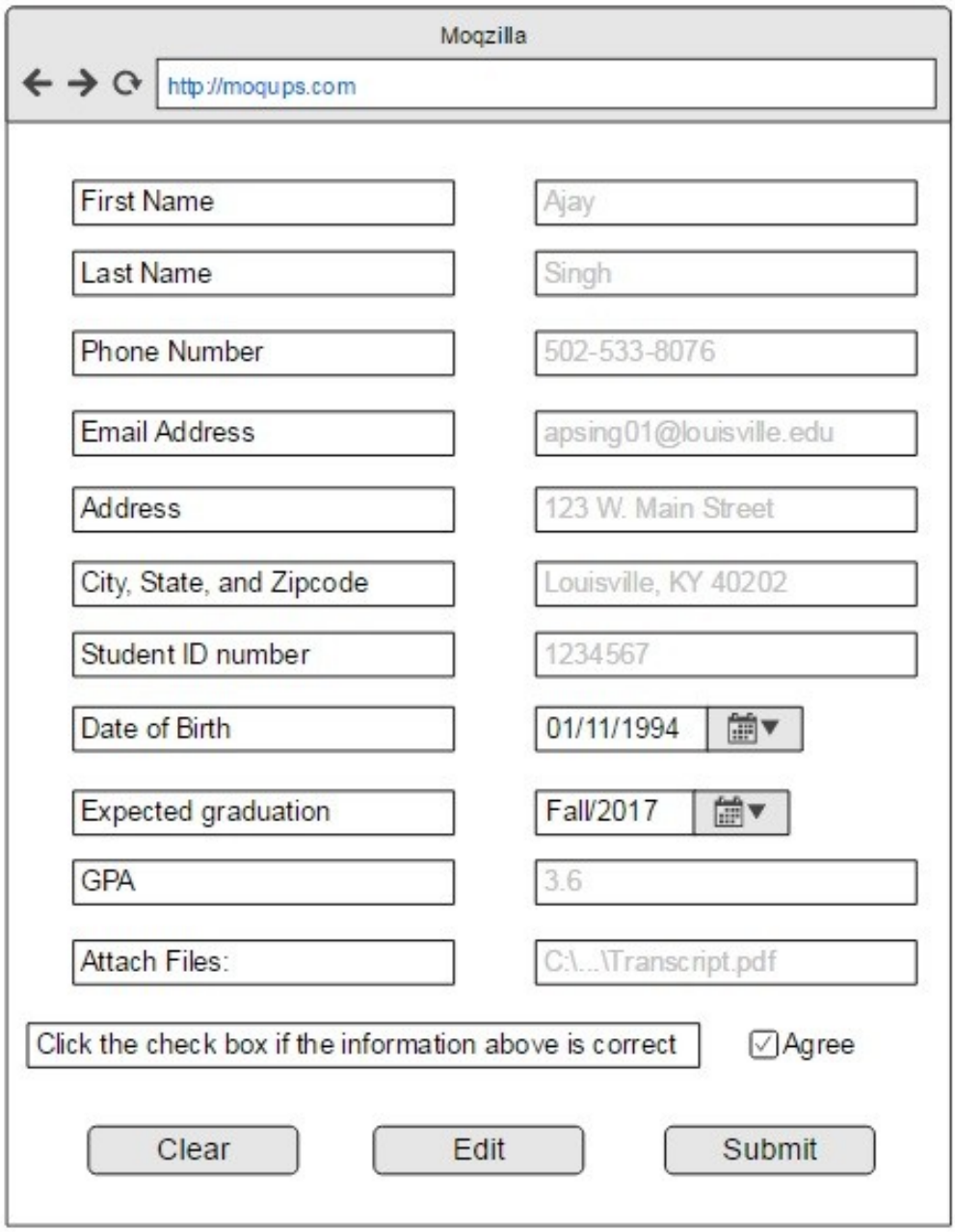
16) Track graduation progress of student

Here, advisors will be able to view a student's completed classes and classes that need to be taken that are required to graduate. They will enter their credentials and select the student tab. From here they will search the student they want and be able to look at what classes they have finished and still need to finish.

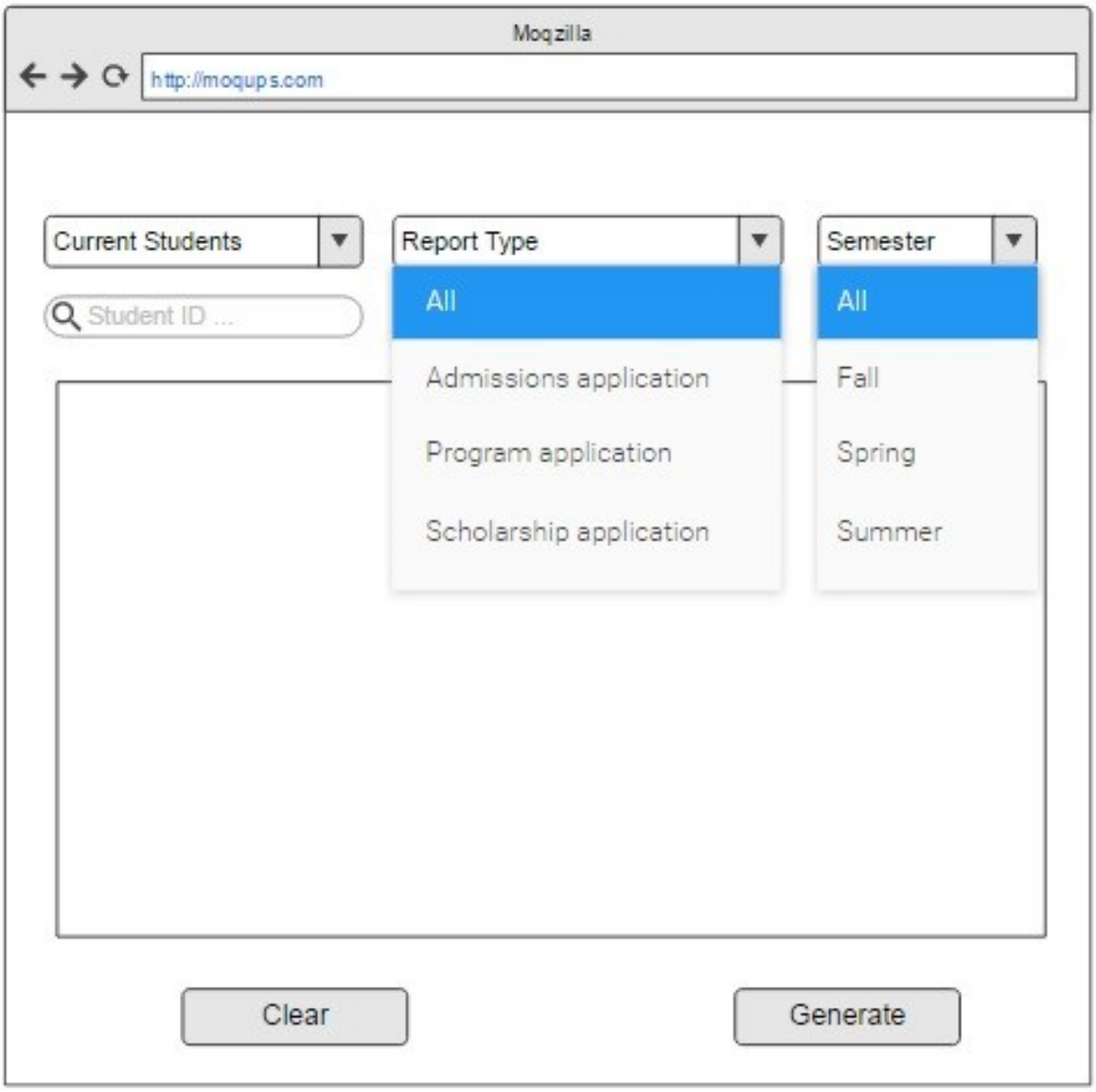


▼ StudentID	▼ First Name	▼ Last Name	▼ Total Credit Hours	▼ GPA	▼ Program of Study
1122334	Tim	Mahan	60	3.0	Upper Division
▼ Classes Passed					
NURS 605	NURS 741	NURS 652	NURS 608	NURS 697	NURS 657
▼ Classes Remaining					
NURS 740	NURS 742	NURS 754	NURS 743	NURS 744	NURS 745
NURS 746	NURS 755	NURS 756	NURS 757	NURS 747	NURS 760
NURS 758	NURS 761	NURS 750	NURS 725	NURS 762	NURS 787
NURS 748	NURS 751	NURS 788	NURS 752	NURS 789	

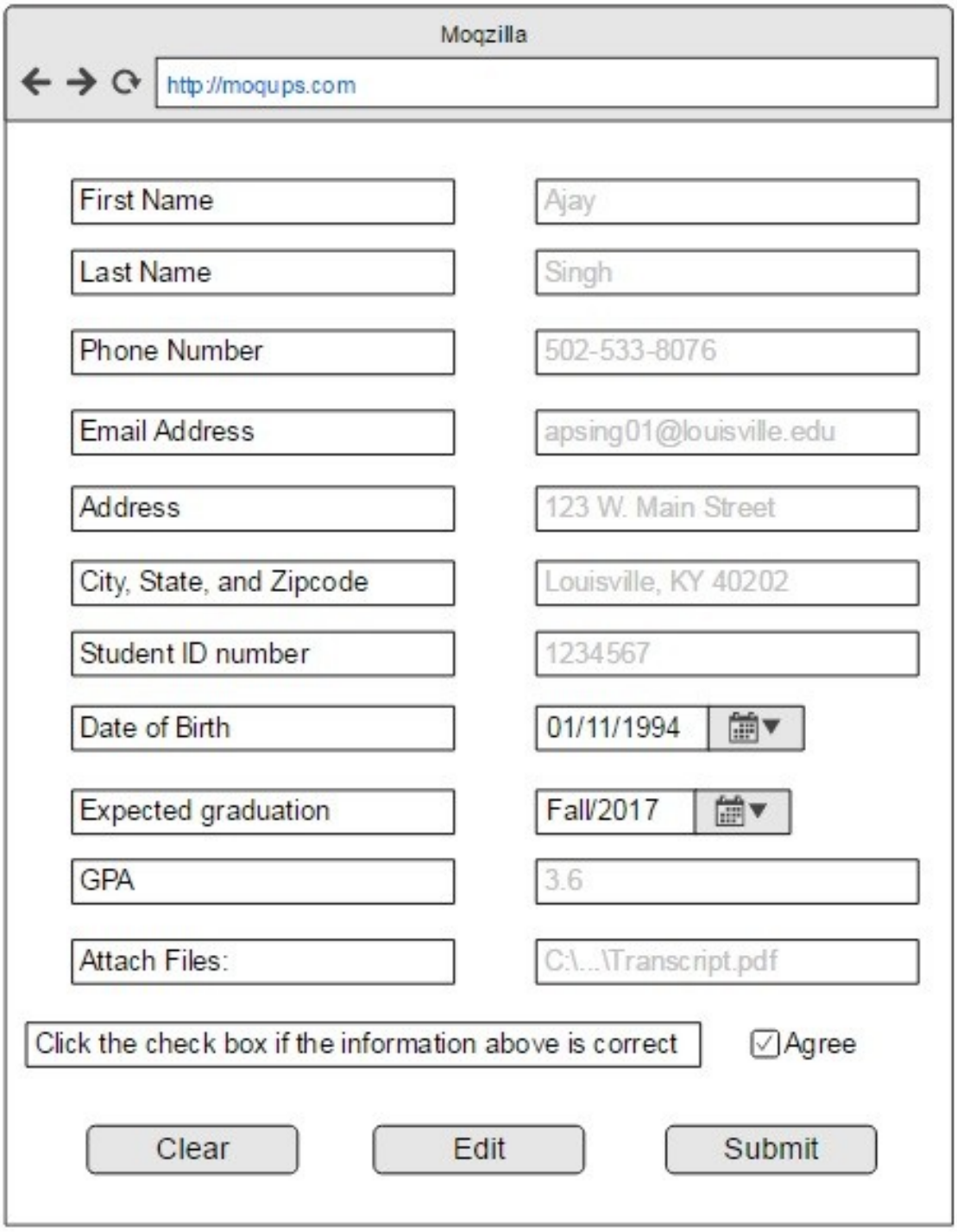
25. Submission of application to school of nursing.



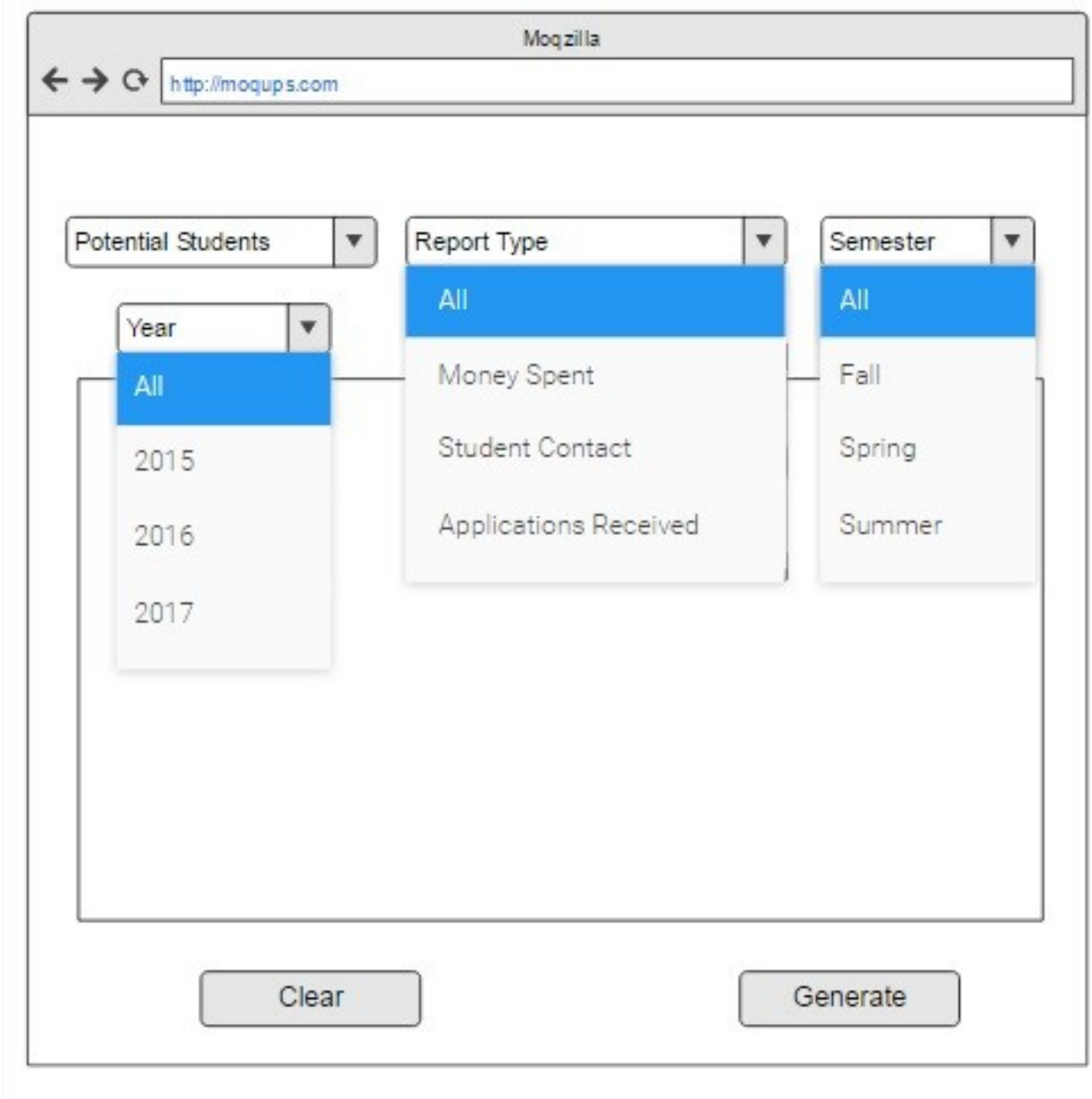
26. Track Received scholarships



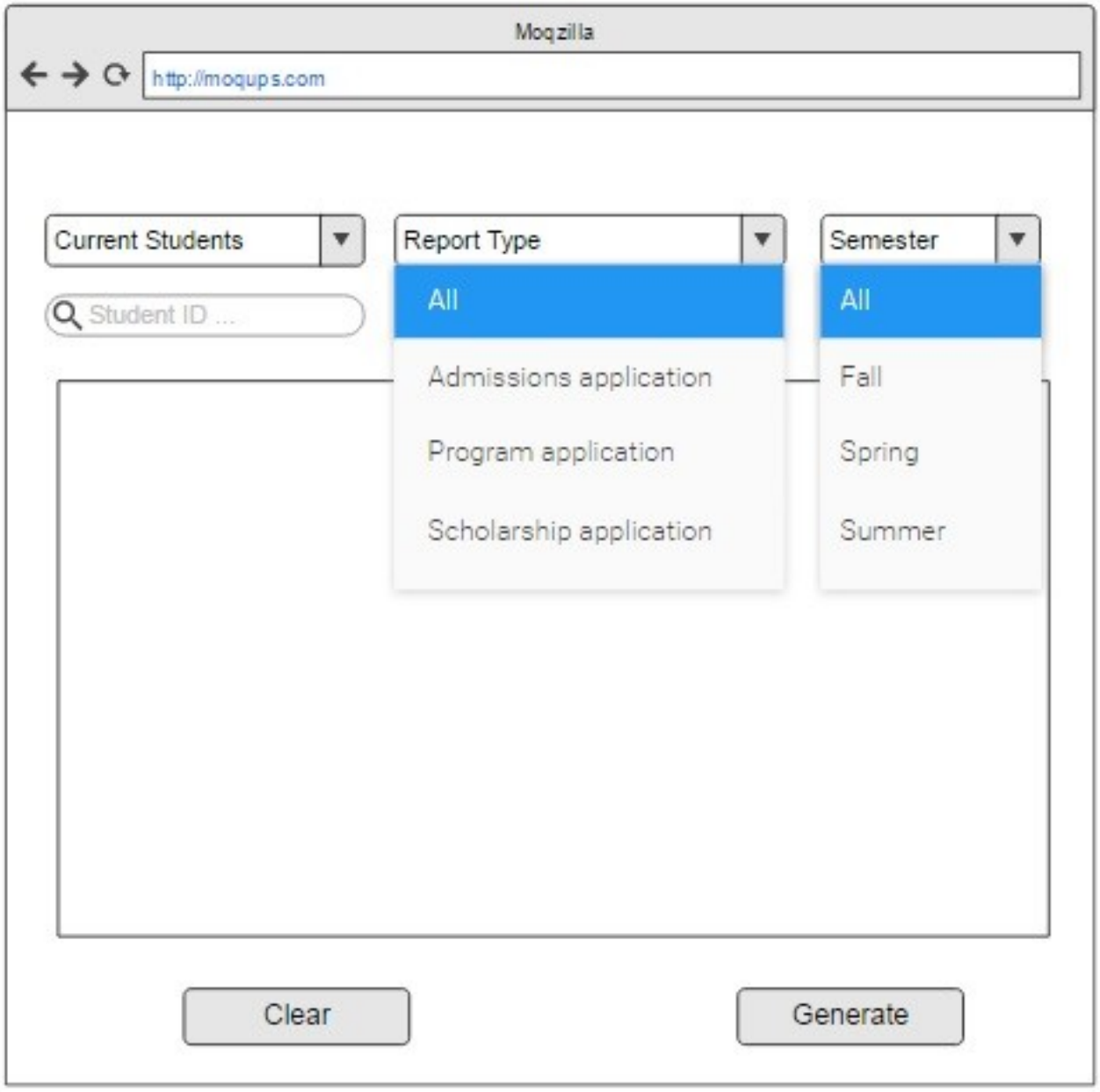
27. submit scholarships



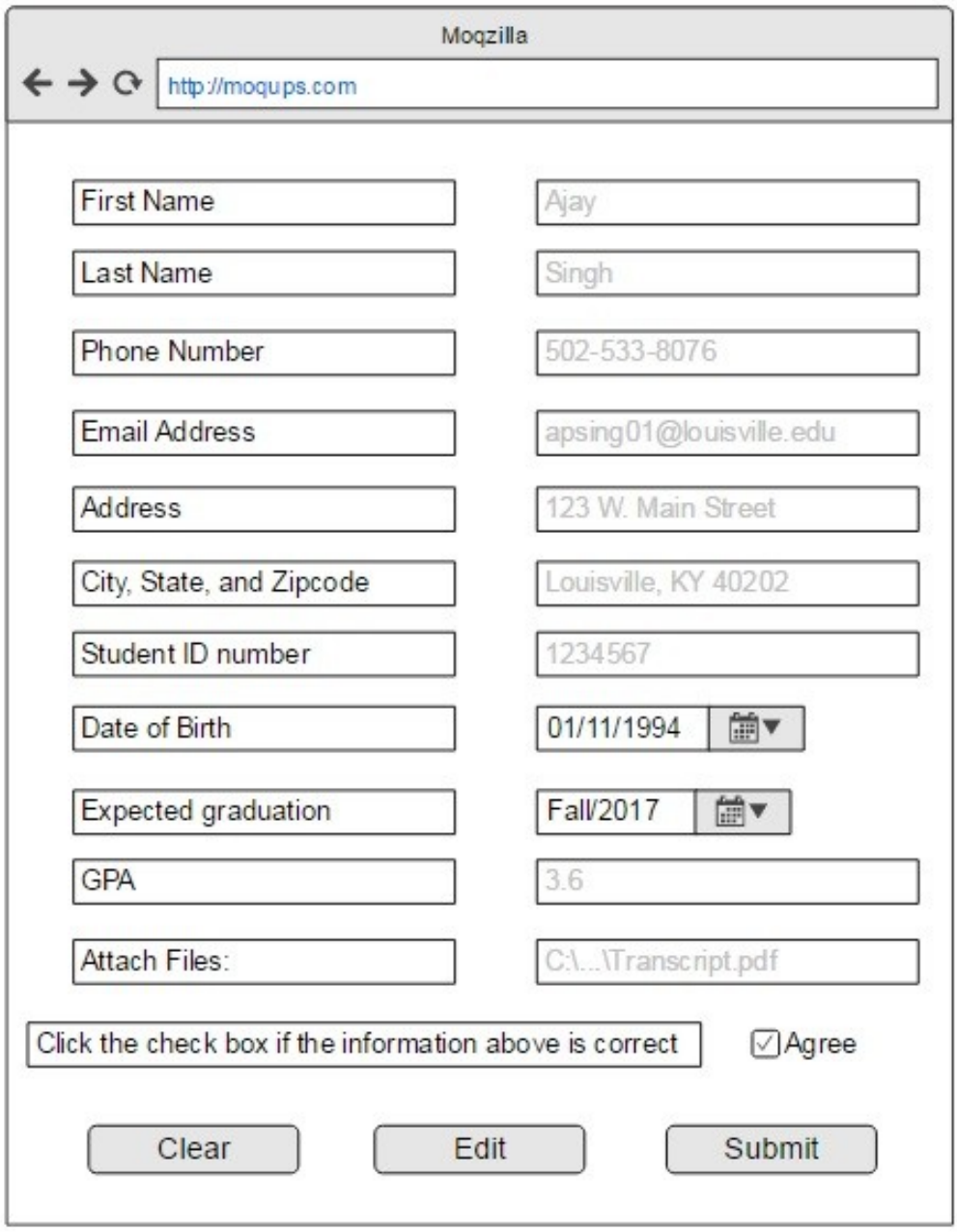
29. Track Marketing Efforts



30. View reports for admissions decisions

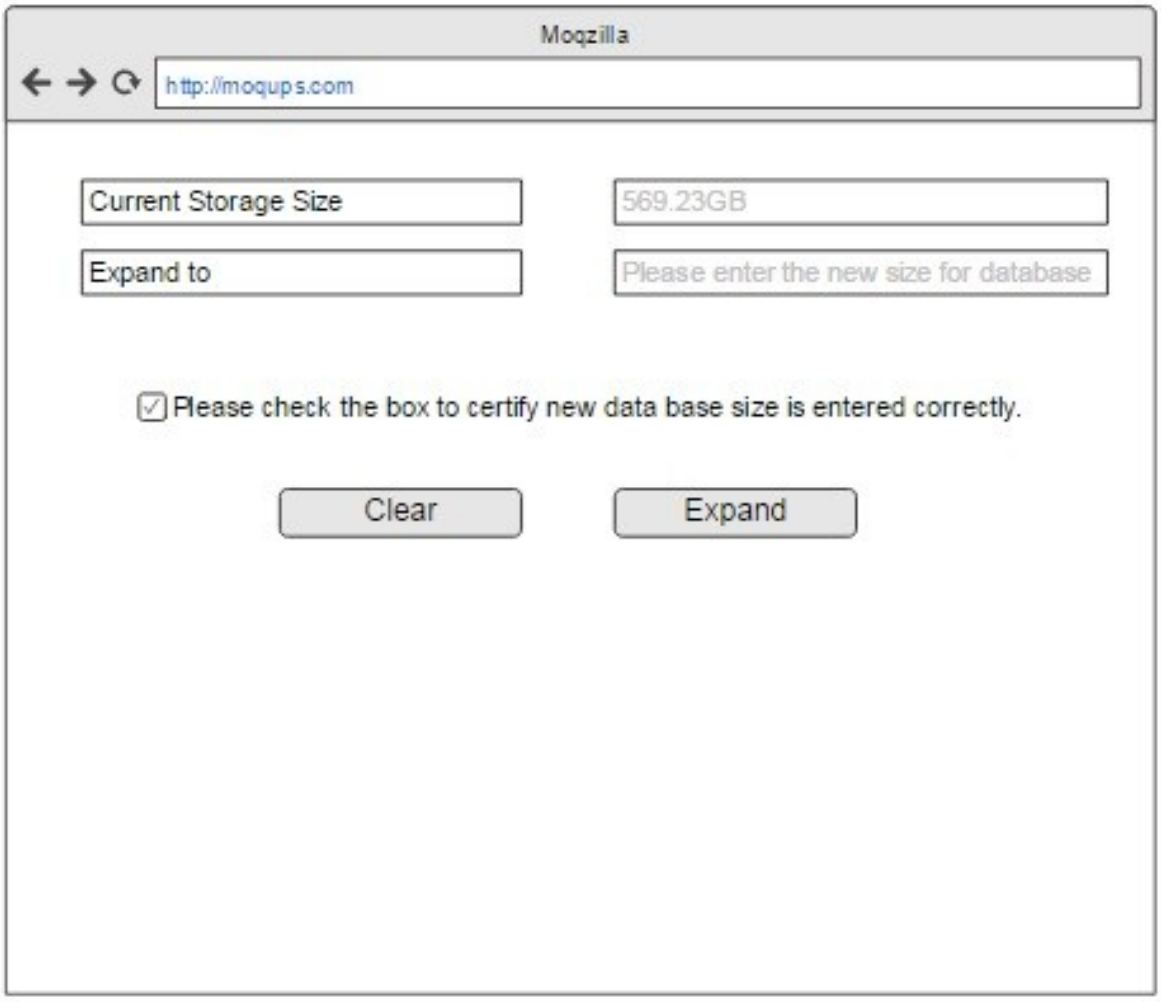


31. Submission of application for program of study

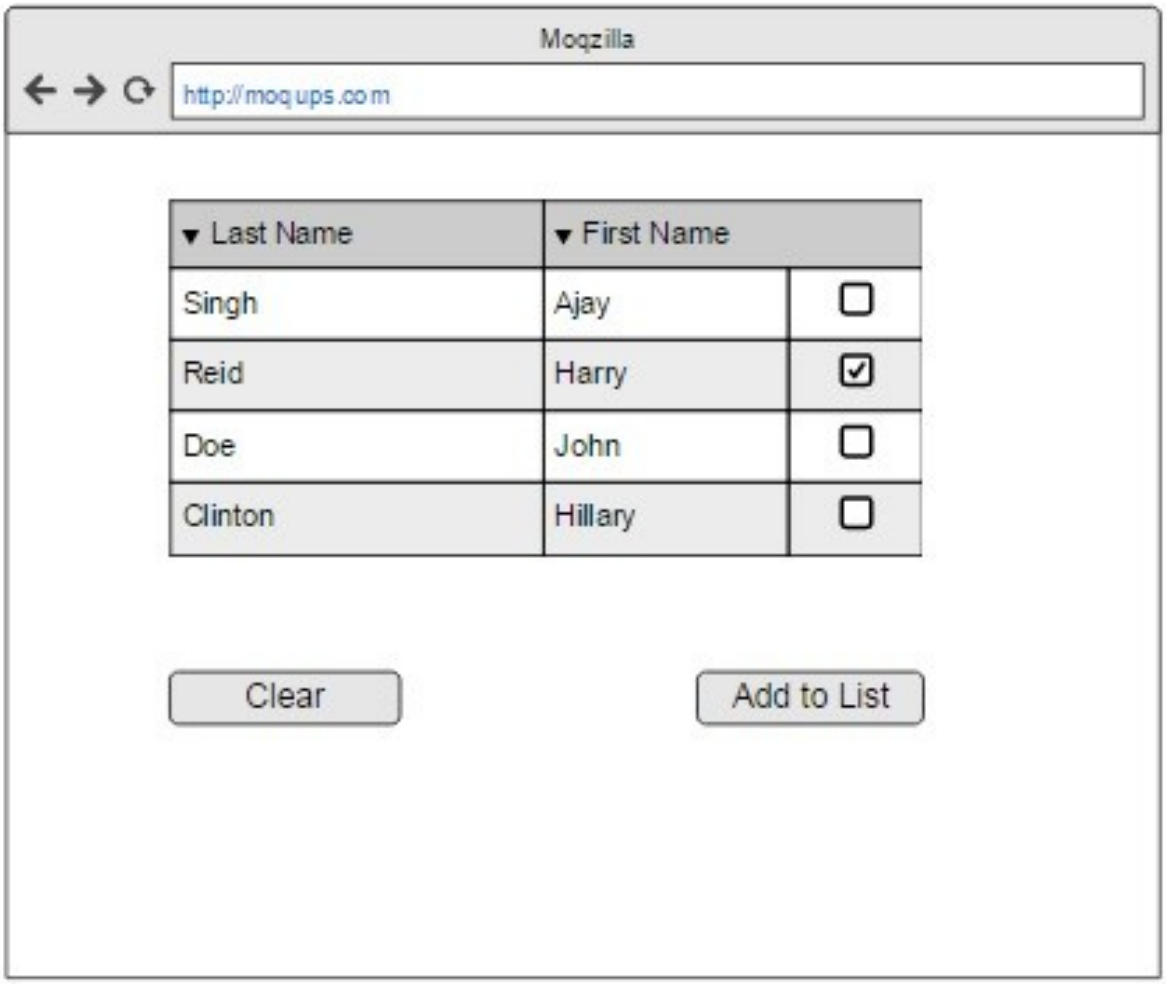


32. Add to database storage

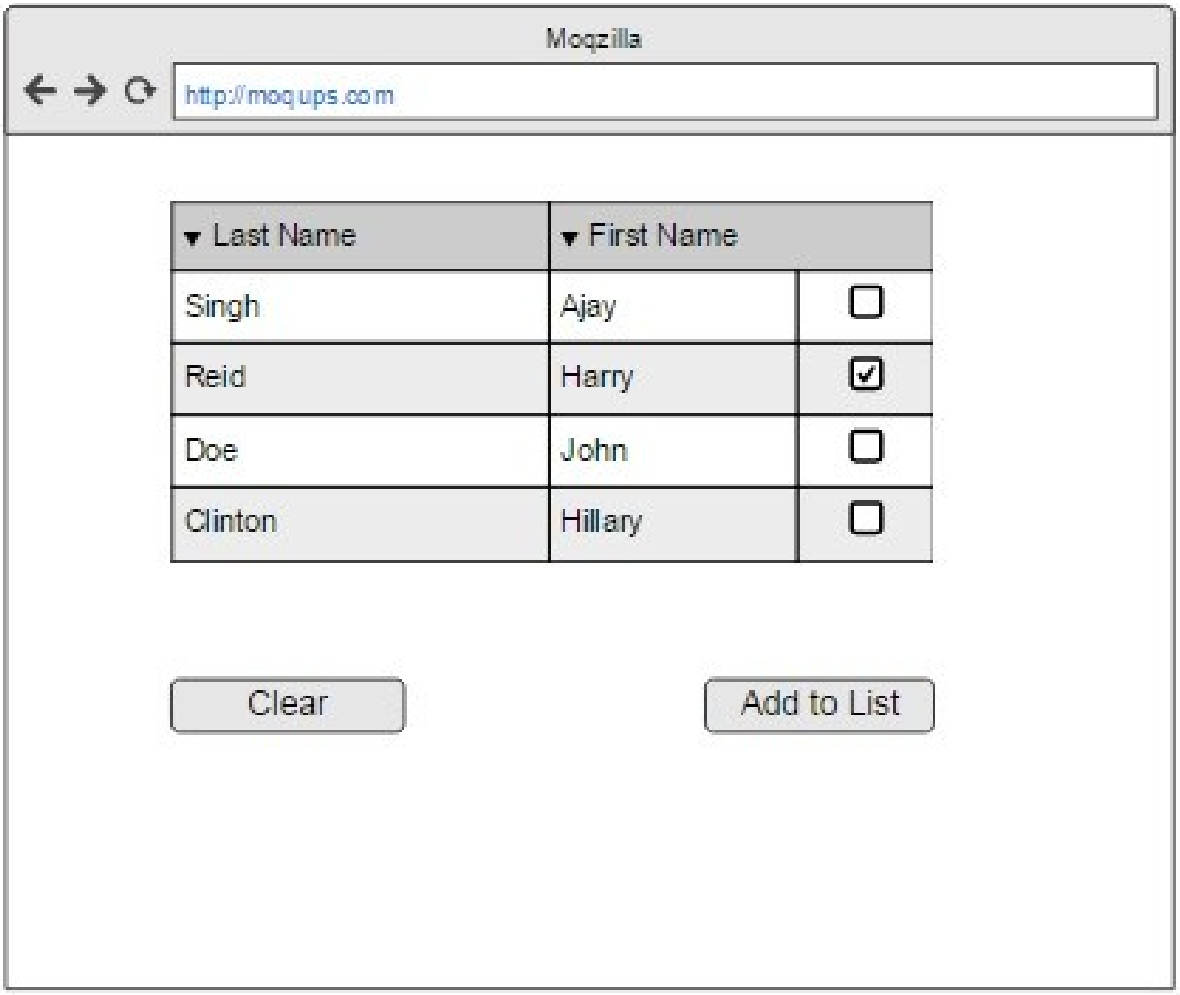
System admin would physically add storage to system server



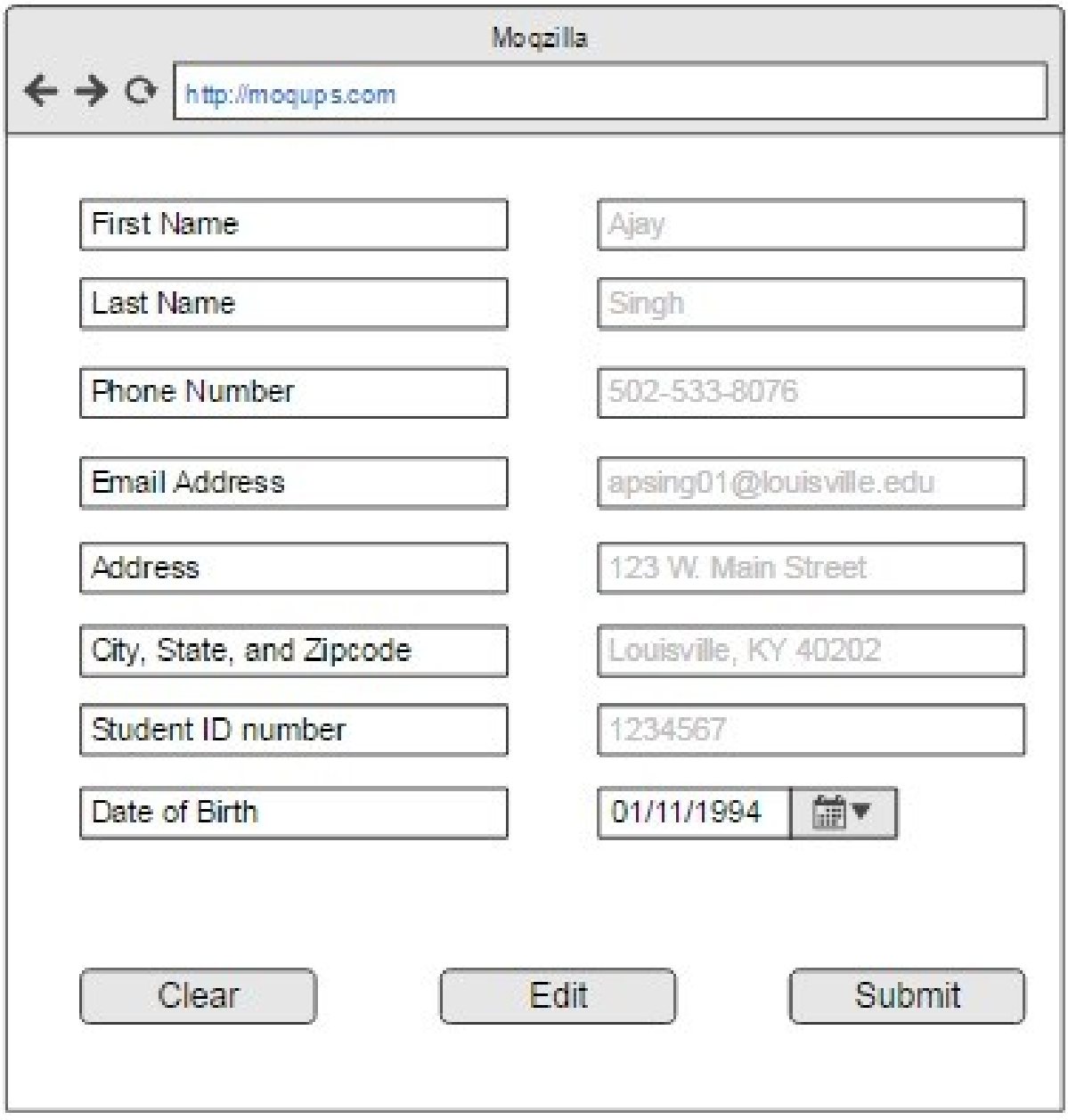
33. Add Graduated students to alumni list



34. Generate email list



35. Edit contact information for alumni



36. Generate email list to ask alumni for donations