

SPRINT 3

A. Requirements Engineering

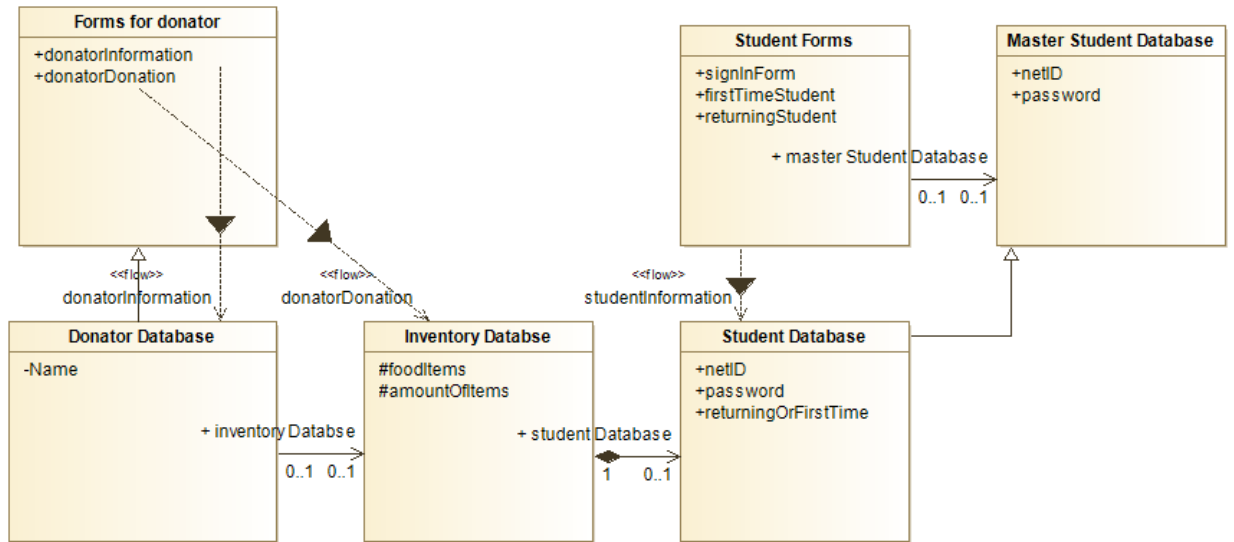
Functional Requirements:

- Have a database that will manage the data coming into the food pantry. The data held should specify:
 - o What food is in the Food Pantry.
 - o How much food in each of the various food categories there are (i.e. 5 cans of beans, 14 pastas, etc.)
 - o Each food donation with date of donation, the food donated, quantity of donation, name of donator, and other information about the donator.
- Should look like current Rutgers sign in and log in pages so the usability of the system is greater among RU students.

Non- Functional Requirements:

- Easy and fast process for donors to log their donation.
- Must be working and reliable at least 99% of the time.
- Non-authorized users should not have access to the inventory or donor database
- Inventory should be accessible by both Employees and Students, but not necessarily Donators.
- Verify that the person taking food is a Rutgers student
 - o Has valid netid and associated password
- Each time food is taken out of the pantry, the recipient must log what is taken out, this should update the inventory in the database.
- The system must allow for a sense of privacy (which the previous method of checking each and every student's bag did not allow for)
 - o The user will have to report what they have taken out from the food pantry
 - o This information should never be known by the employees or anyone other than the user
 - o This information should only be used to update the inventory

B. System Modeling



Class Diagram for entire system

C. Architectural Design

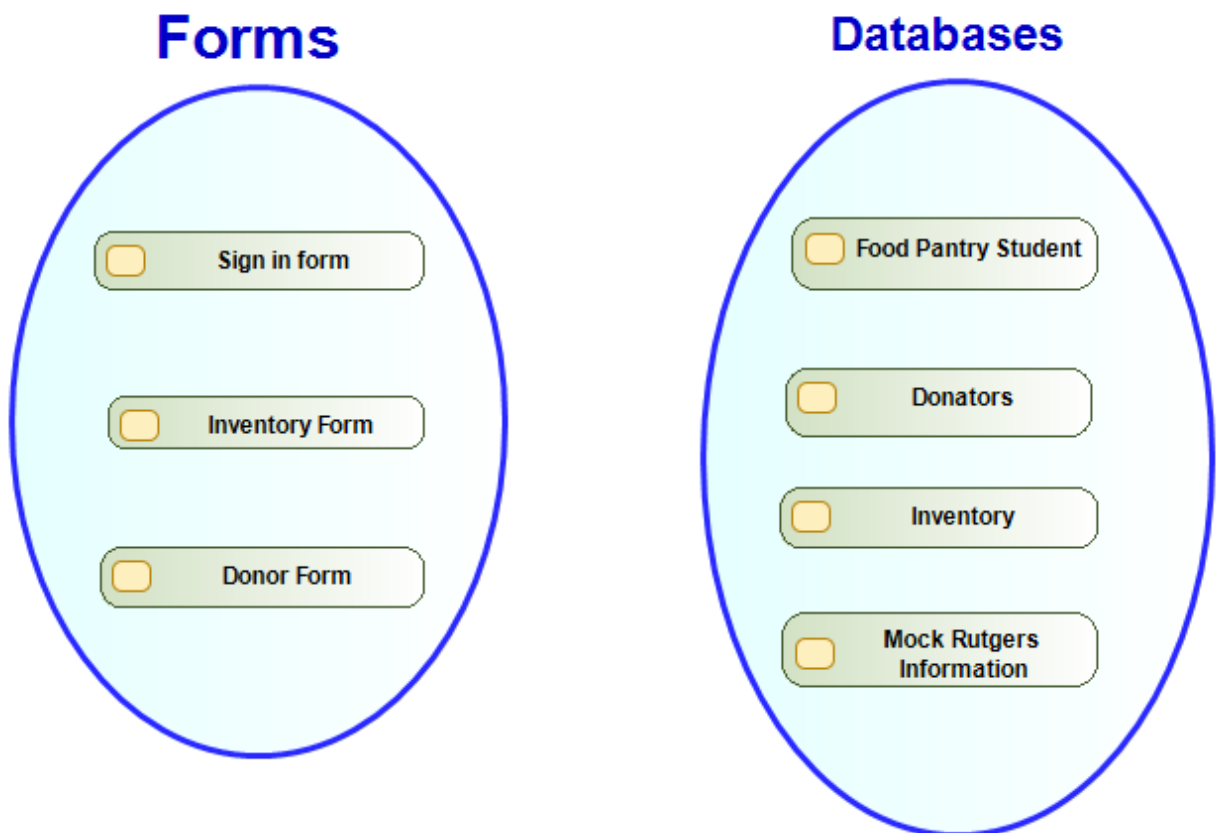
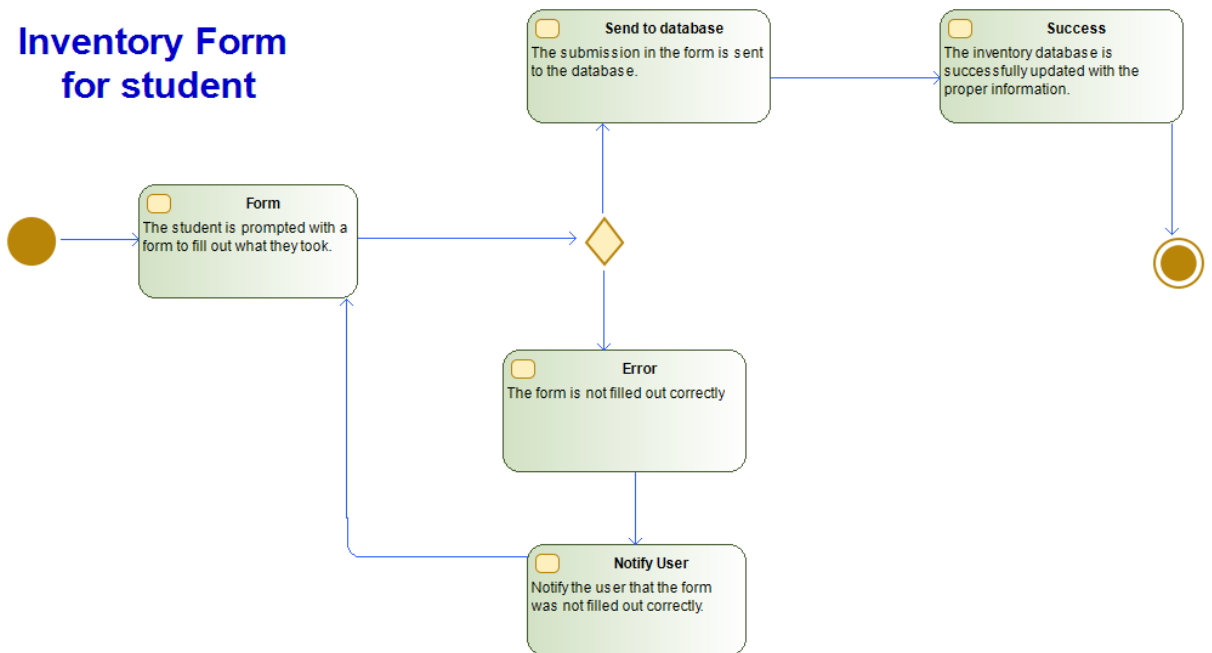
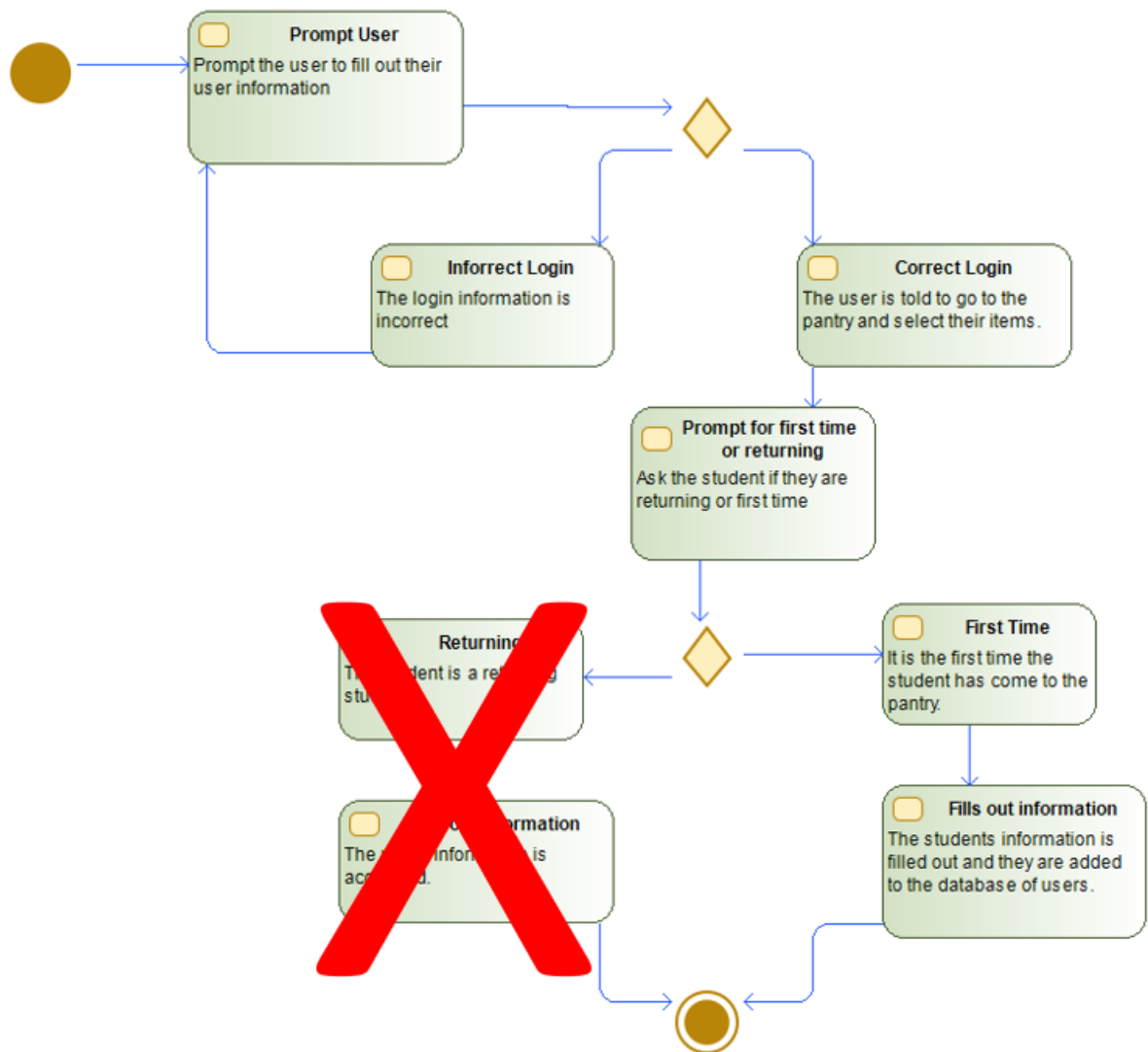


Diagram of all parts of the system



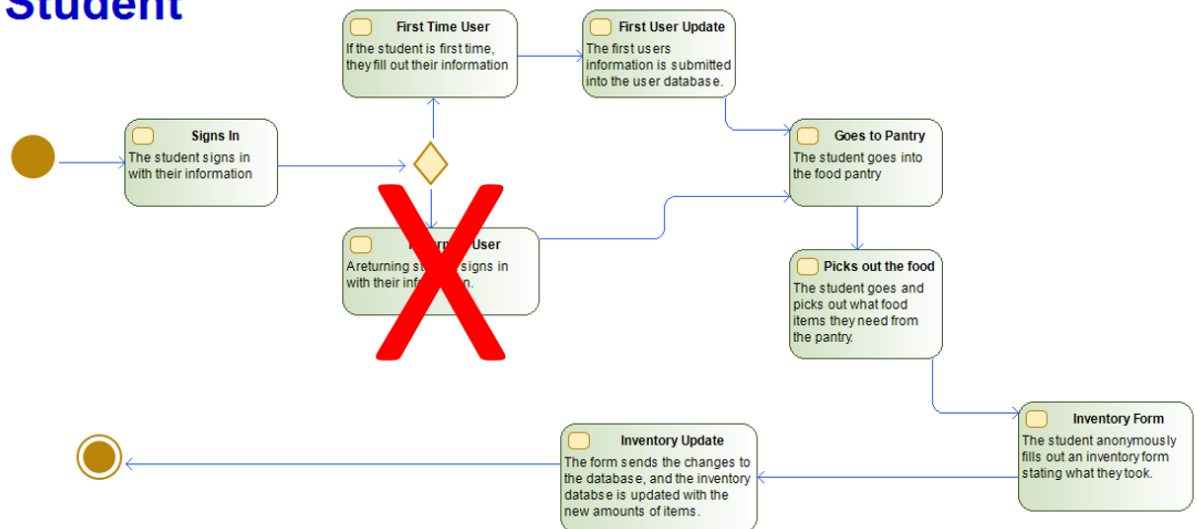
Inventory form for student activity diagram

Login Form for picking up food

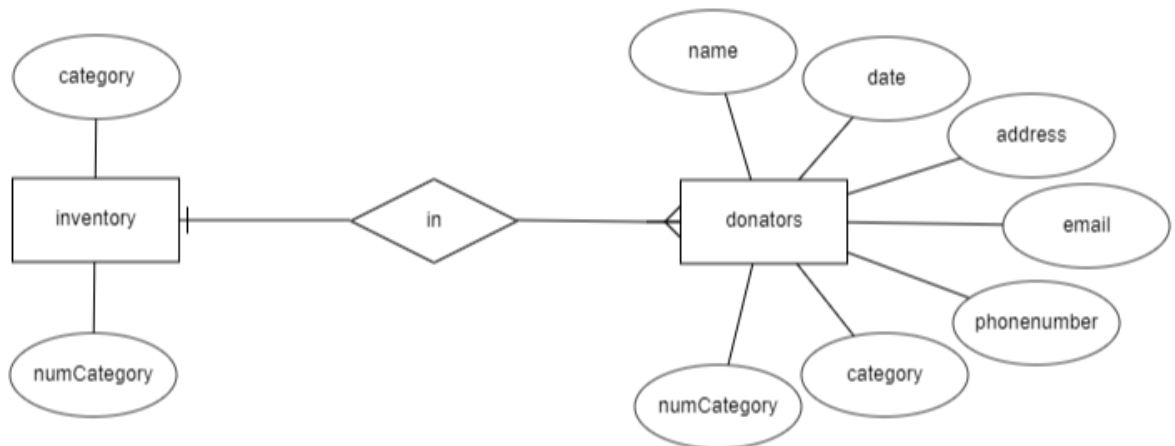


Updated login form for student picking up food form activity diagram

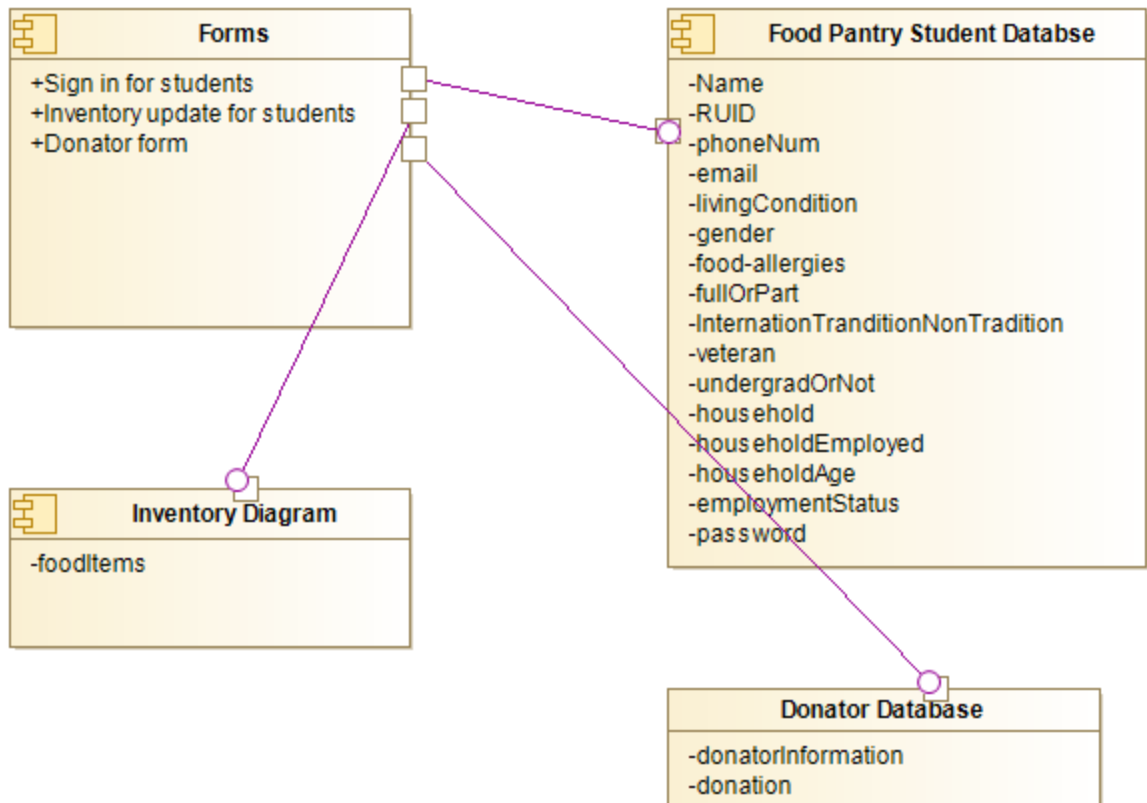
Student



Updated total student activity diagram



Original Entity Relationship Diagram of table relation in the database



Component Diagram for Main Databases

D. Design and Implementation

The donator form and student form are both made using an HTML form that the user inputs their information into, JavaScript inside the HTML file to validate the inputs (name shouldn't have numbers in it, date values should be selected, address just shouldn't be empty, category values can be empty but at least one category should be donated or picked up, etc), and PHP to put the HTML inputs into the FoodPantry database with tables for inventory and donors using SQL queries. XAMPP is the local server used to make the HTML interact with MySQL and have the form make changes to the database so the files are run locally.

The donator form is shown below to demonstrate the inputs the form asks for from the donors. Note that the student form has just the categories since it's an anonymous form (the food pantry doesn't want to know what a specific person picks up from the pantry but they still want the inventory updated).

Donator Form

Name	<input type="text"/>
Date	<input type="text" value="Please select month..."/> <input type="text" value="Please select day..."/> <input data-bbox="1305 296 1507 317" type="text" value="Please select year..."/>
Address	<input type="text"/>
City	<input type="text"/>
State	<input type="text"/>
Zip Code	<input type="text"/>
Email	<input type="text"/>
Phone Number	<input type="text"/>
Donation Categories:	

Please enter the amount donated for each category!

(Leave it blank if nothing in that category.)

Applesauce	<input type="text"/>
Beans	<input type="text"/>
Broth	<input type="text"/>
Canned Fish	<input type="text"/>
Cereal	<input type="text"/>
Condiments	<input type="text"/>
Cream of Wheat and Grits	<input type="text"/>
Fruit	<input type="text"/>
Mac n Cheese	<input type="text"/>
Oatmeal	<input type="text"/>
Pasta	<input type="text"/>
Peanut Butter	<input type="text"/>
Plant Fusion	<input type="text"/>
Potatoes	<input type="text"/>
Ramen	<input type="text"/>
Refrigerated Items	<input type="text"/>
Rice	<input type="text"/>
Seasonal Items	<input type="text"/>
Snacks	<input type="text"/>
Soup	<input type="text"/>
Spices	<input type="text"/>
Tomato and Pasta Sauce	<input type="text"/>
Vegetables	<input type="text"/>
Other	<input type="text"/>

Thank you for your donation!

PLEASE VALIDATE THIS FORM

AND THEN ONLY SUBMIT IF YOUR FORM IS VALIDATED!

Please validate first!

A donator inputs their information and then presses “Validate” to validate their inputs (certain inputs should have certain formats like name is only alphabetic characters and zip code is 5 numbers and the category inputs should only have numbers or be blank but at least one category should have an input). The donator can donate multiple items in different categories and fill out as many

category inputs as desired as long as at least one category has an input. If the form is valid, the donator presses “Submit” and the donator information and donation categories and amounts are inserted into the donator table of the FoodPantry database and the inventory table of that database has the amounts of each category updated (amounts increase). The donator table has a row inserted for each category and amount donated so a single donator that donates multiple items in different categories has multiple rows inserted with the same donator name, date, etc information.

The student form below only has the categories and the “Validate” and “Submit” buttons work in similar ways to those buttons in the donator form. When “Submit” is pressed, only the inventory table of that database has the amounts of each category updated (amounts decrease).

Student Form

Food Categories: Please enter the amount taken for each category! (Leave it blank if nothing in that category.)

Applesauce	<input type="text"/>
Beans	<input type="text"/>
Broth	<input type="text"/>
Canned Fish	<input type="text"/>
Cereal	<input type="text"/>
Condiments	<input type="text"/>
Cream of Wheat and Grits	<input type="text"/>
Fruit	<input type="text"/>
Mac n Cheese	<input type="text"/>
Oatmeal	<input type="text"/>
Pasta	<input type="text"/>
Peanut Butter	<input type="text"/>
Plant Fusion	<input type="text"/>
Potatoes	<input type="text"/>
Ramen	<input type="text"/>
Refrigerated Items	<input type="text"/>
Rice	<input type="text"/>
Seasonal Items	<input type="text"/>
Snacks	<input type="text"/>
Soup	<input type="text"/>
Spices	<input type="text"/>
Tomato and Pasta Sauce	<input type="text"/>
Vegetables	<input type="text"/>
Other	<input type="text"/>

PLEASE VALIDATE THIS FORM

AND THEN ONLY SUBMIT IF YOUR FORM IS VALIDATED!

Please validate first!

Generally, the donator form is the only form that the donator (could be any person) has to fill out and that information is stored in the donator table of the FoodPantry database. The student form is filled out anonymously when the student is exiting the food pantry (they have to fill out the login form when entering the food pantry). Both forms update the inventory table of the FoodPantry database so that the food pantry can easily keep track of inventory.

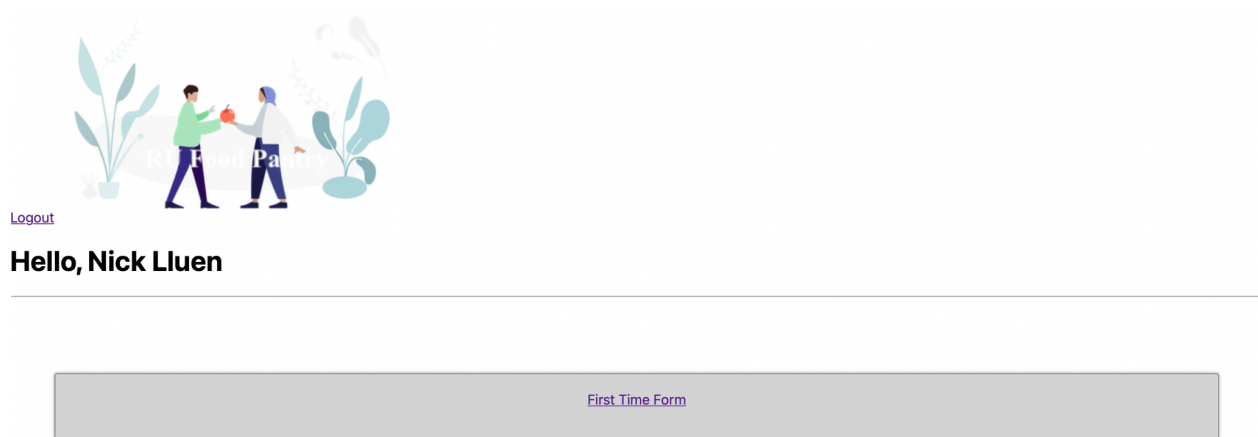
There is a video that shows us putting valid inputs into the Donator Form and looking at the donor table and inventory table of the FoodPantry database changing. There is also a video that shows us putting valid inputs into the Student Form and looking at the inventory table for the FoodPantry database

changing. Putting invalid inputs would show errors when trying to validate the forms and the donator/student shouldn't submit the form so the inputs don't change the tables in the database.

Shown below is the donator table of the FoodPantry database and then the inventory table of the FoodPantry database after all the group members donate to the food pantry (shown in the donators table and increases the numCategory in the inventory table), all of the items they donated are picked up by anonymous students (decreases the numCategory in the inventory table back to 0), Shantenu Jha donates to the food pantry (shown in the donators table and increases the numCategory in the inventory table), and two cereals are picked up by anonymous students (decreases the numCategory for cereal in the inventory table).

name	date	address	email	phonenummer	category	numCategory
Rebecca Kim	2020-06-06	33 Rutgers Rd, Piscataway, NJ 08854	rbccjkm@gmail.com	1112223333	applesauce	1
Jennifer Penaranda	2019-09-19	1 St, Ekdfks, NJ 31111	rr@gmail.com	1234567890	beans	2
Adams Perez	2018-02-04	2 Rd, Eld, NJ 03939	ajp@hotmail.com	2839583748	fruit	4
Nick Lluen	2022-05-02	44444 Tt Ln, New Brunswick, NJ 32222	tt@ln.org	9381112345	applesauce	20
Nick Lluen	2022-05-02	44444 Tt Ln, New Brunswick, NJ 32222	tt@ln.org	9381112345	beans	500
Rohan Gorajia	2020-12-25	2 St, Tokyo, NJ 54321	japan@govt.gov	1912031933	other	100
Shantenu Jha	2018-02-03	12 SWE St, New Brunswick, NJ 12345	swe@ru.edu	1231231234	cereal	5
Shantenu Jha	2018-02-03	12 SWE St, New Brunswick, NJ 12345	swe@ru.edu	1231231234	vegetables	2

category	numCategory
applesauce	0
beans	0
broth	0
canned fish	0
cereal	3
condiments	0
cream of wheat and grits	0
fruit	0
mac n cheese	0
oatmeal	0
pasta	0
peanut butter	0
plant fusion	0
potatoes	0
ramen	0
refrigerated items	0
rice	0
seasonal items	0
snacks	0
soup	0
spices	0
tomato and pasta sauce	0
vegetables	2
other	0



This is the index page that appears once the specific user is verified and logged in. It will prompt them with their name in order to prove that it is their own unique page. On this page there is the potential to logout and to click on the first time form. The first form will send the users to the next section.

First Time Form:

First Time Form

Name:

RUID:

Phone Number:

Email Address:

Living Condition:

I am a resident student. I live in a residence hall on campus.

I am an off-campus student. I live near campus in New Brunswick, Highland Park, Piscataway or Somerset with other students and pay rent.

I am a commuter. I live with my family/and or others and travel to campus by car, transit or some other means.

I do not have secure housing. I am staying with friends and/or in a shelter

Gender:

Male

Female

Non-binary

Prefer not to say

Food Allergies:

Yes

No

I don't know

Campus Status

Full time student

Part time student

International student

Traditional student

Non-traditional student

Veteran

Non veteran

Undergraduate student

Graduate student

Other

How many individuals are in your household?

number of people 1 2

Of those, how many are employed?

number of people 1 2

How many of those individuals are under the age of 18?

number of people 1 2

Are you employed?

Employed full-time

Employed part-time

Not employed

Submit

Here the user will now fill out the form according to what suits them with the choices provided. This information will be inputted into the foodPantry_users which is a database that keeps track of the students that use the food pantry.

id	name	ruid	phone_number	email	living_condition	gender	food_allergies	full_or_part_time	international_or_traditional	veteran	undergraduate_or_not	household_number	household_employed	household_age	employed
1	dkeedf	2032043	2920939	g@h.com	resident	male	yes	full-time-student	international-student	veteran	undergraduate-student	1	1	1	
2	ncik	202020	102039003	h@g.comg	off-campus	male						1	1	1	
3	Nick	192006819	9736418554	n@h.com	no-housing	non-binary	idk	part-time-student	non-traditional-student	non-veteran		1	1	1	
4	fjnjerj	2200	193949	h@h.com	commuter	no-answer	yes	part-time-student	international-student	non-veteran	graduate-student	2	1	1	
5	Nick	192006819	97344	n@n.com	resident	non-binary	no	part-time-student	traditional-student	non-veteran	other	1	1	1	
6	Nick	192006819	929329	h@h.com	commuter	female	yes	part-time-student		veteran	graduate-student	4	3	1	
7	Nick	100	1010	h2@h.com	commuter	no-answer	no	full-time-student				1	1	4	
8	ferfe	20202	20200	h@h.com								1	1	1	
9	kmkkk	9999	0									1	1	1	
10	kjj	9202	202									1	1	1	not-employed
11	kkk	29292	1021020	h@h.com	resident	male	idk	full-time-student	non-traditional-student	non-veteran	graduate-student	1	1	1	employed-part-time
12	Nick	192006819	9736418554	nliu24@gmail.com	resident	male	no	full-time-student	traditional-student		undergraduate-student	5+	2	3	employed-part-time
13	Adams	19999	1109292	n@h.com	resident	female	idk	part-time-student	international-student	veteran	other	5+	5+	5+	not-employed
14	Becca Jr	192006819	9734306789	beccajr@hotmail.com	resident	female	idk	full-time-student	traditional-student	non-veteran	undergraduate-student	5+	3	4	employed-full-time
15	Jennifer Segura	999973183	111111111	jsegura@hotmail.com	resident	non-binary	yes	full-time-student	traditional-student	non-veteran	graduate-student	5+	3	5+	employed-part-time

Once the student has submitted their information, they will be prompted with a thank you text and then they will be able to log out. From here, the students will be able to enter the food pantry.

Thank you!

[Logout](#)

E. Software Testing (all levels)

Column Types in Donator Table:

name VARCHAR(40) PRIMARY KEY, date DATE NOT NULL, address VARCHAR(70) NOT NULL, email VARCHAR(40) NOT NULL, phonenumber VARCHAR(40) NOT NULL, category VARCHAR(40) NOT NULL, numCategory INT NOT NULL

Column Types in Inventory Table:

category VARCHAR(40) PRIMARY KEY, numCategory INT NOT NULL

Testing the Donators Table:

	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8
name	Bart Green		Liam House	Omar Newma n	Lia Jones	Jane James on	Liz Wright	Terry 23
date	2022-03-12	2021-01-01	2018-10-09	2019-02-01	2	2022-02-19	2021-03-14	
addresses	33 Tower Road, Piscata way, NJ 08854	12 Olde Street, Yes, NY 03833	11 Sleepy Lane, PA 29292	4 Cherry Street, Et, PP 28343		45 Sherwo od Boulev ard, TT, EE 93922	12 Apple Lane, Keud, YY 39302	23 Atlanta Drive
email	bg23@gmail.c om	ot3@a ol.com		om.ne @yaho o.com	ljs@gm ail.com	bigone @yaho o.com	tunafis h@yah oo.com	tj1001 @gmail .com
phonen umber	452001 2233	122445 1029	112235 677	112332 4422	109934 5512		221457 6881	113224 5511
categor y	beans		snacks	broth	ramen	rice	pasta	oatmea l
numCa tegory	4	3	1	12	2	-3	mn!	1
Expect ed Output	Valid	Invalid	Invalid	Valid	Invalid	Invalid	Invalid	Invalid
Actual Output	Valid	Invalid	Invalid	Valid	Invalid	Invalid	Invalid	Invalid

Testing the Inventory Table:

	Test 1	Test 2	Test 3	Test 4	Test 5	Test 6
category	applesauce	oatmeal		ramen	rice	snacks
numCategory	6	-1	3	3000		0
Expected Output	Valid	Invalid	Invalid	Valid	Invalid	Valid
Actual Output	Valid	Invalid	Invalid	Valid	Invalid	Valid

Valid Inputs for Donator Form:

name	Alphabetic (with spaces)
month	Selected
day	Selected
year	Selected
address	Not blank
city	Alphabetic (with spaces)
state	Alphabetic (with spaces)
zip code	5 numbers
email	Has @ and .
phone number	Numeric
applesauce	Numeric or blank
beans	Numeric or blank
broth	Numeric or blank
canned fish	Numeric or blank
cereal	Numeric or blank
condiments	Numeric or blank
cream of wheat and grits	Numeric or blank

fruit	Numeric or blank
mac n cheese	Numeric or blank
oatmeal	Numeric or blank
pasta	Numeric or blank
peanut butter	Numeric or blank
plant fusion	Numeric or blank
potatoes	Numeric or blank
ramen	Numeric or blank
refrigerated items	Numeric or blank
rice	Numeric or blank
seasonal items	Numeric or blank
snacks	Numeric or blank
soup	Numeric or blank
spices	Numeric or blank
tomato and pasta sauce	Numeric or blank
vegetables	Numeric or blank
other	Numeric or blank
	At least one category needs an input

Valid Inputs for Student Form:

applesauce	Numeric or blank
beans	Numeric or blank
broth	Numeric or blank
canned fish	Numeric or blank
cereal	Numeric or blank
condiments	Numeric or blank

cream of wheat and grits	Numeric or blank
fruit	Numeric or blank
mac n cheese	Numeric or blank
oatmeal	Numeric or blank
pasta	Numeric or blank
peanut butter	Numeric or blank
plant fusion	Numeric or blank
potatoes	Numeric or blank
ramen	Numeric or blank
refrigerated items	Numeric or blank
rice	Numeric or blank
seasonal items	Numeric or blank
snacks	Numeric or blank
soup	Numeric or blank
spices	Numeric or blank
tomato and pasta sauce	Numeric or blank
vegetables	Numeric or blank
other	Numeric or blank
	At least one category needs an input

Donator Form Validation:

See “ECE452 MAJOR_PROJECT TEST_CASES.xlsx”

Student Form Validation:

See “ECE452 MAJOR_PROJECT TEST_CASES.xlsx”

F. Evaluation

We verified this program by testing it against inputs that would tell us whether the program performed its specifications. If at any point it did not meet any of the requirements, we would update the software. To verify the program, we checked to make sure that it was available the majority of the time and executed acceptably fast. We tested opening the donator and student forms to ensure they were accessible. We also tested to ensure that the FoodPantry database was accessible and the donator table and inventory table could be modified.

Making sure that the program performs to a standard that is acceptable for the user and that the requirements of the program match what the user needs is validation, and this was done extensively for this MVP. We did this by testing the program with inputs we expect the form to typically receive from users and by validating that it performs as the user would expect. To validate the donator and student forms, we tested invalid inputs for name (like numbers or blank), date (no selections), address (blank), city (numbers or blank), state (numbers or blank), zip code (anything other than 5 numbers), email (no @ or .), phone number (invalid if not all numbers), or category inputs (invalid if not number or no category has an input). Invalid inputs should give errors when trying to validate the form and thus the form should only be submitted and modify the tables in the database if the inputs are all valid.