



SkyNet

– A business management system



Present by:

CS 691 Capstone Project Team Three



Josh Krinsky, Kai Wang,
Peter McKechnie, Peter Torrente,
Houqi Zhan, Jincheng Zou

Agenda

- **Feedback & Improvements**
- **Team Intro**
- **Problem Statement & Project Description & Personas**
- **MVP (Minimal Viable Product): Design & Functions**
- **Technologies & Architecture Diagram**
- **Sprint 3 Recap**
- **Product Backlog**
- **Sprint Backlog**
- **Metrics**
- **Retrospective**
- **Sprint 5**

Team Members

SkyNet

Josh Krinsky

Scrum Master
Back-end Developer



Peter Torrente

Front-end Developer



Kai Wang

Database Admin
Back-end Developer



Peter McKechnie

Front-end Developer
Project Consultant



Jincheng Zou

Front-end Developer



Houqi Zhan

Database Developer



Improvements From Feedback

Feedback

- Remove the phrase “task story”
- Add a sequence or UML diagram
- Team velocity should reflect all sprints
- More enthusiasm in presentation
- Shorten testing portion of presentation, and show amount of times tested instead of either pass/fail
- Product seems good but packaging could be more interesting

Improvements

- Use “task” instead of “task story”
- We added UML diagram
- Rebuild the team velocity graph
- Presentation reflects a more appealing and less granular overview of product

Problem Statement

What problem is our project aiming to solve?

- Companies rely heavily on CRM and POS software to control the customer experience.
- These are sold as complex software platforms offering a variety of features.
- Large and expensive packages dominate the market and are tailored to larger companies.
- Many customers do not have the budget, nor the technological aptitude, to effectively employ popular CRM and POS platforms.

Project Description

What are we building?

- We aim to design a POS styled system with greater simplicity for customers.
- We will prioritize fundamental services for day to day operations of a small business.
- Users will be able manage inventory, track sales, compare vendors, analyze production output, organize contact info, track orders/deliveries. Record order, shipping, and vendor history.
- Easy-to-use interface means even the most novice users are capable of creating custom data visualizations and analysis.

Personas - 1

David:

Who is he?

- A 43-year-old man, the owner of the retail store.
- Has a happy family: his wife has just given birth to his third child.
- Currently on sabbatical; His oldest daughter just entered college to study nursing, while his son just entered high school and is the point guard for the school's basketball team.
- To make his family's financial situation better, he started to expand his retail business last year.

Issue:

- Spends a huge amount of time each week comparing offers from different suppliers.
- Needs to do a lot of calculations and comparisons based on stock availability and expectations of sales
- Has very little free time to spend with his wife and children, despite his off-hours.



Personas - 2

Mike:

Who is he?

- A 26-year-old production manager, responsible for several different production lines
- He and his accountant fiancée got engaged this spring and the wedding is being planned!
- He and his fiancée are both hikers and usually go on weekend excursions to the countryside

Issue:

- The traditional forms (for example, Excel or the printed forms) makes him tired of calculating the efficiency of the different lines
- Needs to provide more rational and useful advice for each quarter of production
- His factory is a traditional manufacturing factory, in the cost-effective consideration, did not use the popular production management software



Personas - 3

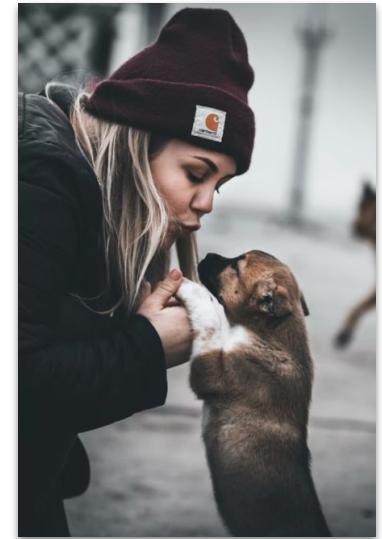
Alexis:

Who is she?

- A 23-year-old girl, with her college friends, founded a pet transport company
- She likes to travel with her pets. A few years ago she traveled abroad with a friend and due to the negligence of her pet transport company, her shepherd became ill upon her return.
- She is a girl who is good at dealing with people and knows many friends who are in pet services.

Issue:

- Alexis's company needed a low-cost management software to help them calculate costs and compare suppliers.
- She needs to manage different service providers, such as transportation companies, pet nail technicians, etc.

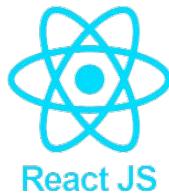


MVP Design

MVP Design

Features	Manage items	Manage Inventory	Manage Order	Manage Shipment	Manage Supplier	Cash registers
	Add item	Add record	Add order	Add log	Add supplier	Calculation of receivables
	Edit item	Edit record	Edit order	Edit log	Edit supplier	Calculate change
	Delete item	Delete record	Delete order	Delete log	Delete supplier	Automatic order generation
	Use barcode to get item INFO	Filtering	Link to shipment	Link to order	Filtering	Use barcode to get item
	Filtering		Filtering	Track a shipment		Print the receipt
				Filtering		

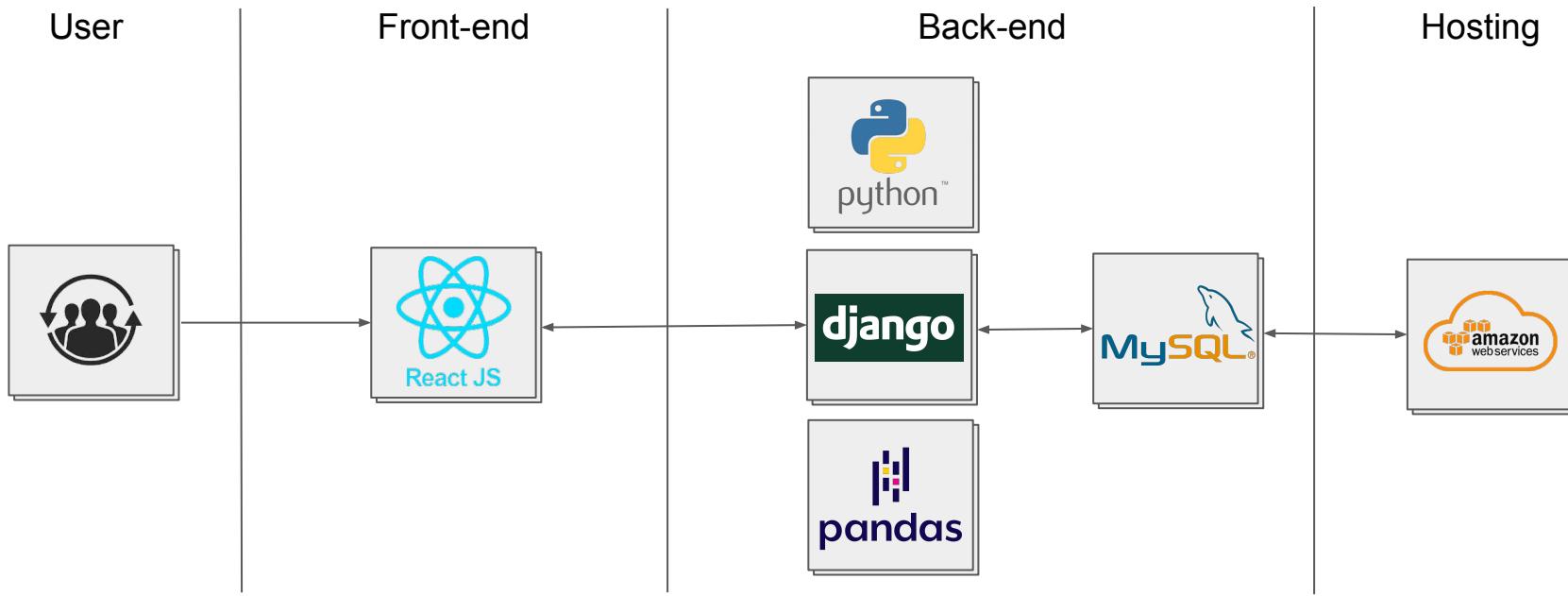
Technologies



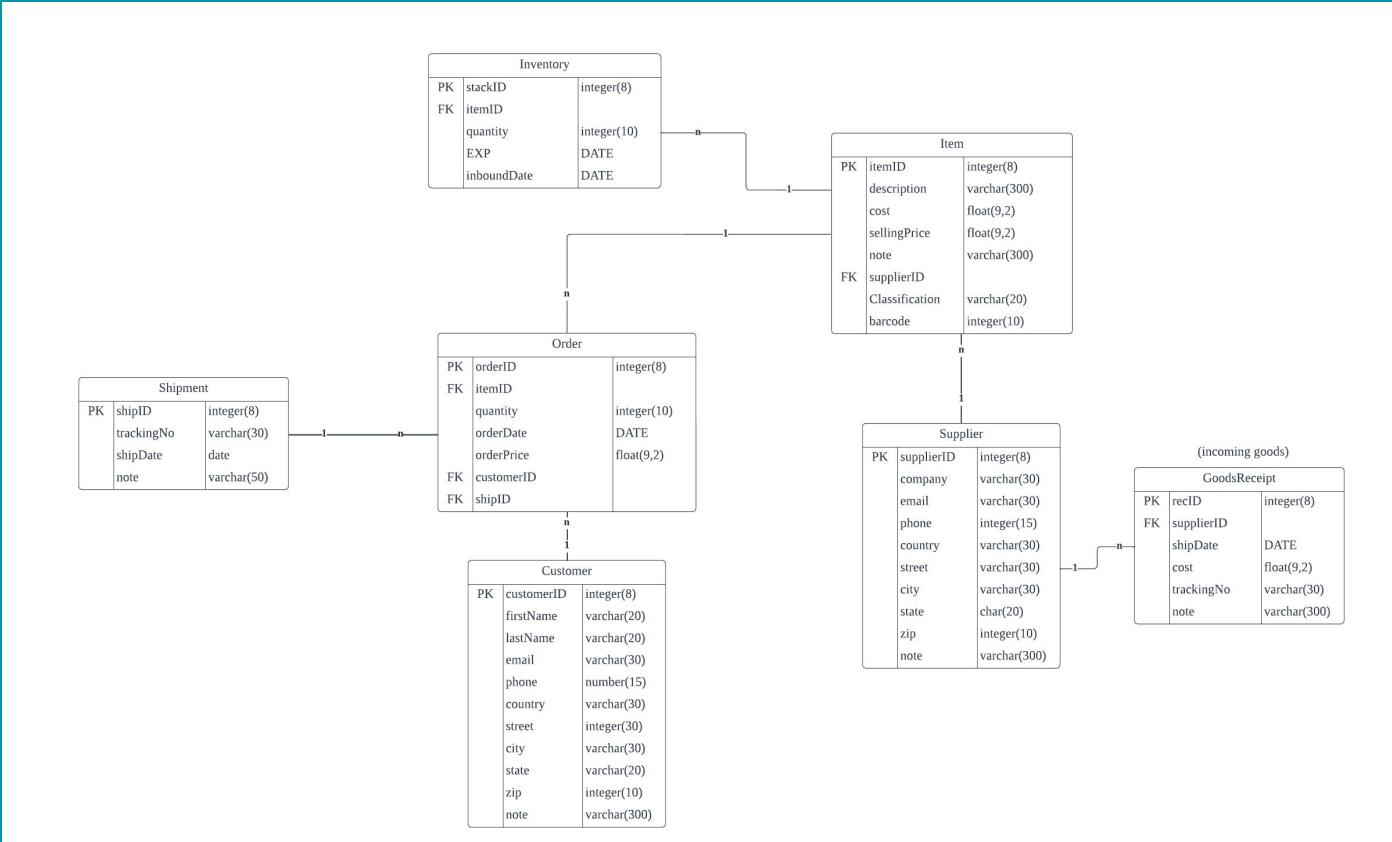
The Purpose of the Technologies

- React - Front-end JavaScript library for building UI
- Django - Back-end Python framework that implements a restful API
- Pandas - Python based data structure & data analysis tools
- MySQL - Database Management
- AWS (Amazon Web Services) - Hosting, Relational Database Service, and Machine Learning
- Discord - Team Communication

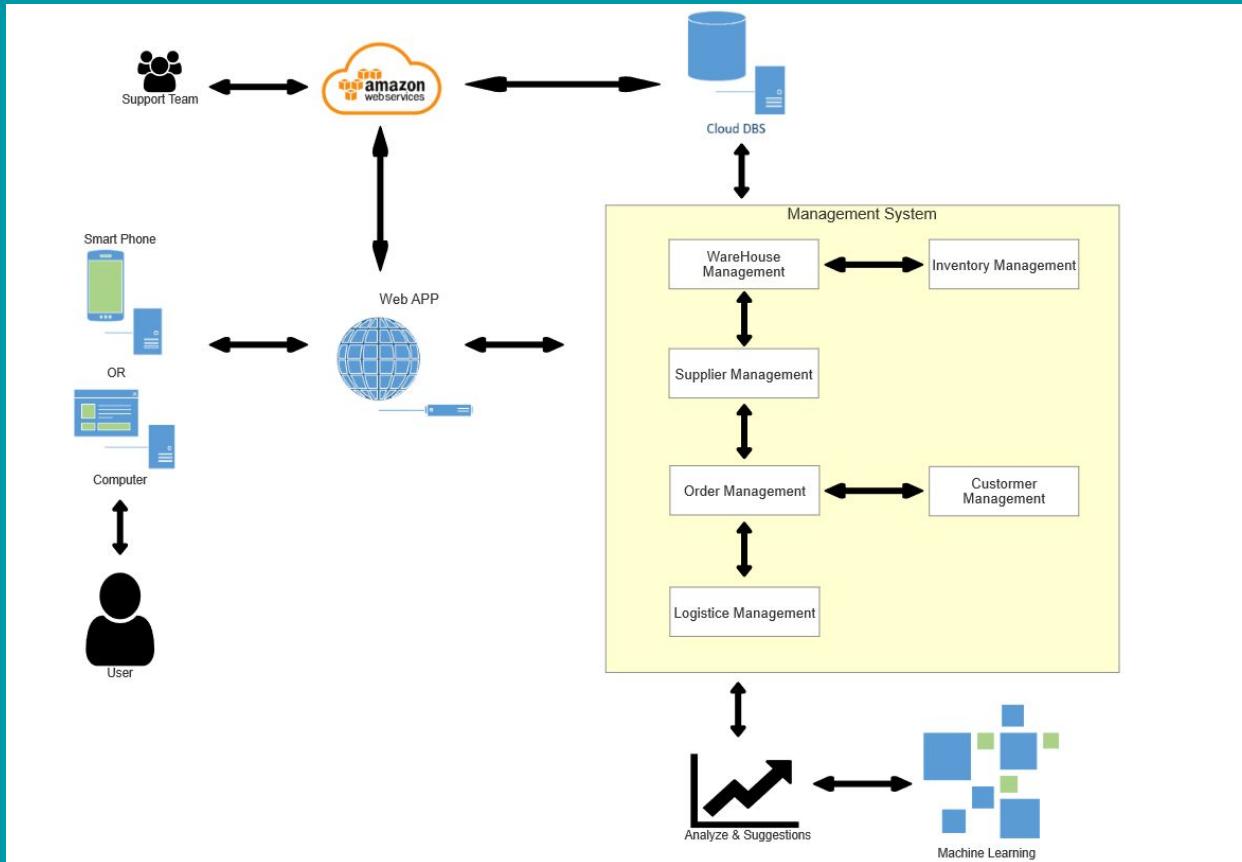
Technologies - continue



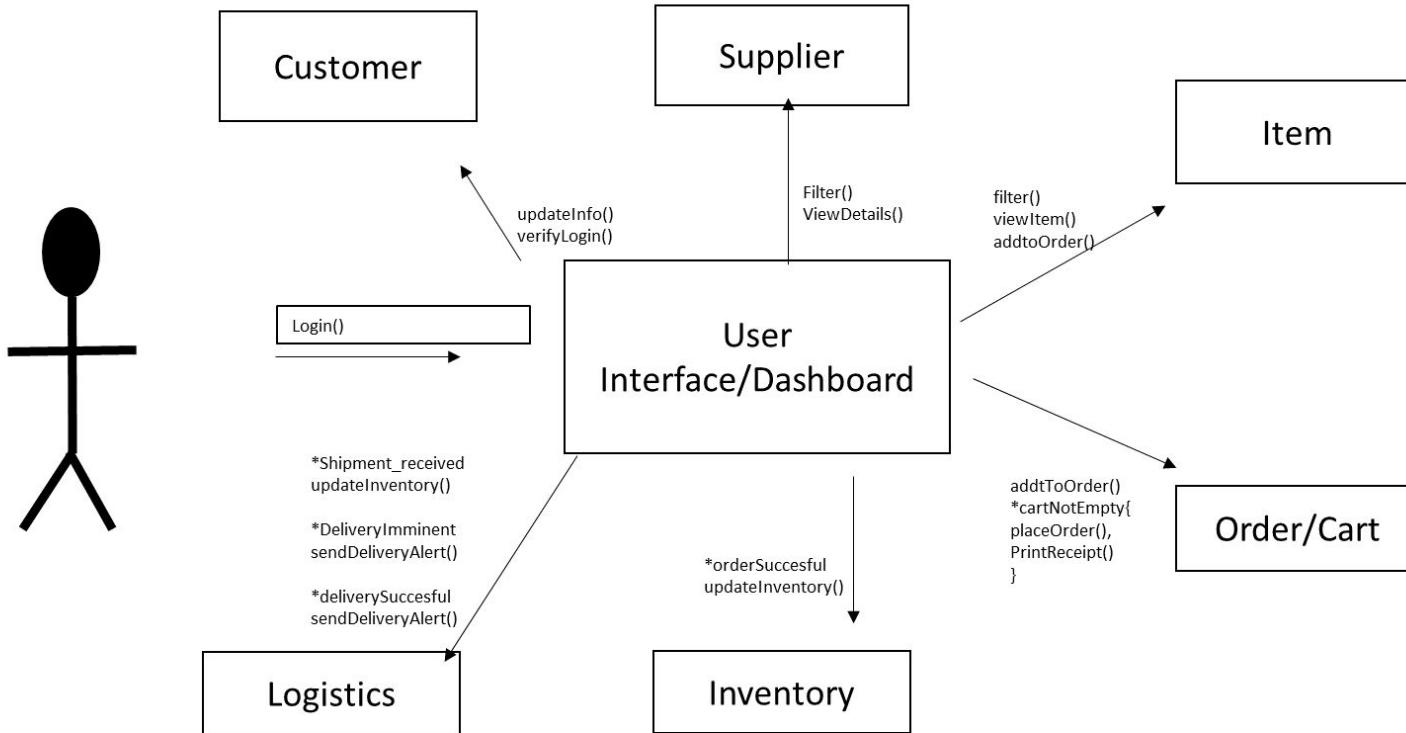
Database ER-diagram



Conceptual Architecture Diagram



UML Diagram



Sprint 4 Recap

This is what we delivered in Sprint 3:

- Project Interface
- Data in the database can be accessed and modified through the front-end
- Sidebar links to pages

What is new in Sprint 4:

- Login
- Dashboard
- Filter for the items
- Barcode scanner with item lookup
- Item INFO lookup
- Shipment Tracking and Address verification

				When, And, Then)				
US1	user	I want to be able to add new inventory to my database	Keep my database accurate to my changing inventory	When a user adds data, Then the database will add a new row.	DBS_add	4	High	Done
US2	user	I want to be able to edit inventory items in my database	Make changes to inventory details and correct typos	When a user delete data, Then the database will delete the row.	DBS_edit	4	High	Done
US3	user	I want to be able to delete inventory items in my database	Effeciently utilize server space and keep data accurate	When a user edit data, Then the database will edit the row	DBS_delete	4	High	Done
US4	user	I need to sort the data in my database	analyze and track my inventory my different metrics	Given different categories, When the user selects a category, Then show the products undere that category.	DBS_sort	4	Medium	Done
US5	user	I want to be able to check my inventory with a visual chart	Get a clearer picture of my inventory	Given automatically generated charts, When the user changes the chart options or changes the date range, Then the chart is regenerated based on user behavior	DBS_visualization	7	High	Waiting
US6	user	I would like to be alerted when some items are out of stock	Replenish my inventory in a timely manner	When an item is about to expire, Then the system will automatically send a reminder.	DBS_alert	5	Medium	Waiting
US7	user	I want the system to record my sales and analyze them	Keep track of my sales and change sales strategies	Given users the option of AI analysis, When the user chooses to use this feature, Then the user's data is used as input for his analysis fuciton, Then provides analysis of the data such as the history of sales for	DBS_analyze	10	Medium	Waiting
US8	user	I want to be able to enter data via cell phone camera or			DBS_modelInput	3	Low	Waiting
US9	user	I want to be able to scan items				5	Medium	Waiting
US10	user	I want to be able to calculate the amount of money owed	Know the total amount of money owed	When there are no items remaining to be added, Then the total amount of payment due will be correctly reported	CR_amountowed	3	High	Waiting
US11	user	I want to be able to record a payment	Collect money from the customer	When payment is tendered, Then the status of the order will change from "Payment Outstanding" to "Paid"	CR_deposit	3	High	Waiting
US12	user	I want to keep track of what items the customer wants to purchase	Analyze consumer preferences	Given a list of custmore, When select a customer, Then show the history of the customer	CR_trackCusnsumer	3	High	Waiting
US13	user	I want to record and offer a receipt of the customer's purchase	Have an itemized list of items purchased by the customer	When an order is paid, Then a formatted record of the sale will be created	CR_receipt	3	Low	Waiting
US14	user	Evaluate suppliers	Create relationships with the best possible suppliers for my industry	Given a list of all suppliers, When a user filters on a detail, Then the relevant data will be shown	SRM_eval	6	High	Done
US15	user	Streamline onboarding with suppliers	Quickly establish working supply chains	Given a new supplier, When new data needs to be collected, Then a standard template will be sent and uploaded to the database	SRM_select	3	High	Done
US16	user	Manage supplier performance	Quickly and easily track supplier performance with key performance metrics that are already established for me	Given a supplier ID, When the metrics are requested, Then the database returns accurate data	SRM_kpi	6	Medium	Done
				When upload sales data, Then the				

Backlog

Product Backlog - What has changed

We added one Task for the dashboard

ID	Task Description	Acceptance Criteria	Task Name	Size	Priority	Status	Sprint	Notes
TS15	Design Dashboard for the webApp that shows key information	Approved by all team members	Project_Dashboard	9	High	Done	4	added in 2022/11/28

We changed the story points for one user story, because we changed the way we implemented it and wanted the functionality to be more powerful

ID	As a...	I want to...	So that I can...	Acceptance Criteria (format: use keywords Given, When, Then)	Task Name	Size	Priority	Status	Sprint
US13	Cashier	I want to record and offer a receipt of the customer's purchase	Have an itemized list of items purchased by the customer	When an order is paid, Then a formatted record of the sale will be created	CR_receipt	12	Low	Pending	5

Sprint Backlog - 1/3



Task									
ID	Task Description		Acceptance Criteria	Task Name	Size	Priority	Status	Sprint	Notes
TS15	Design Dashboard for the web App that shows key information		Approved by all team members	Project_Dashboard	9	High	Done	4	added in 2022/12/08

User Story										
ID	As a...	I want to...	So that I can...	Acceptance Criteria (format: use keywords Given, When, Then)	Task Name	Size	Priority	Status	Sprint	Notes
US12	Cashier	I want to keep track of what items the customer wants to purchase	Analyze consumer preferences	Given a list of customer, When select a customer, Then show the history of the customer	CR_trackCustomer	3	High	Done	4	
US13	Cashier	I want to record and offer a receipt of the customer's purchase	Have an itemized list of items purchased by the customer	When an order is paid, Then a formatted record of the sale will be created	CR_receipt	12	Low	Pending	4	changed story points
US21	Logistics Manager	I want to check the detail of the current orders	Have idea of a order detail	Given information about all order. When the user selects a particular order, Then the details of that order are provided.	LOG_OrderDetails	3	High	Done	4	

Sprint Backlog - 2/3



User Story										
ID	As a...	I want to...	So that I can...	Acceptance Criteria (format: use keywords Given, When, Then)	Task Name	Size	Priority	Status	Sprint	Notes
US22	Logistics Manager	I want to get notification when delivery of an order is imminent	Be prepared for the coming package	Given information about all logistics. When the user selects a particular logistics, Then the details of that logistics are provided.	LOG_coming Track	6	Medium	Done	4	
US23	Logistics Manager	I want to check the previous shipping information	Ensure accurate shipping details	When shipping details are entered, Then a check against the previous details is run	LOG_history	5	low	Done	4	
US24	Logistics Manager	I want to see shipping history filtered for specific details	Review and analyze my shipment efficiency and timeliness	When a filter is added, Then data matching that filter is returned	LOG_filter	3	Medium	Done	4	
US25	Systems Security	I want to use two factor authorization to verify my customer's login	Prevent fraudulent login	Given a new device, When login is successful, Then the secondary security check will be sent	Login_2Factor	4	Medium	Pending	4	not free - move to later sprint or remove

Sprint Backlog - 3/3



User Story										
ID	As a...	I want to...	So that I can...	Acceptance Criteria (format: use keywords Given, When, Then)	Task Name	Size	Priority	Status	Sprint	Notes
US17	Marketing Manager	I want to upload my sales data	Track/Maintain /Organize my data	When i upload sales data, Then the database update to add	ML_upload	3	High	Done	4	
US8	Retail Manager	I want to be able to enter data via cell phone camera or code reader	Input data easily	Given barcode entry options, When the user enters product information using the barcode Then the corresponding product information, such as product name, brand, price, etc., is automatically populated.	DBS_barcodeinput	9	Medium	Done	4	
US9	Retailers Manager	I don't need to type everything about the item manually	I don't need to type everything about the item manually	Given a item's barcode, When the barcode is scanned, Then the "add item" form is filled automatically	DBS_itemInfo	7	Medium	Done	4	
US26	Systems Security	I want to strongly encrypt and safely store my user's data	Ensure my customers their data is safe	Given a database of customer data, When unauthorized entry is attempted, Then request will not be returned	DBS_security	3	Medium	Done	4	

Total Story Points: 67

Test Cases

ID	User Story	Test Description	Test Date	Action	Expected Output	Actual Output	Test Result (Pass/Total)	Comments
T11	US8	Scan barcode	2022/12/10	Barcode recognition by camera	Output the data contained in the barcode	The barcode numbers	8 of 10	Need HD webcam for better result
T12	US9	Scan product	2022/12/14	Identify and add items via camera	Add the item to the bill	The item INFO is automatically filled into the form	10 of 15	Some item is not found in the database
T15	US12	Generate customer list and scroll through the form	2022/12/5	Navigate to the customer list, and click to view the details of each line of customer history	Each customer history record in the list can be clicked. Click a customer history record randomly to navigate to the history details page	A list of customers	3 of 3	
T20	US17	Upload, update data	2022/12/15	Upload local data and update it to the database	After the local data is uploaded, the database is updated and new data information can be viewed	New data is shown	3 of 3	
T24	US21	Logistics transportation status management	2022/12/15	Navigate to the logistics of the item, provide the date and location, and predict when it will arrive	The status of the article (shipped or not shipped), information about the goods, date, and location	The UPS shipment INFO is shown	4 of 5	only works for UPS shipments
T25	US22	Logistics arrival management	2022/12/15	When the goods are about to arrive, the recipient will receive a prompt from the app	Pop up window with prompt (SMS or email or other methods)	A message is shown	5 of 5	
T26	US23	Logistics History	2022/12/15	Navigate to the logistics history page. Each history is a separate information, record date, recipient, sender, bill of lading number, goods information, etc	The latest historical data are arranged from top to bottom, and you can view the details of each historical data	A list of all the shipments	3 of 3	
T27	US24	Logistics History Filter Settings	2022/12/15	This setting has specific filtering information, such as keywords, dates, logistics, etc	After selecting filtering information, jump to the page with relevant data	Filtered data is displayed	3 of 3	

Sprint 4



Stories completed:

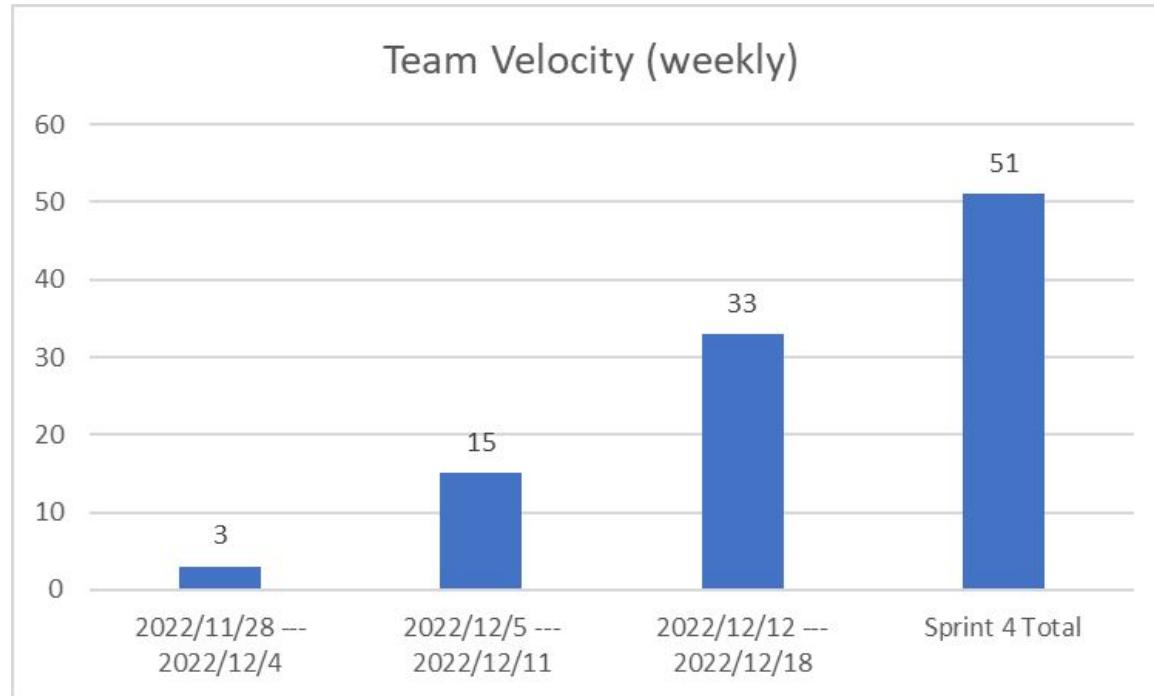
ID	Story Name	Size	Status	Date
TS15	Dashboard	9	Done	12/17
US12	CR_trackCunsumer	3	Done	12/02
US21	LOG_OrderDetails	3	Done	12/13
US22	LOG_comingTrack	6	Done	12/12
US23	LOG_history	5	Done	12/12
US24	LOG_filter	3	Done	12/15
US9	DBS_itemInfo	7	Done	12/13
US26	DBS_security	3	Done	12/10

ID	Story Name	Size	Status	Date
US8	DBS_barcodeInput	9	Done	12/08
US17	DBS_upload	3	Done	12/05

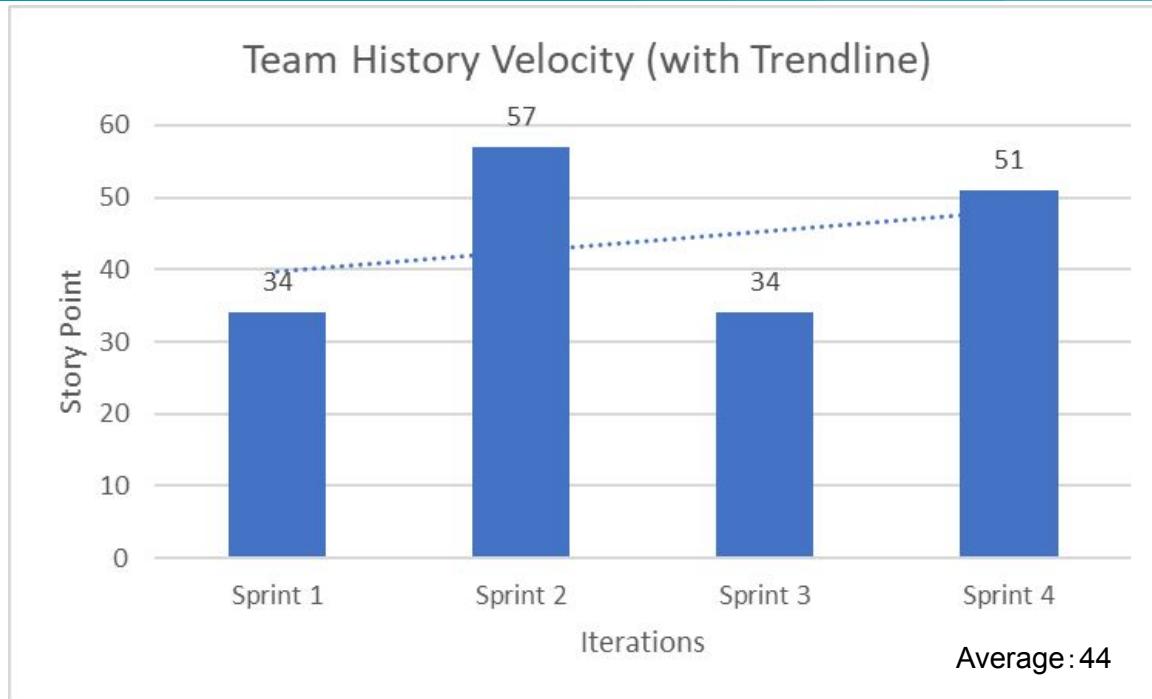
Stories incompletely:

ID	Story Name	Size	Reason	Note
US25	Login_2Factor	4	not free - move to later or remove	
US13	CR_receipt	12	Not working as expected	

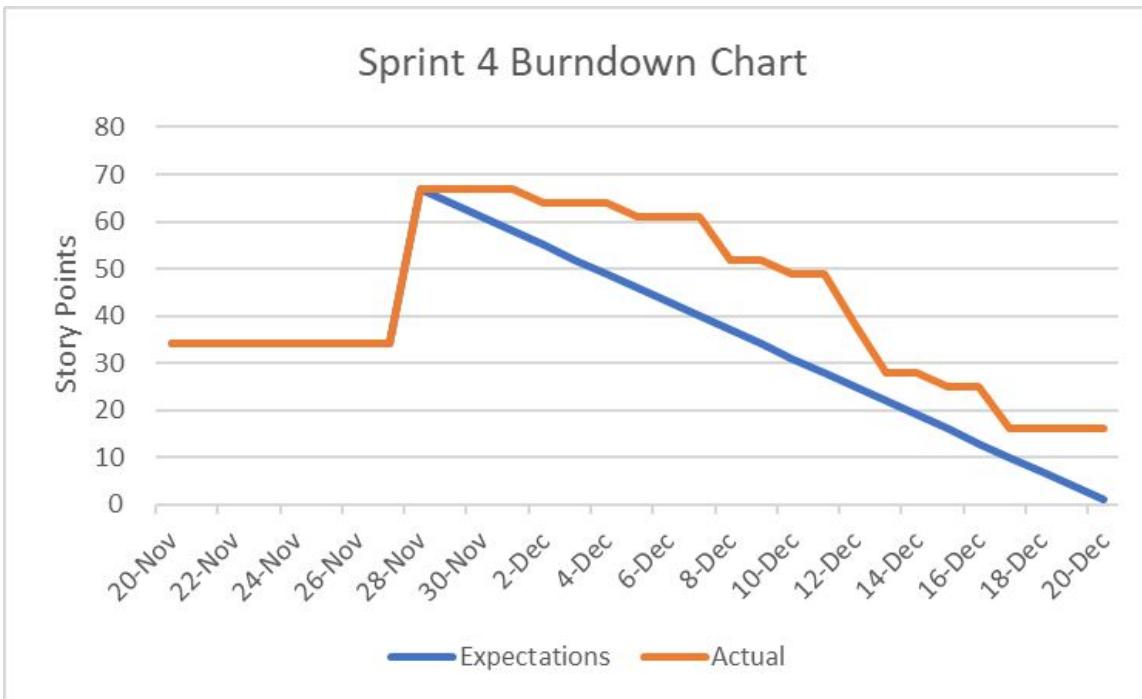
Metrics - Team Velocity of Sprint 4



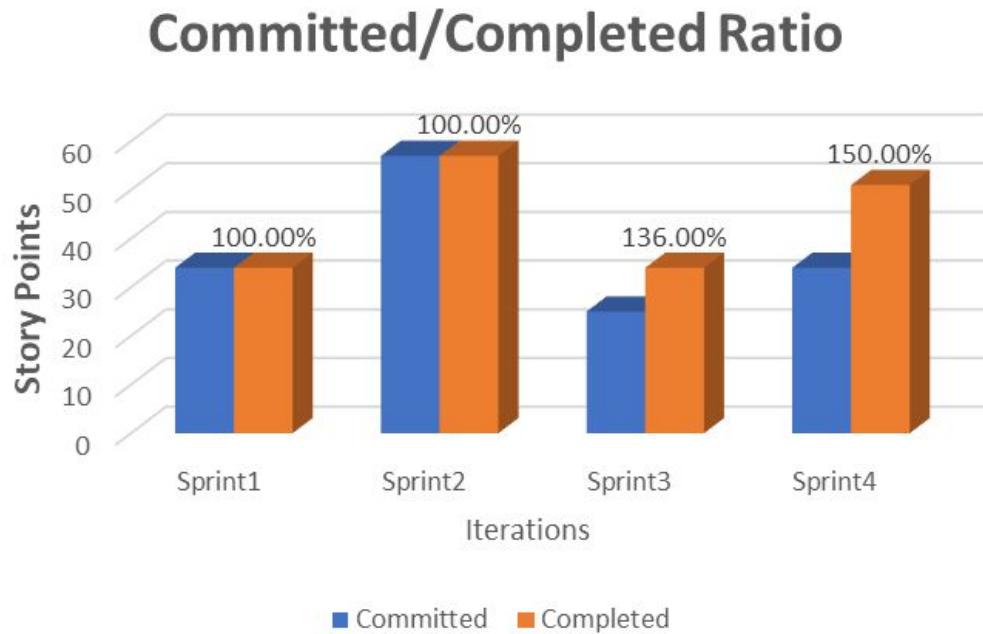
Metrics - Team History Velocity



Metrics - Burndown Chart



Metrics - Committed/Completed Ratio



Retrospective - What Went Well

What went well in Sprint 4?

- Completed more user stories than any previous sprint!
- Group members provided different solutions and ideas when someone was stuck
- Team members helped one another out with tasks, often playing to their strengths.
- Tasks were clearly defined and assigned early in the sprint
- Stories were progressed consistently through the sprint instead of saved for the end
- This sprint had the most collaboration as we worked through our interrelated stories

Retrospective - What Did Not Go Well

What did not go well in Sprint 4?

- Meeting attendance was not consistent, and missed meetings were not communicated before hand
- Github was unorganized at times, causing version control issues and merge incompatibilities
- Bugs in previously working code due to inconsistent API versions
- Staying on schedule, there is still procrastination from some group members
- Group engagement was poor
- Communication was lacking as a team
- Missed meetings/poor communication slowed progress

Retrospective - Action Plan

What we need to improve for next Sprint?

- Reiterate group & individual expectations
 - For example: Showing up to meetings, pushing code to the Github, etc.
- Focus more on developing new features and less time on fixing issues
- Standardize method to pull/push project updates
- Group review penalty for missed meetings without notification (e.g 1%-2% reduction for each one)

Sprint 5 - Plan

User Story									
ID	As a...	I want to...	So that I can...	Acceptance Criteria (format: use keywords Given, When, Then)	Task Name	Size	Priority	Status	Sprint
US5	Retailers Manager	I want to be able to check my inventory with a visual chart	Get a clearer picture of my inventory	Given automatically generated charts, When the user changes the chart options or changes the data range, Then the chart is regenerated based on user behavior	DBS_visualization	7	High	Waiting	5
US7	Inventory Manager	I want the system to record my sales and analyze them	Keep track of my sales and change sales strategies	Given users the option of AI analysis, When the user chooses to use this feature, Then the user's data is used as input for his analysis function, Then provides analysis of the data, such as the history of sales for each item.	DBS_analyze	10	Medium	Waiting	5
US10	Cashier	I want to be able to calculate the amount of money owed	Know the total amount of money owed	When there are no items remaining to be added, Then the total amount of payment due will be correctly reported	CR_amount owed	3	High	Waiting	5
US11	Retailers Manager	I want to be able to record a payment	Collect money from the customer	When payment is tendered, Then the status of the order will change from "Payment Outstanding" to "Paid"	CR_deposit	3	High	Waiting	5
US13	Cashier	I want to record and offer a receipt of the customer's purchase	Have an itemized list of items purchased by the customer	When an order is paid, Then a formatted record of the sale will be created	CR_receipt	12	Low	Pending	5

Total Story Points: 35

Project Demo - Screenshot

SkyNet

Dropdown Q

Dashboard

Supplier

Item

Inventory

Order

Sales Overview

Daily Sales

↑ \$ 249.95

67%

Monthly Sales

↓ \$ 2,942.32

36%

Yearly Sales

↑ \$ 8,638.32

80%

Recent Purchases

	Order 1	● 11 DECEMBER 12:56	View Order
	Order 2	● 11 DECEMBER 10:35	View Order
	Order 3	● 9 DECEMBER 17:38	View Order

Low Inventory Reminders

0 Items have low inventory

No items are low are inventory!

Project Demo - Screenshot

SkyNet

Dashboard

Supplier Management

Dropdown ▾ Q

Suppliers

Supplier Management

Add Supplier

#	Company	Email	Phone Number	Country	Street	City	State	Zip	Note	Actions
1	3M Company	manager@gmail.com	809-815-6322	USA	Albany St	New York	New York	10001		<button>Edit</button> <button>Delete</button>
2	The Alpine Group, Inc.	manager@office.com	536-459-2355	USA	Allen St	Los Angeles	California	57586		<button>Edit</button> <button>Delete</button>
3	Avnet, Inc.	manager@avnet.org	174-285-8907	USA	Amsterdam Ave	Chicago	Illinois	15227		<button>Edit</button> <button>Delete</button>
4	Avon Products, Inc.	manager@Avon.com	102-564-7978	USA	Canal St	Houston	Texas	18506		<button>Edit</button> <button>Delete</button>

Project Demo - Screenshot

Item

Add Item

#	Description	Cost	Selling Price	Note	Supplier ID	Classification	Actions
1	Bananas	0.06	0.77	per lb	1		<button>Edit</button> <button>Delete</button>
2	Orange	1.73	2.08	per lb	2		<button>Edit</button> <button>Delete</button>
3	Bread						<button>Edit</button> <button>Delete</button>
4	Tomato						<button>Edit</button> <button>Delete</button>
5	Chicken		3.49				<button>Edit</button> <button>Delete</button>
6	Eggs			Note			<button>Edit</button> <button>Delete</button>
7	Gasoline			Supplier ID			<button>Edit</button> <button>Delete</button>
8	Beef			Classification			<button>Edit</button> <button>Delete</button>

Add Item

Description
CVS Health Isopropyl 91% Alcohol First Aid Antiseptic Spray - 10 Oz

Cost
Cost

Selling Price
3.49

Note
CVS Health Isopropyl 91% Alcohol First Aid Antiseptic Spray | CVS Health Isopropyl 91% Alcohol First Aid Antiseptic Spray ·

Supplier ID
Supplier ID

Classification
Health & Beauty - Health Care - First Aid

Scan Save changes Cancel

Project Demo - Screenshot

SkyNet

- Dashboard
- Supplier
- Item
- Inventory
- Order

Add Supplier

X

ID	Supplier Name	Stock Level	Action
18	Starbucks Corp.	54311	Edit Delete
19	Symbol Techno	20840	Edit Delete
20	Synovus Financ	24650	Edit Delete
21	Sysco Corp	15272	Edit Delete
22	Systemax Inc.	50398	Edit Delete
23	Target Corp.	14772	Edit Delete
24	Tiffany & Co	41298	Edit Delete
25	Toro Company	65320	Edit Delete
26	Tower Automot	12652	Edit Delete

Company
Target Corp.

Email
customerRelations@Target .com

Phone Number
762-591-6434

Country
USA

Street
Union Square E

City
Las Vegas

State
Nevada

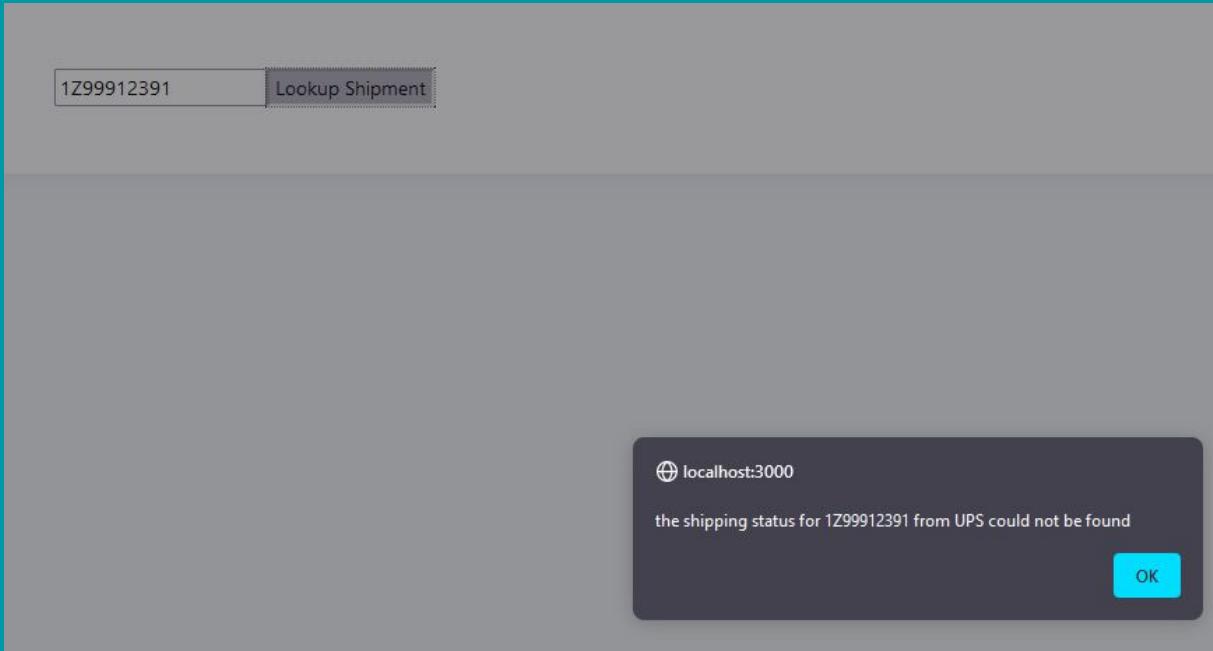
Zip
14772

Note
Note

Save changes Cancel

Project Demo - Screenshot

UPS or FedEx number



Project Demo - APIs

Bootstrap

Django rest framework

Django CORS(Cross-origin resource sharing)

Django also comes equipped with many APIs in its standard library, some examples include a Database API, Model-View-Template APIs, HTTP request and Response, and URL utility API.

Barcode lookup - item information database which matches barcodes to known inventory items

Quagga - a barcode-scanner entirely written in JavaScript supporting real-time localization and decoding of various types of barcodes

FedEx & UPS package track and address verification APIs

Github Link

<https://github.com/CarviS0302/Pace-MS-Capstone/wiki>

Live Demo



Thank you for watching!