

Transportation Network Company



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System Analysis Project

Transportation Network Company

Transportation Network Companies (TNCs) provide prearranged transportation services for compensation using an online-enabled application or platform (such as smart phone apps) to connect drivers using their personal vehicles with passengers. Examples include Uber, Lyft, and Careem.

The Uber logo, consisting of the word "UBER" in white, uppercase, sans-serif font centered on a black rectangular background.

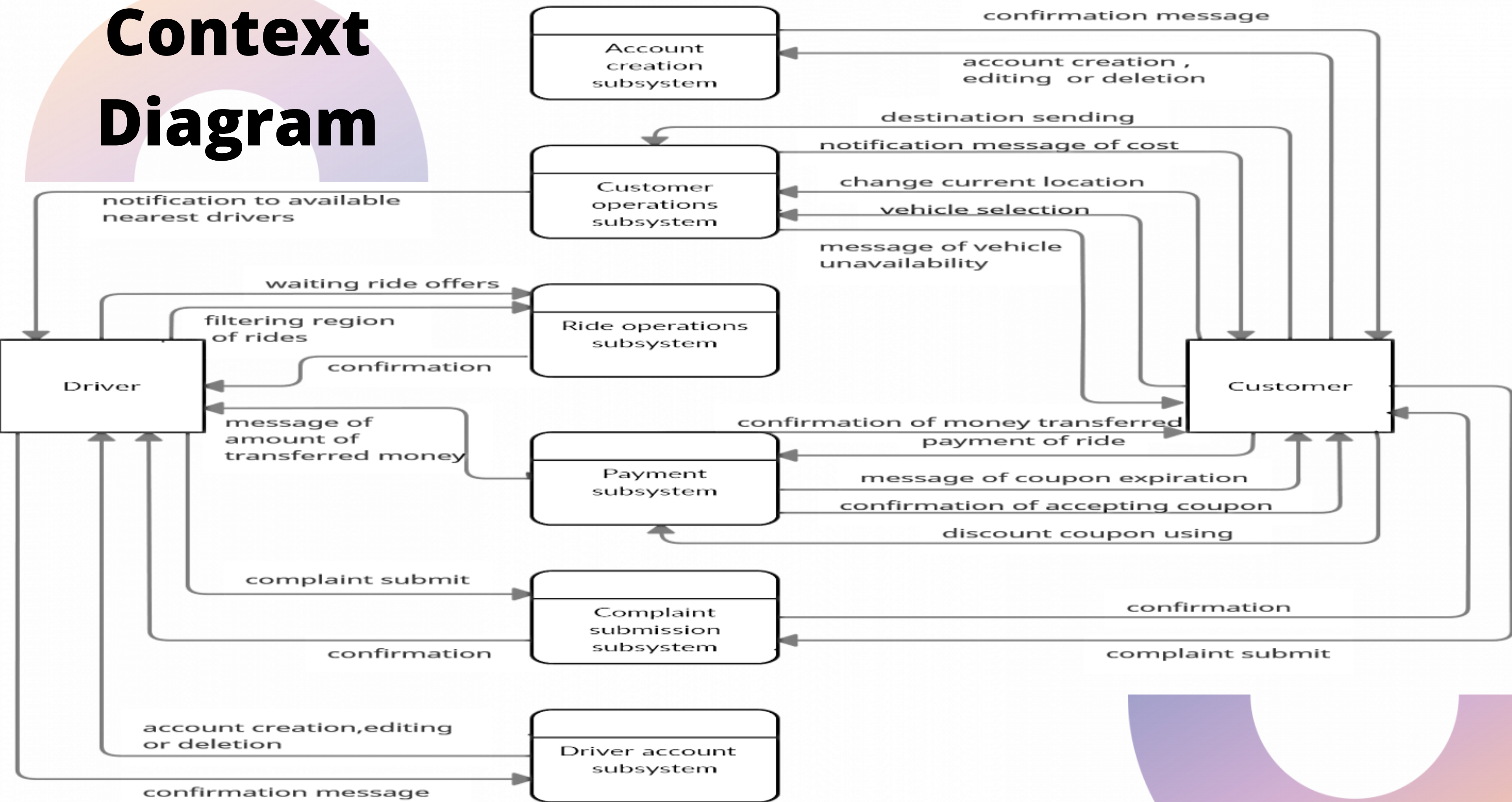
UBER

The Careem logo, featuring a green circular icon with a white dot inside, followed by the word "careem" in a green, lowercase, sans-serif font, all on a white rectangular background.

careem



Context Diagram

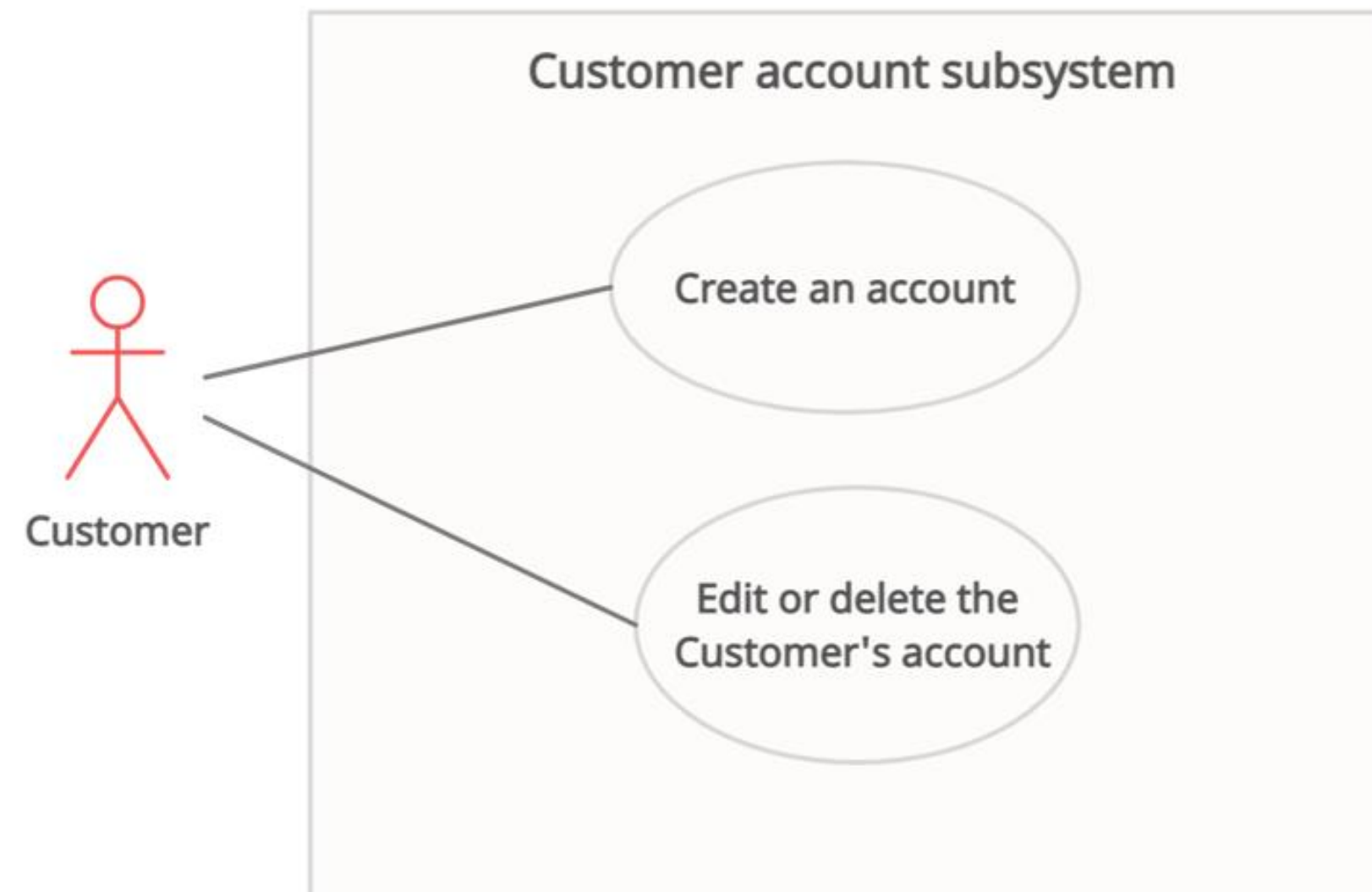




Use Cases

Use Case: Create an account

EVENT	TRIGGER	SOURCE	USE CASE	RESPONSE	DESTINATION
Customer wants to create an account	Account creation	Customer	Create an account	Confirmation	Customer



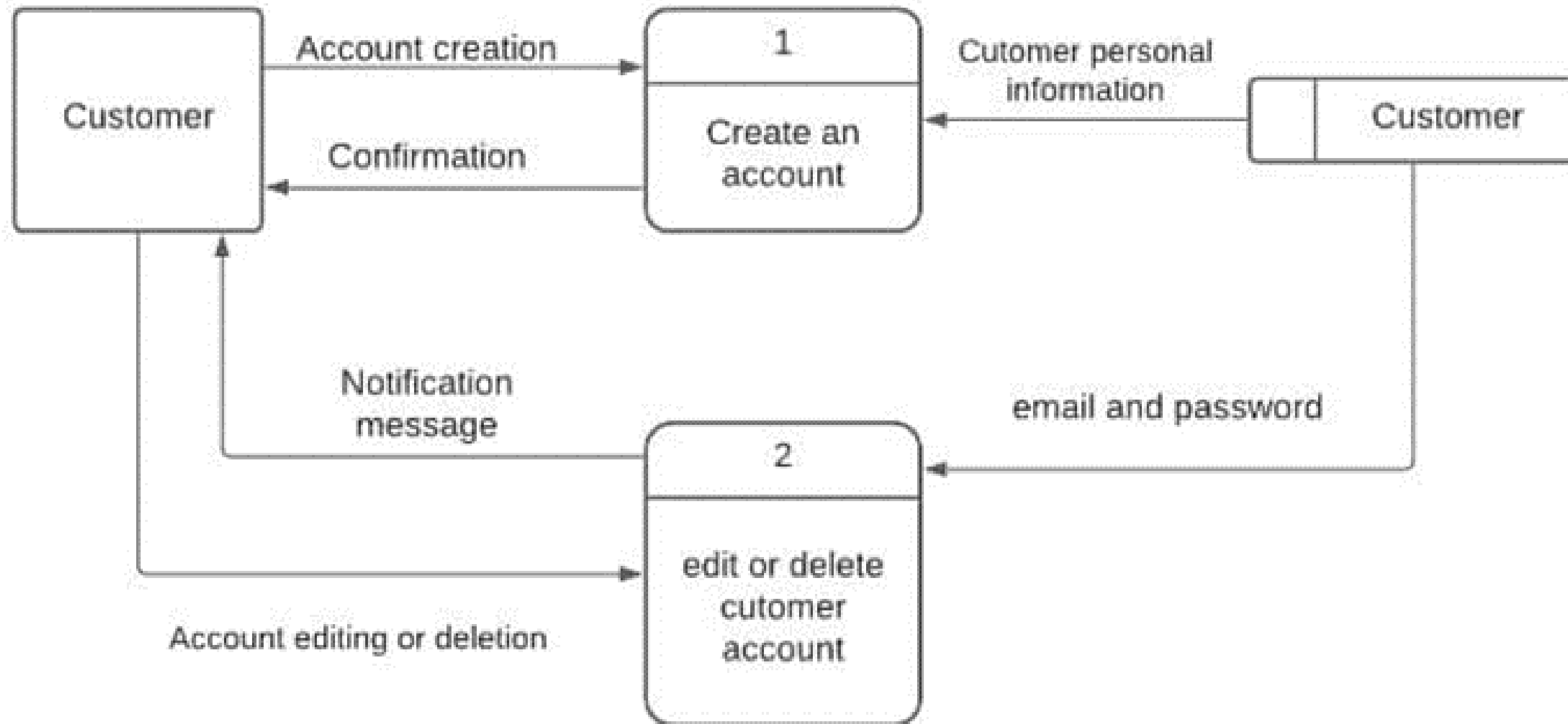
Use Case Description

Use Case Name	Create an account	
Actors	Customer	
Preconditions	- Customer should have the application.	
Postconditions	- Customer has an account	
Flow Activities	Customer	System
	1. customer wants to create an account 2. customer fill in registration form	1.1 System displays a registration form. 1.2 System sends a confirmation message
Exceptions	- Customer account is suspended	

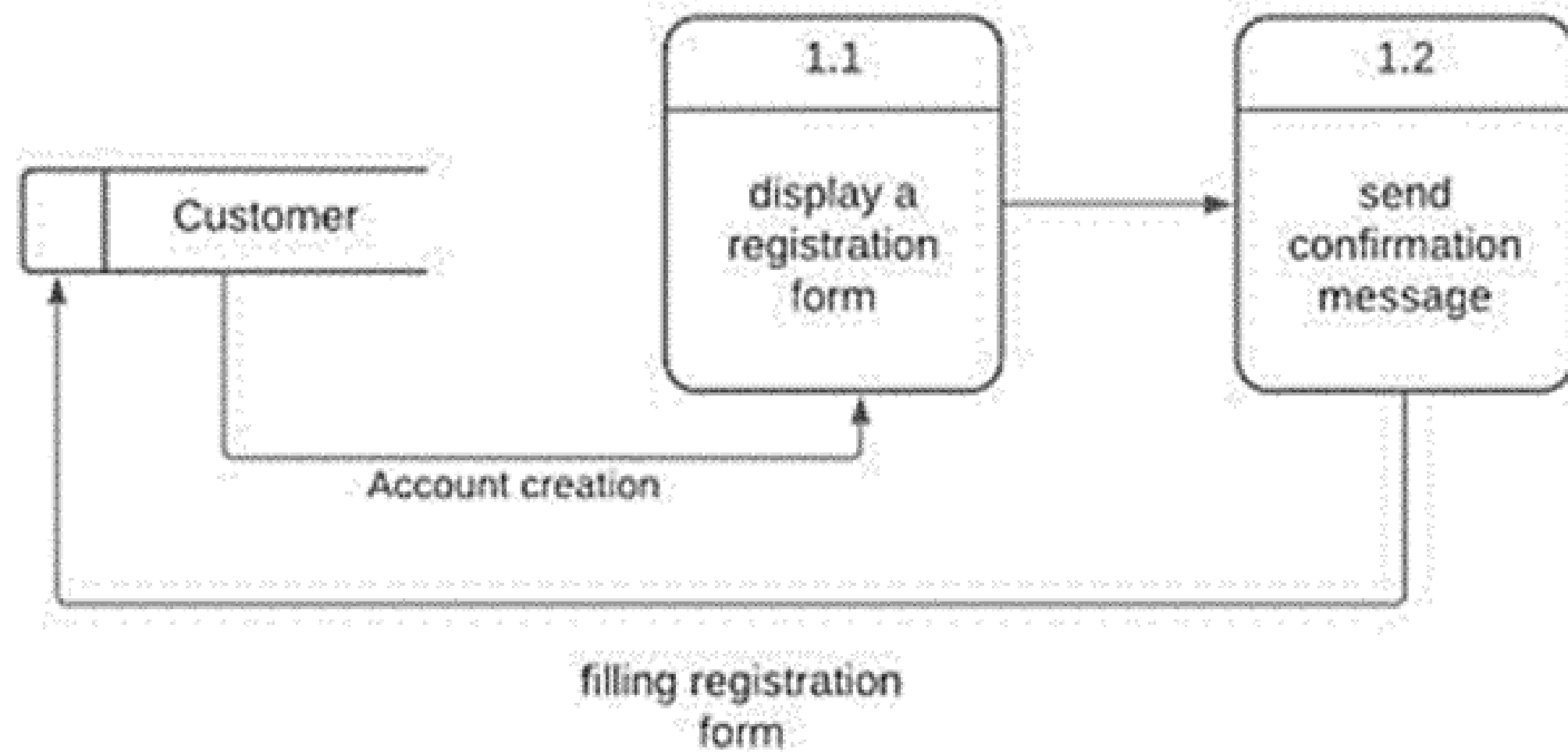
Sequence Diagram



DFD of Customer account

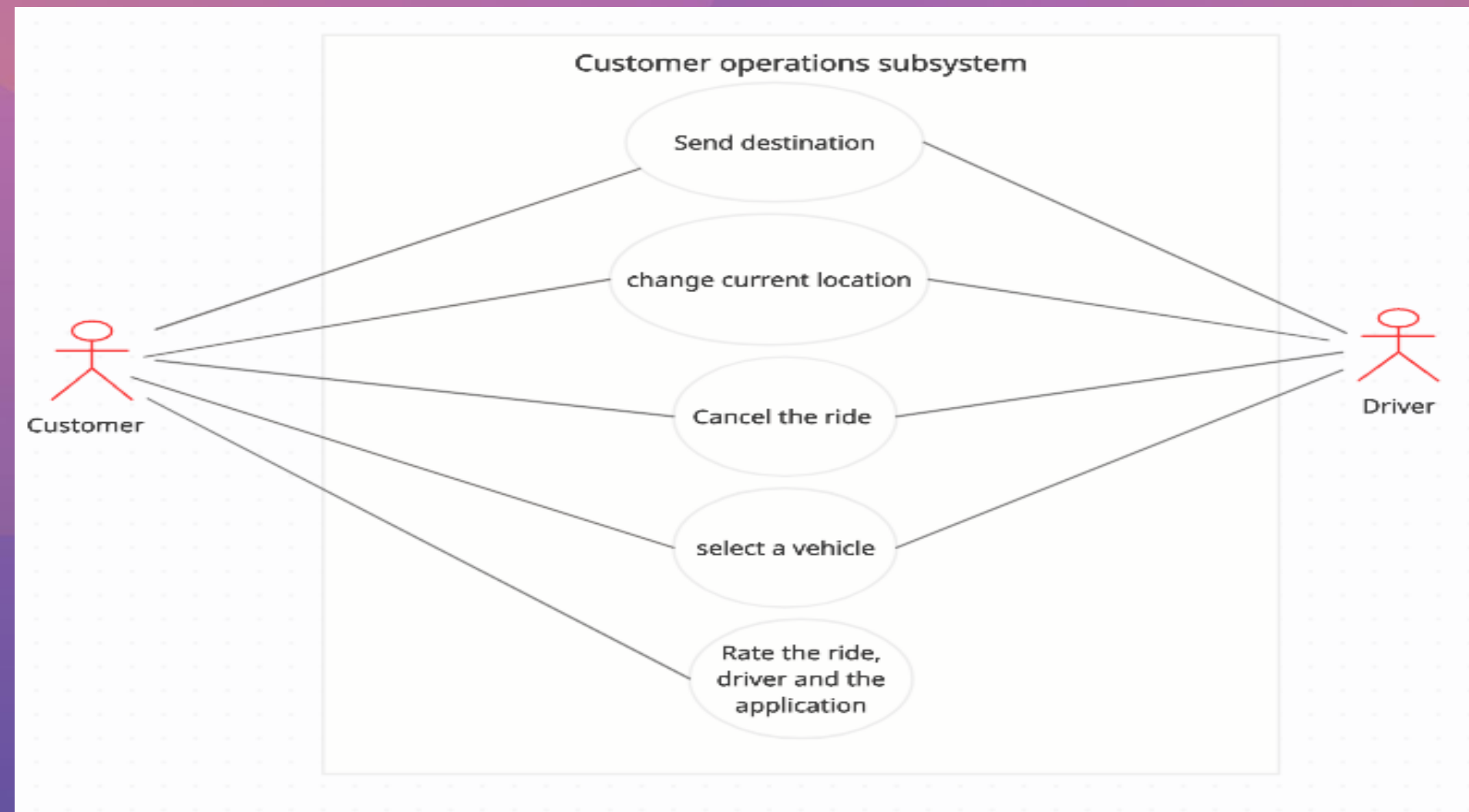


Detailed DFD of Customer account



Use Case: Send Destination

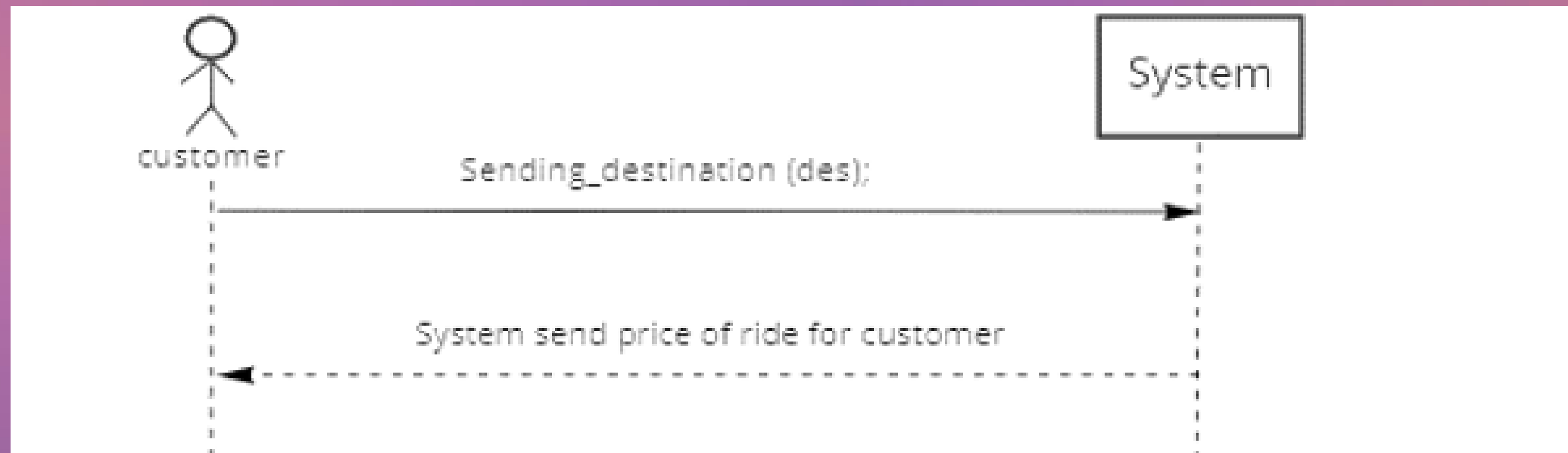
EVENT	TRIGGER	SOURCE	USE CASE	RESPONSE	DESTINATION
Customer wants to send his destination to driver	Destination sending	Customer	Send destination	<ul style="list-style-type: none">- Notification message of price of ride.- Notification to available nearest drivers.	<ul style="list-style-type: none">- Customer- Driver



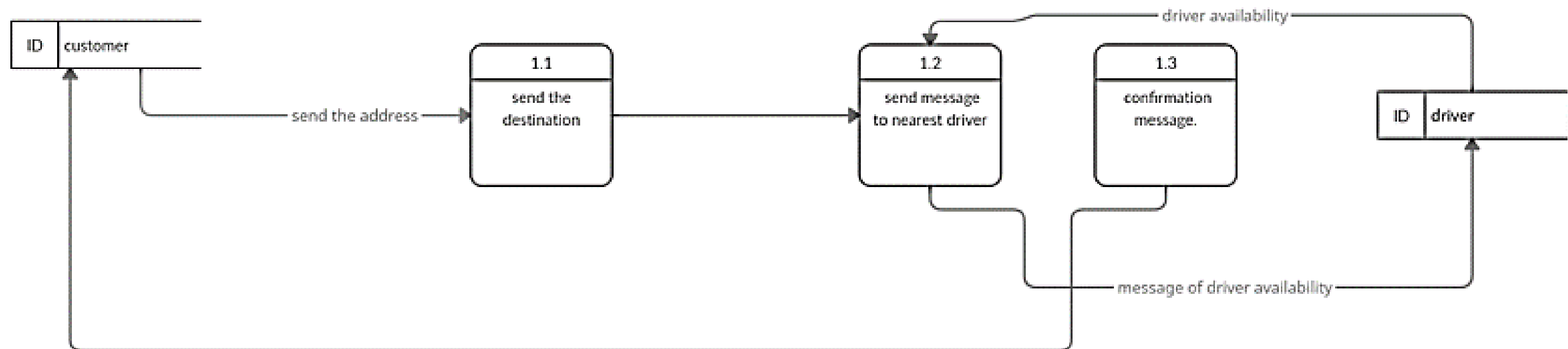
Use Case Description

Use Case Name	Send destination	
Actors	Customer	
Preconditions	<ul style="list-style-type: none">- The customer is ready for the ride.- The customer has enough money.	
Postconditions	<ul style="list-style-type: none">- The driver receives the destination.	
Flow Activities	Actor	System
	1. The customer send his destination.	1.1 System send Notification massage of price of ride for customer. 1.2 System send Notification to available nearest drivers.
Exceptions	<ul style="list-style-type: none">- The customer lost his money.	

Sequence diagram

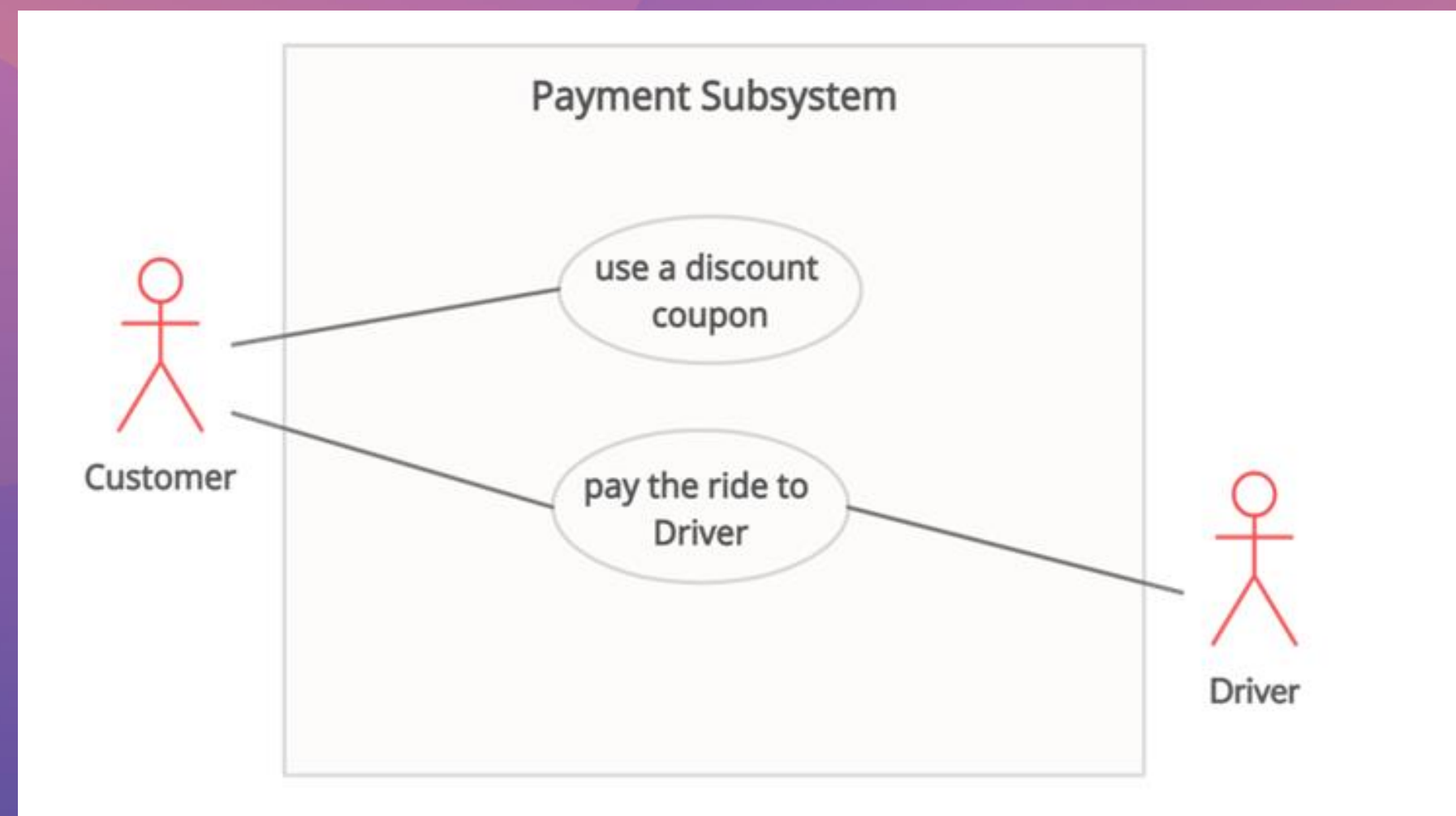


Detailed DFD



Use Case : Pay the ride

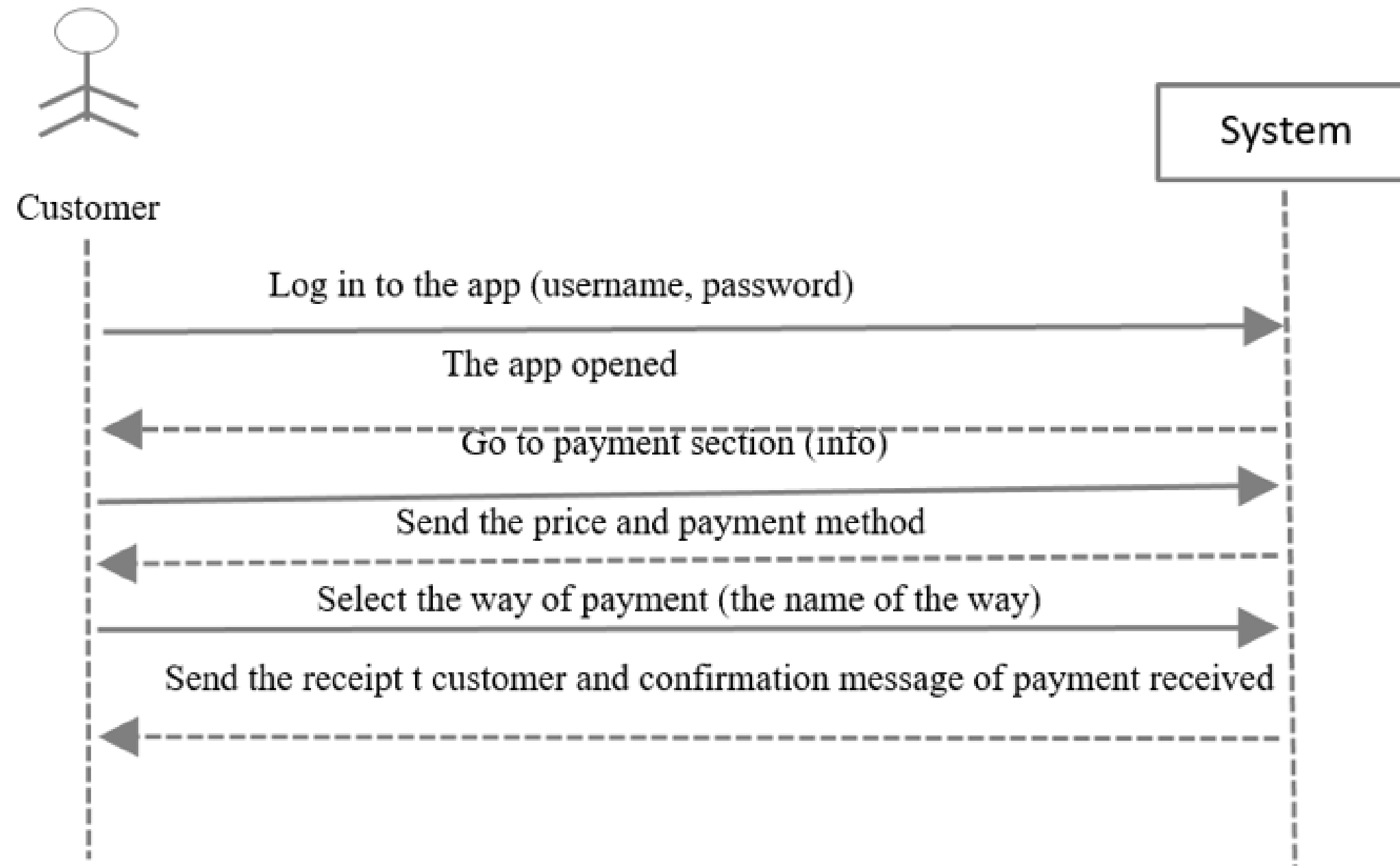
EVENT	TRIGGER	SOURCE	USE CASE	RESPONSE	DESTINATION
Customer wants to pay the ride to the driver	Payment of the ride	Customer	Pay the ride to the driver	<ul style="list-style-type: none">• Confirmation of money transfer• Message of amount of money transferred.	<ul style="list-style-type: none">• Customer• Driver



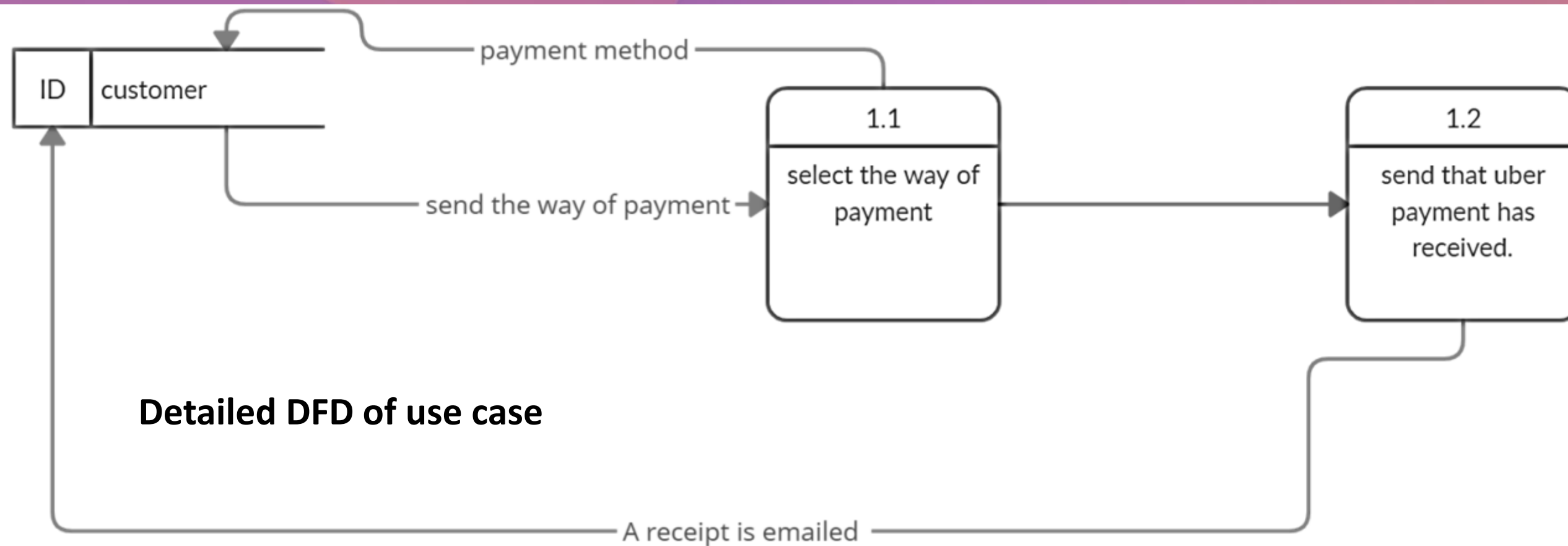
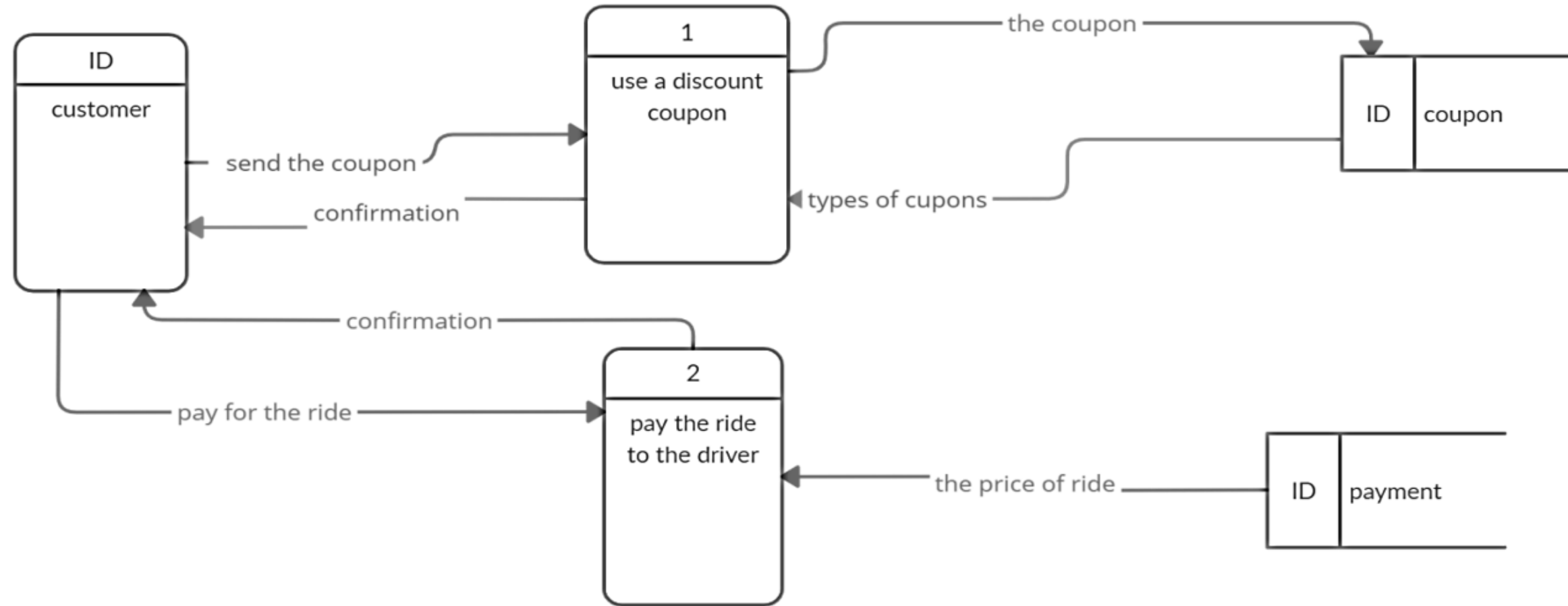
Use Case Description

Use case name	Pay the ride to driver	
Actor	Customer	
Precondition	A valid account	
post condition	The payment method selected for the trip is immediately charged. A receipt is emailed to customer. Account's trip history is update with details about the route and fare.	
Flow of activities	Customer	System
	<ol style="list-style-type: none">1. Log in to the app2. Go to payment section3. Select the way of payment	<ol style="list-style-type: none">1.1 the app is opened successfully2.1 send the price of the trip2.2 send the payment method3.1 send that <u>uber</u> payment has received.3.2 A receipt is emailed to customer.
Exception conditions:	1.1 not valid account 3.1 there not enough charge for payment by the app.	

Sequence Diagram



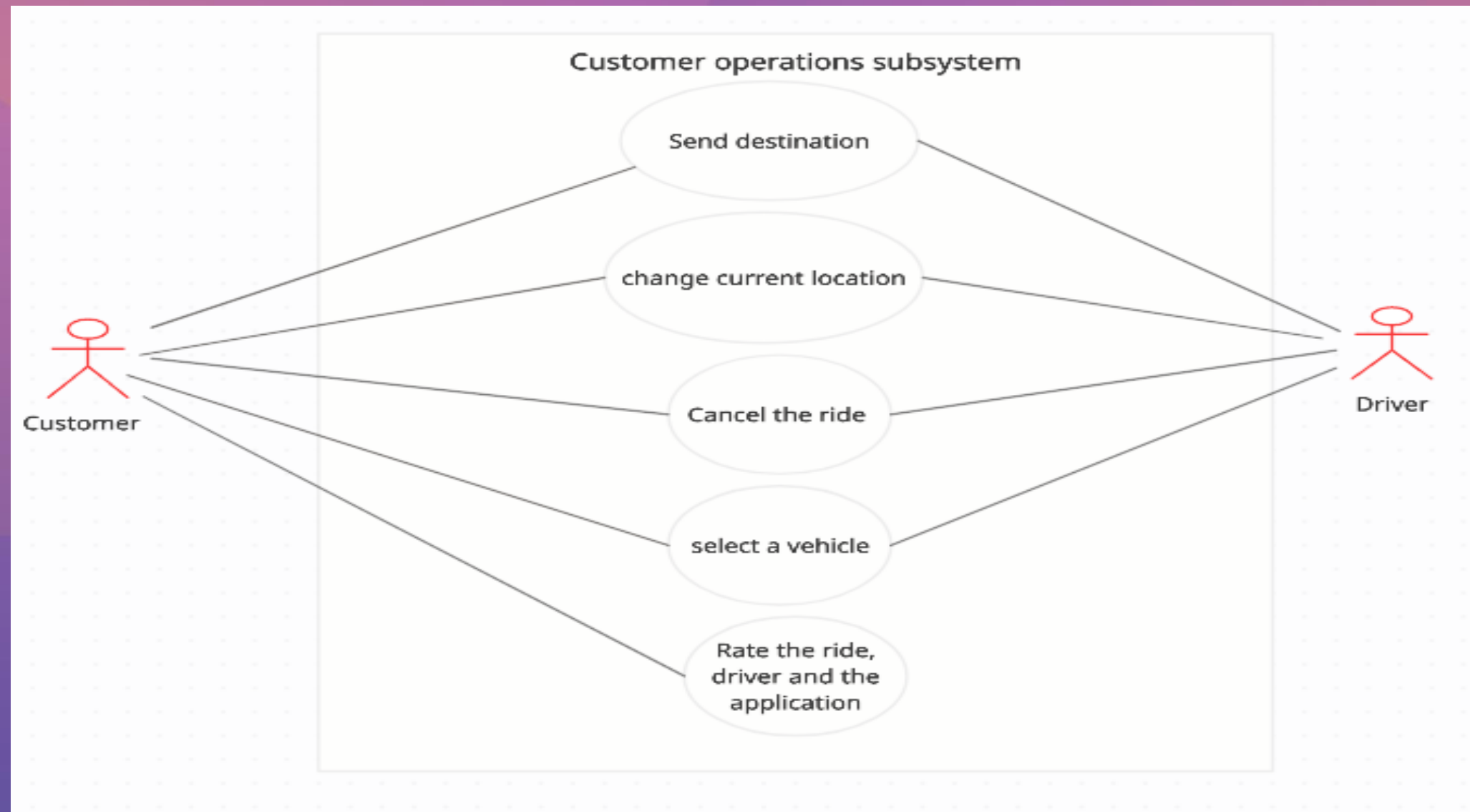
DFD



Detailed DFD of use case

Use Case: Cancel the ride

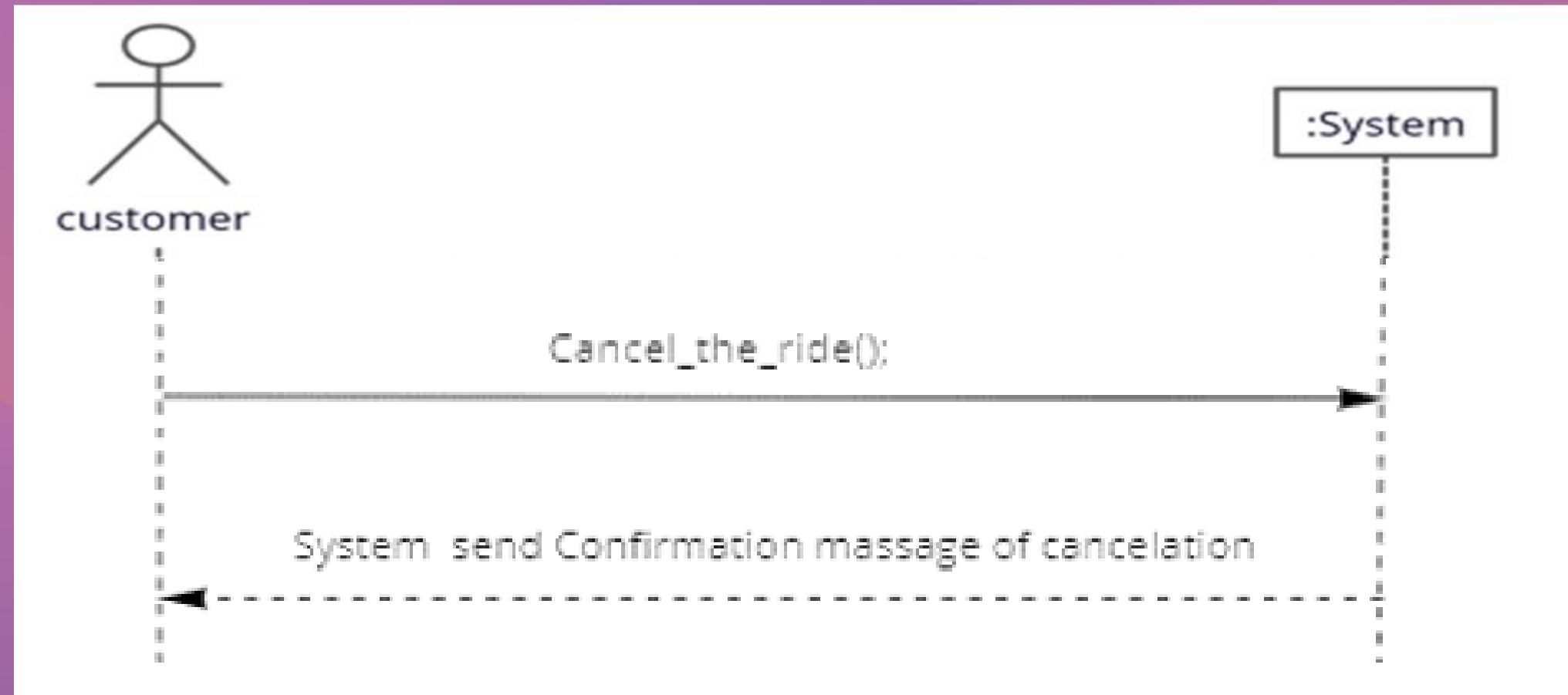
EVENT	TRIGGER	SOURCE	USE CASE	RESPONSE	DESTINATION
Customer wants to cancel the ride	Ride cancelation	Customer	Cancel the ride	- Confirmation.	Customer



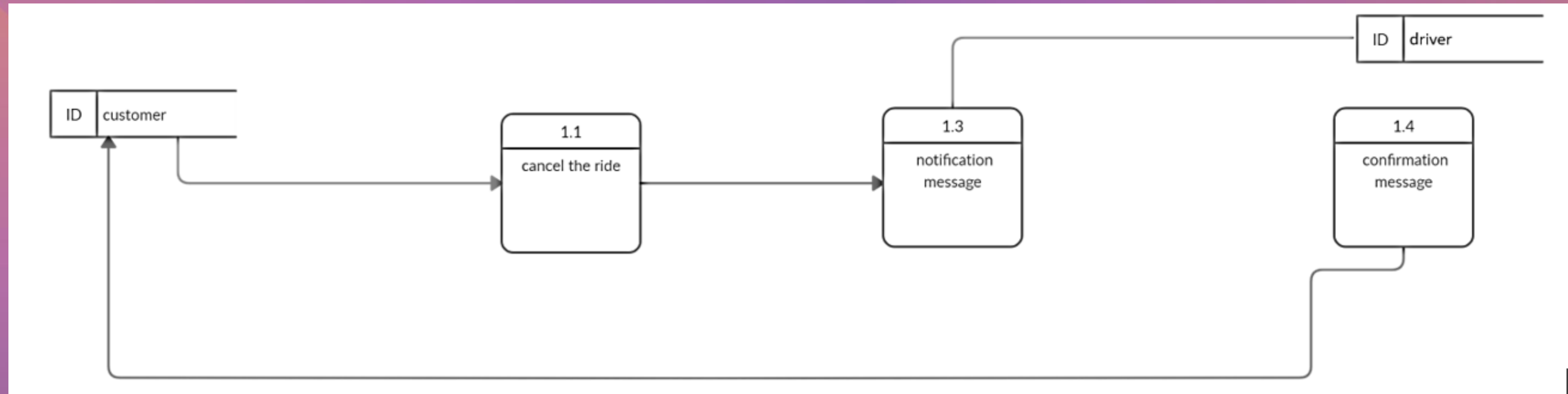
Use Case Description

Use Case Name	Cancel the ride	
Actors	Customer	
Preconditions	- The customer is ready for the cancelation.	
Postconditions	- The driver receives the cancelation message.	
Flow Activities	Actor	System
	1. The customer send Ride cancelation Request.	1.1 System send Confirmation message for customer of cancelation. 1.2 System send Notification message for the <u>drivers</u> .
Exceptions	- The customer change his decision.	

Sequence Diagram



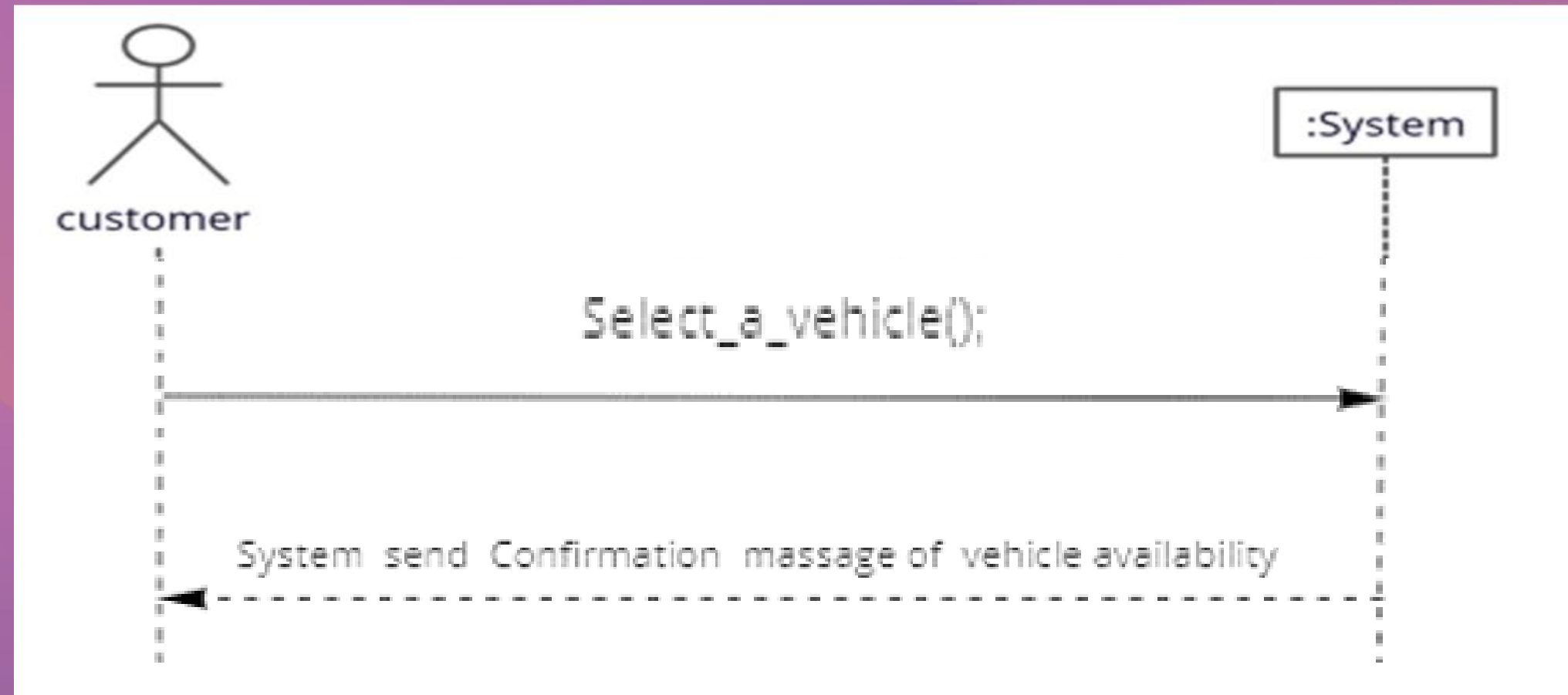
Detailed DFD



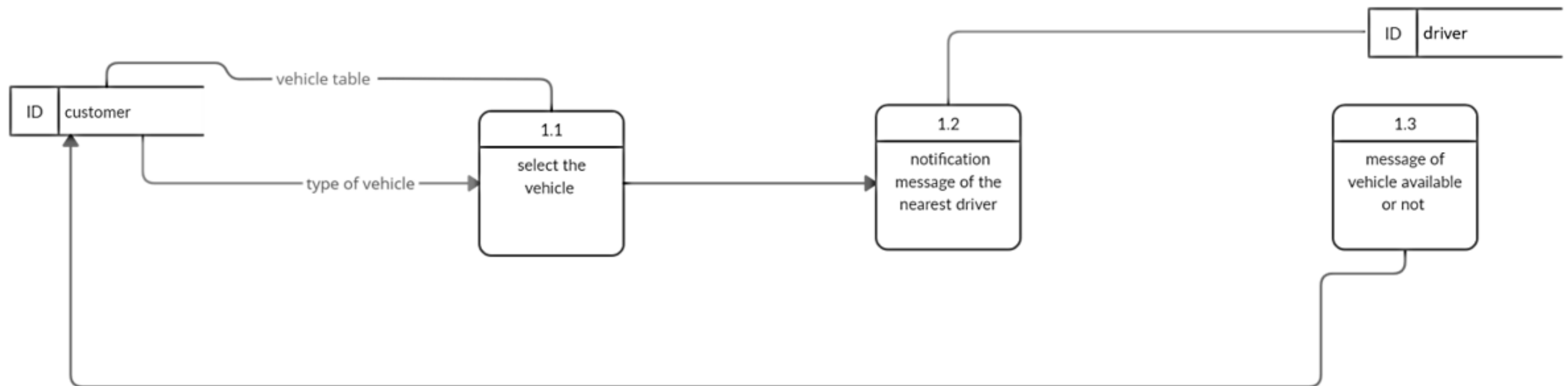
Use Case: Select a vehicle

Use Case Name	Select a vehicle	
Actors	Customer	
Preconditions	<ul style="list-style-type: none">- The customer has decided the type of vehicle.- The customer has enough money.	
Postconditions	<ul style="list-style-type: none">- The vehicle has been selected.	
Flow Activities	Actor	System
	1. The customer select a vehicle.	1.1 System send Confirmation message of vehicle (available or not)for customer.
Exceptions	<ul style="list-style-type: none">- There are no available vehicles.	

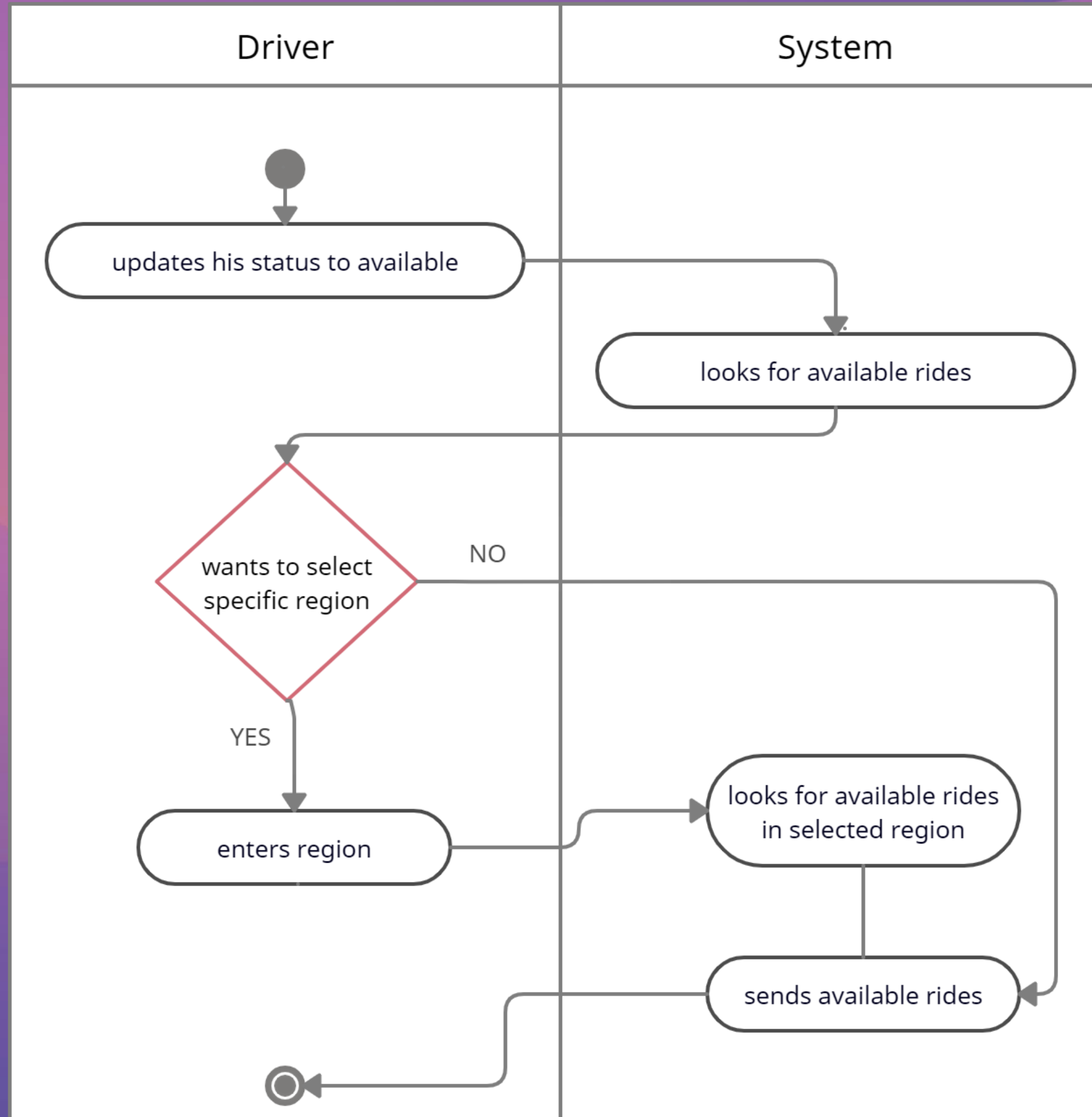
Sequence Diagram



Detailed DFD



Activity Flow Diagram



System vision document

Problem description

The transportation sector of any economy is always its backbone. This is the network that connects every part of a country together, it connects homes to religious gatherings, connects farms to markets and even connects students' accommodation to schools. Public transportation has many problems. The main problem of public transportation is its comfortability and time. Sometimes the customer wants to have a car to just pick up him from his home or wherever he is. Instead of going to the transportation parking, then waiting the car to be full. Sometimes it costs much to go to the parking if you are far and it may cost you more than your trip costs. Customer also may need to be more comfortable in his trip with little additional cost and it's mandatory to find a transportation car at any time. On the other side, there is another problem which is working as drivers can work any time they want and it's not mandatory to work all working hours continuously. This transportation network system helps the customer be more comfortable like it is his car with his own driver.

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System capabilities

Transportation network system has 8 main capabilities:

- 1- Registering of customers or drivers
- 2- Booking features
- 3- The ability to identify a customer's location
- 4- Price calculator
- 5- Add multiple drop-off points
- 6- Easy payment options
- 7- Scheduled rides
- 8- Trip tracking
- 9- Reports
- 10- Coupons

Business benefits

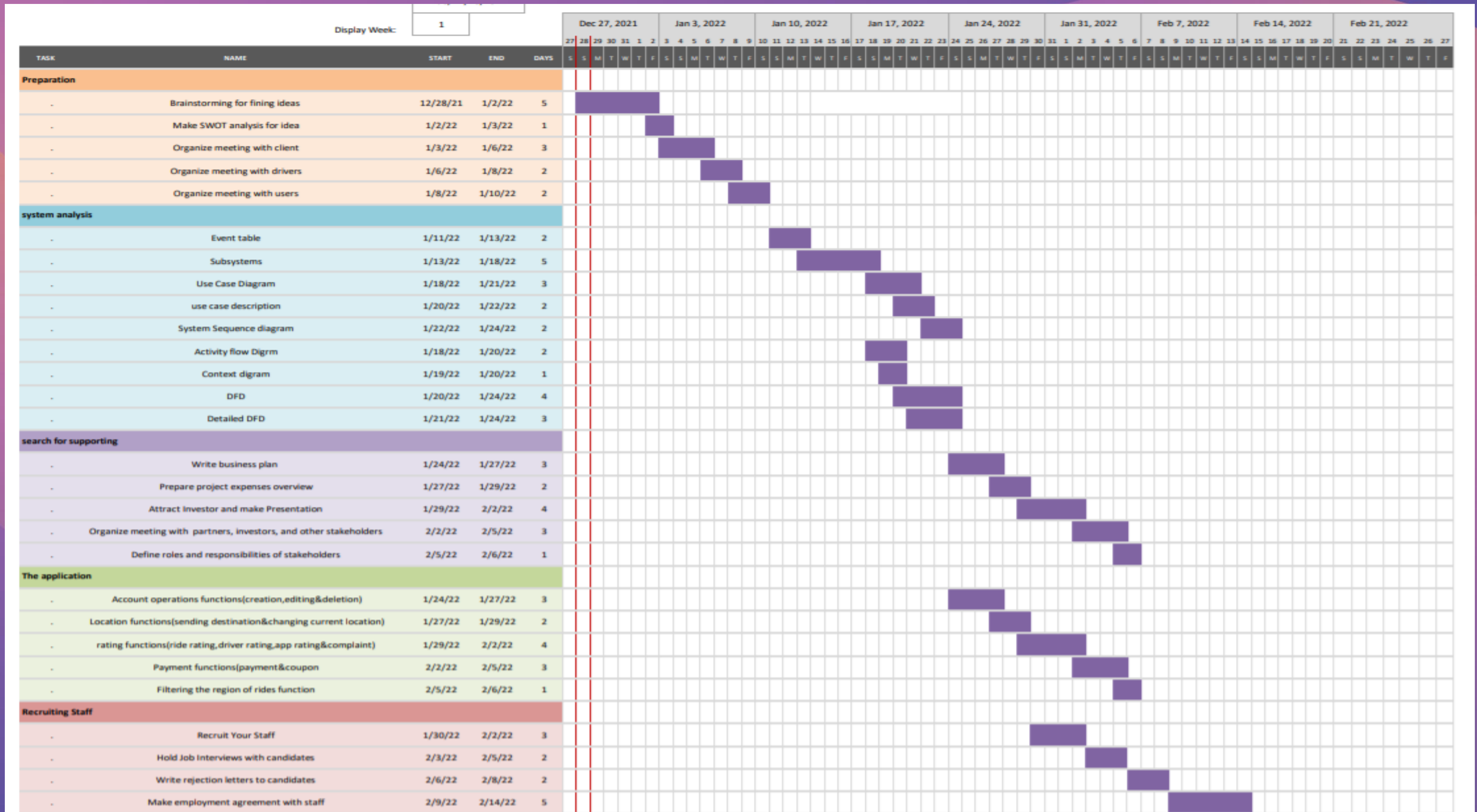
Transportation network system has some business benefits which makes a good profit. One of the main benefits is that it makes money by running a ride-hailing service and takes a cut of the fares. It also gets paid by sponsors for advertising and earn money by increasing the company's reputation which can be sold posteriorly.

Cost Benefit Analysis

	Current Year (CY)	CY +1	CY +2	CY +3	CY +4	CY +5	
Established Development Cost							
Salaries	\$800,000	\$920,000	\$1,074,460	\$1,288,800	\$1,399,455	\$1,745,785	
Training	\$355,000	\$187,000	\$169,000	\$370,000	\$183,000	\$200,990	
Equipment	\$60,000	\$33,000	\$19,000	\$55,000	\$17,000	\$19,340	
Facilities	\$390,000	\$166,000	\$123,000	\$450,000	\$177,000	\$195,876	
Utilities	\$76,000	\$97,000	\$100,000	\$119,000	\$99,000	\$116,750	
Licenses	\$22,000	\$13,000	\$12,576	\$35,098	\$25,000	\$27,878	
	Current Year (CY)	CY +1	CY +2	CY +3	CY +4	CY +5	
Established Support Cost							
Conductivity/Hosting	\$100,176	\$133,320	\$154,266	\$230,008	\$260,086	\$290,889	
programming	\$88,000	\$98,000	\$120,050	\$167,354	\$199,878	\$243,564	
Help desk	\$88,000	\$97,100	\$120,987	\$167.43	\$196,868	\$234,686	
Total Costs (Future Value)	\$1,820,300	\$1,416,000	\$1,498,036	\$2,317,898	\$1,801,455	\$2,306,619	
Total Costs (Present Value)	\$1,820,200	\$1,409,588	\$1,387,634	\$2,254,211	\$1,604,353	\$2,165,768	\$10,641,754
Benefits							
Increase revenues	\$674,000	\$965,500	\$1,187,879	\$1,476,988	\$2,645,976	\$5,387,876	
Increase user interest	\$315,000	\$478,000	\$567,799	\$694,864	\$1,286,976	\$2,565,976	
Improve team morale	\$44,000	\$61,500	\$73,920	\$96,096	\$172,976	\$365,946	
New investors	\$276,000	\$387,400	\$430,076	\$579,109	\$1,009,366	\$2,016,709	
Increase efficiency in trips	\$56,000	\$78,000	\$94,000	\$122,304	\$220,147	\$440,276	
Total Benefits (Future Value)	\$1,365,000	\$1,970,400	\$2,353,674	\$2,969,361	\$5,335,441	\$10,783,776	
Total Benefits (Present Value)	\$1,360,000	\$1,886,668	\$2,198,867	\$2,798,923	\$4,939,277	\$9,684,987	\$22,868,722
Net Benefits/cost	(\$460,200)	\$359,078	\$612,444	\$427,613	\$2,918,112	\$7,430,354	
Net present value	(\$460,200)	\$351,897	\$600,195	\$419,061	\$2,859,750	\$7,281,747	
Cumulative NV	(\$460,200)	(\$101,122)	\$511,323	\$938,939	\$3,857,048	\$11,287,402	
Payback Period	1.1651						
Present Value Discout Rate	2%						

Cost Benefit Analysis	cost
Total PV Benefits	\$22,868,722
Total PV Costs	\$10,641,754
NET BENEFIT	12,226,968.00

Gantt chart



Gantt chart

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