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# User's Guide

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# 1 Introduction

This User Guide describes the miscellaneous use cases of our DTUPay implementation. Our use cases are divided into four sections: Account, Token, Payment and Report Management. Each of these represent a specific microservice in our system. The Facade is responsible for sending requests to each microservice and handles their response. In some cases, microservices communicate with each other to retrieve necessary info, before replying back to the Facade.

## 2 Account Management

### 2.1 Create DTUPay Account

#### 2.1.1 Successful Scenario

Use Case	A Customer/Merchant can create an account within the DTUPay System
Actors	Customer/Merchant
	User requests an account to DTUPay by providing his Cpr Number, First and Last Name. He also should provide a valid Bank Account to link his DTUPay account with. Request payload differentiates Customer/Merchant by a type parameter (0 for Customer, 1 for Merchant)
	DTUPay requests the account to be made by Account Management microservice.
	The Account Management microservice creates the account.
	The Account Management microservice notifies DTUPay that the account has been created.
Outcome	DTUPay notifies the Customer/Merchant that the account has been successfully created. It also returns their new Account Id.

**2.1.2 Fail Scenario**

Use Case	A Customer/Merchant already has a DTUPay account
Actors	Customer/Merchant
	User requests an account and provides a CPR Number - Bank Account combination that already exists.
	DTUPay requests the account to be made by Account Management microservice.
	The Account Management microservice returns an "Account already exists" error message.
	The Account Management microservice notifies DTUPay that the account could not be created.
Outcome	DTUPay notifies the Customer/Merchant that the account was not created since it already exists.

Use Case	A Customer/Merchant provides an invalid Bank Account when creating a DTUPay account.
Actors	Customer/Merchant
	User requests an account and provides a Bank Account that is not valid.
	DTUPay requests the account to be made by Account Management microservice.
	The Account Management microservice contacts the bank to check if account exists and returns an error message.
	The Account Management microservice notifies DTUPay that the account could not be created.
Outcome	DTUPay notifies the Customer/Merchant that the account was not created since the Bank Account was not recognised.

## 2.2 Retrieve a DTUPay Account

### 2.2.1 Successful Scenario

Use Case	A Customer/Merchant wants to retrieve their account info.
Actors	Customer/Merchant
	User requests his account by providing an Account Id.
	DTUPay requests the account from Account Management microservice.
	The Account Management microservice retrieves the account.
	The Account Management microservice notifies DTUPay that the account has been found.
Outcome	DTUPay shows to the Customer/Merchant his account information.

### 2.2.2 Fail Scenario

Use Case	A Customer/Merchant wants to retrieve an account that does not exist.
Actors	Customer/Merchant
	User requests his account by providing an Account Id.
	DTUPay requests the account from Account Management microservice.
	The Account Management microservice cannot find an account with the provided Id.
	The Account Management microservice notifies DTUPay that the account could not be found.
Outcome	DTUPay notifies the Customer/Merchant that the account was not found.

## 3 Token Management

### 3.1 Request Tokens

#### 3.1.1 Successful Scenario

Use Case	Customer requests tokens
Actors	Customer
	Customer sends a request for tokens to DTUPay.
	DTUPay sends token request to Token Management microservice.
	Token Management microservice generates a list of valid tokens.
	Token Management microservice notifies DTUPay that the token request was successful.
Outcome	DTUPay notifies the customer that the request was successful and provides him the valid tokens.

#### 3.1.2 Fail Scenario

Use Case	Customer requests tokens when he still has more than one valid.
Actors	Customer
	Customer sends a request for tokens to DTUPay.
	DTUPay sends token request to Token Management microservice.
	Token Management microservice checks that customer still has some valid tokens and refuses to provide more
	Token Management microservice notifies DTUPay that the token request was unsuccessful.
Outcome	DTUPay notifies the customer that the request failed.

Use Case	Customer requests more than 5 tokens.
Actors	Customer
	Customer sends a request for tokens to DTUPay.
	DTUPay sends token request to Token Management microservice.
	Token Management microservice refuses to provide more than 5 tokens.
	Token Management microservice notifies DTUPay that the token request was unsuccessful.
Outcome	DTUPay notifies the customer that the request failed.

## 4 Payment Management

### 4.1 Make a Payment

#### 4.1.1 Successful Scenario

Use Case	Customer makes a payment which leads to the appropriate amount sent to the corresponding merchant's bank account.
Actors	Merchant and Customer
	Merchant receives a payment request from Customer and sends the request to DTUPay.
	DTUPay sends payment request to Payment microservice.
	Payment microservice sends Customer token to Token Management microservice for validation.
	Token Management microservice verifies token.
	Payment microservice sends Customer Id to Account Management microservice for validation.
	Account management microservice verifies Customer and returns the Customer's bank account Id.
	Payment microservice sends Merchant Id to Account Management microservice for validation.
	Account management microservice verifies Merchant and returns the Merchant's bank account Id.
	Payment microservice calls the Bank to transfer money.
	The Payment microservice notifies DTUPay that the payment has been successfully made.
Outcome	DTUPay notifies the merchant that the payment has been successfully made.

#### 4.1.2 Fail Scenario

Use Case	Customer makes a payment but does not provide a valid token.
Actors	Merchant and Customer
	Merchant receives a payment request from Customer and sends the request to DTUPay.
	DTUPay sends payment request to Payment microservice.
	Payment microservice sends Customer token to Token Management microservice for validation.
	Token Management microservice can not verify token.
	The Payment microservice notifies DTUPay that the payment failed.
Outcome	DTUPay notifies the merchant that this is a bad request

Use Case	Customer tries to make a payment to a merchant that does not exist within the system
Actors	Merchant and Customer
	Merchant receives a payment request from Customer and sends the request to DTUPay.
	DTUPay sends payment request to Payment microservice.
	Payment microservice sends Merchant Id to Account Management microservice for validation.
	Account Management microservice can not identify requested merchant.
	The Payment microservice notifies DTUPay that the payment failed.
Outcome	DTUPay notifies the merchant that this is a bad request

## 5 Report Management

### 5.1 Get Customer/Merchant Report

Use Case	Customer/Merchant can get a report of their transaction history
Actors	Customer/Merchant
	Customer/Merchant requests report from DTUPay.
	DTUPay requests report from Report Management microservice.
	Report Management microservice sends a request to Payment Management microservice to get transactions by a Customer/Merchant Id.
	Payment Management microservice returns transactions to Report Management microservice.
	Report Management microservice sends the report to DTUPay
	DTUPay sends the report to the Customer/Merchant
Outcome	Customer/Merchant receives the report. Report includes transaction information like amount, time, description, merchant, customer and token. Merchants however cannot see the customer's info only their token.



## 5.2 Get Manager Report

Use Case	Manager can get a report of all transaction history
Actors	Manager
	Manager requests report from DTUPay.
	DTUPay requests report from Report Management microservice.
	Report Management microservice sends a request to Payment Management microservice to get all system transactions.
	Payment Management microservice returns transactions to Report Management microservice.
	Report Management microservice sends the report to DTUPay
	DTUPay sends the report to the Manager
Outcome	Manager receives the report with all the transaction info