Scenario: Purchase painting

When a user wants to purchase a painting, they can navigate the app to the painting page. All paintings that's up for sale will be displayed for the user to choose from. Once the user selects a paining they can click buy now. They will be forwarded to a page where they'll have to sign in to confirm their identity by username, password, card holder full-name, card number, expiration date. The customer will then be asked to choose a delivery address.

Then the system will access the other its database to update the seller's and buyer's account and to save the transaction in the database. A message confirming the transaction will be sent from the app to the users. The transaction will be recorded in the database and added to both of the users' account.

1. **Function Points Size Estimation: -**

- COUNT OF COMPONENTS

External Input types (EI): 6

1. Username
2. Password
3. Selected Painting
4. Full name on Card
5. Card number
6. Expiration Date
7. Delivery address

External Output Types (EO): 1

1. Message confirming that the transaction is confirmed

External inquiry types (EQ): 3

1. Retrieve account information
2. Retrieve user's bank account information
3. Retrieve painting information

Logical internal file types (LIF):3

1. Customer Table
2. Transaction Table
3. Paintings Table

External inquiry types (UI):1

1. Customer's Bank database system

IDENTIFY DATATYPES, RECORD TYPES AND COMPLEXITY.

EI:

- 6 Datatypes: Username, password, full name on card, card number, expiration date, delivery address.
- 2 Record Types: Customer Table, Paintings Table
- Average Complexity

EO:

- 1 Datatype: Confirmation Message of Transaction
- 2 Record Types: Customer Table, Transaction table
- Low Complexity

EQ:

- 8 Datatypes: Username, Password, Card holder Full-Name, Card number, Expiration date, Define the Account Type (Credit, Saving, Debit), Transaction amount, painting information
- 3 Record Types: Customer Table, Transaction Table, Painting table
- Average Complexity

LIF:

- 10 Datatypes: Username, Password, Address, Full name, Card number, expiration date, Painting Id, painting price, painting owner, painting information
- 3 Record Types: Customer Table, Transaction Table, Paintings Table.
- Low Complexity

UI:

- 4 Datatypes: Name on Card, Card number, Expiration Date, transaction amount
- 2 Record types: Customer Table, Transaction Table
- Low Complexity

Size Estimation: (6*4) + (1*4) + (2*4) + (3*7) + (1*5) = 60FP

60FP * 46 = 2760 LOC = 2.76 KLO

Scenario: Cancel Painting's Purchase

The customer wants to cancel his purchase, so he logs in into the website with his username and password, he navigates to the Cancel Purchase tab and chooses the purchase he wants to cancel and clicks on the cancel and refund button. The system retrieves the information of the selected purchase. A confirmation message will then show up to ask the customer to confirm his cancelation process. The customer clicks on a "Yes" button to confirm his cancellation. The system deletes the purchase information from the database and then sends the customer an email confirming that his purchase was cancelled.

2. Size and Effort estimation

2.1 Function points method

External Input types (EI): 4

1. Customer username
2. Customer password
3. Purchase ID
4. Painting ID

External Output types (EO): 4

1. Confirmation message asks the user for confirmation.
2. Confirmation message title
3. Confirmation message Body
4. E-mail sent to the customer to inform that his purchase is cancelled.

External inquiry types (EQ): 6

1. Extract Customer from database
2. Extract Purchase from database
3. Extract Painting from database
4. Extract Credit from database
5. Insert the user confirmation into the database
6. Delete purchase from the database

Logical internal file types (LIF): 5

1. Customer table
2. Confirmation table
3. Painting table
4. Purchase table
5. Credit table

External interface file types (EIF): 1

1. Bank database

2.2. Identify data types, record types and complexity:

EI:

- 4 Data types: Customer username, Customer password, Purchase ID, Painting ID
- 1 Record types: User Input
  (LOW COMPLEXITY)

EO:

5. 3 Data types: Confirmation title, Confirmation body, Customer e-mail
6. 2 Record types: Confirmation table, Customer table
   (LOW COMPLEXITY)

EQ:

- 12 Data types: Customer ID, Customer first name, Customer email, Customer mobile number, Painting ID, Painting quantity, Confirmation title, Confirmation body, Purchase ID, Purchase type, Purchase time, Card Number
- 5 Records types: Customer table, Painting table, Confirmation table, Purchase table, Credit table
  (HIGH COMPLEXITY)

LIF:

- 12 Data types: Customer ID, Customer first name, Customer email, Customer mobile number, Painting ID, Painting quantity, Confirmation title, Confirmation body, Purchase ID, Purchase type, Purchase time, Card Number
- 5 Record types: Customer table, Painting table, Confirmation table, Purchase table, Credit table
  (HIGH COMPLEXITY)

EIF:

- 1 Data type: Card Number
- 1 Record type: Credit table
  (LOW COMPLEXITY)

Size Estimation: (4*3) + (4*4) + (6*6) + (5*15) + (1*5) = 144 FP

144 FP * 46 = 6624 = 6.62 KLOC

LOC/FP estimation table

Programming language	*LOC/FP*
C	128
C ++	53
COBOL	107
FORTRAN	105
DELPHI 5	18
JAVA	46
VISUAL BASIC 6	24
SQL	13
Fourth generation languages	20
Object-oriented languages	30