# Question 1

## 1NF:

Expense (**StatementNumber**, **ExpenseLineNumber,** EmployeeID, Name, Title, Email, Department, Manager, StartDateOfTrip, Nbdays, TripPurpose, ExpenseDate, Account, Description, Vendor, Category, PaymentMethod, Amount)

## 2NF:

EXPENSE(**ExpenseLineNumber**, ExpenseDate, Account, Description, Vendor, Category, PaymentMethod, Amount)

STATEMENT(**StatementNumber**, EmployeeID, Name, Title, Email, Department, Manager, StartDateOfTrip, Nbdays, TripPurpose)

BRIDGE (ExpenseLineNumber(FK), StatementNumber(FK))

## 3NF: No non-key column affecting another non-key column

BRIDGE (ExpenseLineNumber(FK), StatementNumber(FK))

DEPARTMENT (**DepartmentID**, department)

STATEMENT(**StatementNumber,** StartDateOfTrip, Nbdays, TripPurpose, DepartmentID(FK), EmployeeID(FK))

EMPLOYEE (**EmployeeID** , Name, Email, Title, Manager, departmentID(FK))

EXPENSE(**ExpenseLineNumber**, ExpenseDate, Account, Description, Vendor, Category, PaymentMethod, Amount)

# Question 2

## UNF:

SCHEDULE ( **routeNum, stopID**, stopName, stopType, SeqOnRoute, {DepatureTime}, stopLocation, status )

Justification: We can say that Departure time is a repeating column as routeNum and stopID make a unique combination otherwise.

## 1NF:

SCHEDULE ( **routeNum, stopID**, stopName, stopType, SeqOnRoute, stopLocation, status )

DEPARTURE( **DepartureTimeID**, DepartureTime)

## 2NF:

STOP (**stopID**, stopName, stopType, stopLocation)

SCHEDULE ( **routeNum, stopID(FK)**, SeqOnRoute, status)

## 3NF:

STOP (**stopID**, nameID(FK), stopType, locationID(FK))

NAME (**nameID**, stopName)

LOCATION (**locationID**, streetNum, streetName, city)

SCHEDULE ( **routeNum, stopID(FK)**, seqOnRoute, status )