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**Silver Airline Reservation System**

**Aim**

The aim of this assignment is to design an online Airline Reservation System (ARS) and illustrate all the main processes within, which includes:

* Identification of users and other systems that can interact with ARS
* Transactions and activities that are carried out by the system
* Vital processes to perform the appropriate activities
* Relevant data flows which can run within or outside of the system
* Data storage arrangement within the system
* Illustrate the system graphically using zero to level two data flow diagrams.
* Recognize the different levels of management that involve different information systems.

The key task of this assignment is to illustrate how the users can manage their booking, check-in or cancel their purchased flights. The Airline Reservation system is partly based on Videcom’s Airline system (Videcom, 2016).

**Users and other Systems** **that interact with ARS**

The systems listed below belong to E-Business organizational activities and there are two main categories.

In our case, these are **B2C** – Business to Consumer (Airline to User) and **B2B** – Business-to-Business (Airlines to GDS) (Coughlan, 2016).

* Users- identified as **a** person or company that purchases the goods or services produced by a company.
* Sales Electronic Systems such as Internet Sales, Travel Agency, Global Distribution Systems, Call Centre and other sales systems. All these systems allow ARS to connect with users, which would lead to maximum ticket sales.
* The ARS Departure Control System, which runs at numerous airports globally. Graphical Interfaces allows management to monitor flights and make appropriate adjustments such as passenger name lists (PNLs) and passenger name records (PNRs) are automatically distributed to third party airlines to provide local check-in services.
* Inventory is the heart of the ARS, providing entire control over seat sales. Powerful inventory and revenue reporting offer a real time analysis across the airlines flights. Schedules are formed and edited graphically, and automatically generated flights vary by date, offering user-friendly filter to make changes to the flights.
* Administration system is a graphical interface that is supplied for all management areas of the system. This allows for management of cities, time zones, exchange rates, aircraft, users and so on.
* Finance is a dominantreporting element of ARS, which lets management team to control all finances within the system from flight revenue, sales reports, invoicing to credit card transactions.
* Management Information System (MIS) - comes with a hundreds of built-in reports, which makes it easier to regain data that is used for management analysis.
* Customer Relationship Management(CRM)- contain more management subsystems such as:
* Management Reporting- allows data to be retrieved in order to create customized reports to business.
* Customer Profiles- allows customers to create a profile, store information and use it to create bookings.
* Frequent Flyer- allows your passengers to earn reward points that can be redeemed against further purchases.
* SMS Module- communicates with customer database.
* Global Distribution system (GDS) - this external entity acts as a handling agent and typically used at outstations where no airline employees are in present and a 3rd party airline is handling the flight check-in, Electronic Tickets and so on.

**Transactions and activities carried by the ARS**

External Entities are situated outside of the ARS system. They forward and receive information to and from the ARS system.

Internal Entities are situated within the ARS system. They also exchange data with ARS but all activities are taking place within the ARS.

There are many activities that are carried out by the ARS in the real world, however in this assignment the main External and Internal activities of the Airline Reservation System are presented as follows:

* Booking- user can search and book the flights through the ARS system.
* Check- in for flight. The ARS system confirms passengers’ intention to travel.
* Cancellation- Users or customers can cancel their flight bookings within the ARS system. The ARS system signals that the person has no intention to travel.
* System Management is the heart of the ARS, contains many sub management systems and some of them are listed below:
* Back Office Management and Administration Control- controls how the existing business runs.
* Full Graphical Interfaces for controlling ARS system is a very sophisticated and easy to use management system, which covers functions from flight schedules to fare pricing.
* Flight Schedules- Centralizes all airline flight schedules.
* Inventory Management- Centralizes all Inventory Hosting.
* Fares Engine - provides superior processing for fare pricing and quickly provides users with accurate costs.
* Service Fees- Offers flexibility to Customers Change Fees, Cancellation Fees and Excess Baggage.
* Ancillary Product Sales and User Management are the "extras" of a holiday, such as: Travel Insurance, Event Tickets, Car Hire, Airport Parking, Foreign Exchange, Sports Equipment, Airport Transfers and so on.
* Reporting Module- unites all relevant information across different regions and variable events to provide reporting managers.
* Revenue Accounting- offers automated transfer of sales data to the revenue accounting system.
* Payment Gateways is a system that connects with specific payment providers.
* E. Banking system - manages all revenue transactions such as revenue accounting, credit card authorisation, E ticketing and others.

**The processes required to perform the relevant activities/data flow**

The processes required to perform the relevant activities/data flow are presented in Table 1 and again only major sets are listed.

*Table 1*

|  |  |  |
| --- | --- | --- |
| **Activities/Data flow** | **Entities To/From** | **Name of the Process** |
| Search for flight availability | Client to ARS | Booking |
| Return flight availability | ARS to Client | Booking |
| Select a flight/sits | Client to ARS | Booking |
| Confirmation of flight selection | ARS Client | Booking |
| Enter passenger login details | Client to ARS | Booking |
| Confirmation of passenger login details | ARS to Client | Booking |
| Credit/Debit card authorisation | ARS to Bank | Booking |
| Credit/Debit card authorisation confirmation | Bank to ARS | Booking |
| Send payment details | Client to ARS | Booking |
| Send payment details | ARS to Bank | Booking |
| Confirmation of payment | Bank to ARS | Booking |
| Confirmation of payment | ARS to Client | Booking |
| View booking details | Client to ARS | Booking |
| Change booking details | Client to ARS | Booking |
| Change booking details surcharge | ARS to Client | Booking |
| Send surcharge payment | Client to ARS | Booking |
| Send surcharge payment details | ARS to Bank | Booking |
| Confirmation of surcharge payment | Bank to ARS | Booking |
| Confirmation of surcharge payment | ARS to Bank | Booking |
| Travel Insurance request | Client to ARS | Booking |
| Travel Insurance confirmation | ARS to Client | Booking |
| Hotel reservation request | Client to ARS | Booking |
| Hotel reservation confirmation | ARS to User | Booking |
| Car hire request | Client to ARS | Booking |
| Car hire request confirmation | ARS to Client | Booking |
| Airport parking request | Client to ARS | Booking |
| Airport parking confirmation | ARS to Client | Booking |
| Airport transfer request | Client to ARS | Booking |
| Airport transfer confirmation | ARS to Client | Booking |
| Priority sits request | Client to ARS | Booking |
| Priority sits confirmation | ARS to Client | Booking |
| Update Tickets database | ARS to Database | Booking |
| Visa application | Client to Travel Agent | Booking |
| Visa conformation | Travel Agent to Client | Booking |
| Cash payment/cheque | Client to Travel Agent | Booking |
| Receipt | Travel Agent to Client | Booking |
| Log in | Client to ARS | Check- in |
| Check-In | Client to ARS | Check- in |
| Confirmation of Passport details | ARS to Client | Check- in |
| Security confirmation | ARS to Client | Check- in |
| Update DCS with a new data | ARS to Database | Check- in |
| Confirmation to User (Boarding Data) | ARS to External | Check- in |
| Login | Client to ARS | Cancelation |
| Login confirmed | ARS to Client | Cancelation |
| Request for flight cancellation | Client to ARS | Cancelation |
| Confirmation of flight cancellation | ARS to Client | Cancelation |
| Surcharge for flight cancellation | ARS to Client | Cancelation |
| Payment for cancellation | Client to ARS | Cancelation |
| Payment details | ARS to Bank | Cancelation |
| Confirmation of payment | Bank to ARS | Cancelation |
| Confirmation of payment | ARS to Client | Cancelation |
| Refunds request | ARS to Bank | Cancelation |
| Refund | Bank to Client | Cancelation |
| Refunds conformation | ARS to Client | Cancelation |
| Update Tickets database | ARS to Database | Cancelation |
| Update Inventory database | ARS to Database | Cancelation |
| Collecting from and sending reports to fares | ARS to Internal | Management |
| Collecting from and sending reports to flights | ARS to Internal | Management |
| Collecting from and sending reports to sales | ARS to Internal | Management |
| Collecting from and sending reports to distribution | ARS to Internal | Management |
| Collecting from and sending reports to operations | ARS to Internal | Management |
| Collecting from and sending reports to finance | ARS to Internal | Management |
| Collecting from and sending reports to Clients | ARS to Client and Client to ARS | Management |
| Update Tickets database | ARS to Database | Management |
| Update Inventory database | ARS to Database | Management |
| Update DCS database | ARS to Database | Management |
| Payment validation request | ARS to Credit Card/Bank and Credit Card/Bank to ARS | Credit Card/Banking |
| Transactions to and from ARS | ARS to Credit Card/Bank and Credit Card/Bank to ARS | Credit Card/Banking |
| Invoicing /Reporting to and from sales | ARS to Sales and Sales to ARS | Credit Card/Banking |
| Collecting from and sending reports to the Management | Management to Bank and Bank to Management | Credit Card/Banking |
| Invoicing/Reporting to and from credit card Reconciliation to a 3rd party revenue accounting system | ARS to GDS and GDS to ARS | Credit Card/Banking |
| Credit Card Authorisation Result | Credit Card/Bank to ARS | Credit Card/Banking |
| Update Tickets database | ARS to Database | Credit Card/Banking |
| Update Inventory database | ARS to Database | Credit Card/Banking |
| Update DCS database | ARS to Database | Credit Card/Banking |

Note: Client activities that are listed in the Table 1 are also related to Travel Agents and other third parties like GDS as they perform more or less the same activities in relation to ARS.

**Details where data/information is stored and returned from within the system.**

The data is stored in one main database, real time processing engaged. Fully integrated database are easy to use for any user (customers, reservations, check-in, reporting, inventory control and management functions everyone is on the same sheet).

Databases can produce eternal or provisional locations for storing data. A Database system is designed to convert data to different desire formats so it can communicate through ARS with other similar types of external systems.

This ARS consists of PNR and tickets database, Inventory database and DCS database.

* PNR and tickets database is connected to all major Global Distribution Systems (GDS). This allows ARS to be united with all related systems and all bonded travel agents.
* Inventory database sends and receives availability status data to and from other database systems to ARS. Sent and received information is related to the number of seats available in each booking class.
* DCS (Departure control system) database make possible to ARS to verify who has a valid reservation on a flight. Also DCS is used to enter and update reservation information required by customs or border security agencies.

**Purpose**

The purposes of our assignment were to research relevant data and then transform them into an illustration of our Airline Reservation System. The design of our ARS is easy to read and understand as we have constructed and implemented three levels of DFDs (Data Flow Diagrams). Moreover, Table 1 details the transactions/activities carried out by the ARS, making it as simple to understand as possible. The DFDs and table track the entire string of most important processes and data flow, which run in both pathways and therefore internally and externally.

# Bibliography

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