DATABASE MANAGEMENT PROJECT

DELTA AIRLINES

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Cover Page

Academic Integrity statement signed by all team members:

"In preparing this assignment our team has observed the requirements of the UNCC Code of Student Academic Integrity. The submitted deliverables are entirely the work of our team."

Names	Roles & Responsibilities	Sign here to show that you have read have complied to the UNCC Academic Integrity
Gabriella Lobo	Technical Project Manager; Created ERD diagram and elements, delegated responsibilities within team	*Gabriella Lobo*
Blake Hudson	Graphic Designer: Facilitated in the making of ERD diagram	Blake Hudson
Andrew Peloso	Database Designer; Created simplified data dictionary	Andrew Peloso
Tori Moss	Database Administrator; Facilitated in the making of ERD diagram, designated attributes to entities and identified relationships	Tori Moss
Luke Nissen	Database Designer; Created business rules and simplified data dictionary	Luke Nissen
Jeffrey Armah	Database Specialist	Jeffrey Armah

Relevant files:

File Name	Description
[file name]	Access database
[file name]	Visio or ER Assistant diagrams
Optional	

Version control:

Version	Changes

Contents

Part I. Database Initial Study

About the Model Company

Delta Airlines is a major American airline that transports passengers and cargo. With their headquarters in Atlanta, Georgia, Delta has grown from a crop dusting company, into one of the most well-known and respected airlines in the industry. To successfully evolve into an industry giant, it takes time, grit, and the greatest resource for any airline, their people. In this business proposal, we will display why Delta Airlines could use a database to assist in hiring and management of their greatest resource, the employees.

Problems and Constraints

The hiring process for Delta airlines includes many different constraints and challenges. As you would assume for any business or company, especially one that requires very professional workers on a daily basis. Among those problems include: Finding quality workers, initial screening, and the interviewing process as a whole. The first problem you may encounter when trying to find people to hire, would be to get the word out there about the opening. It is important to put your job opening in the correct places to not only find the right applicants but also find a good number of them as well. The key is to get people interested, whether that is using benefits, pto or good pay; we need to get people interested in the future they could have with the company. This takes research, studying, and surveys to find the correct appeal and marketing design. Among the biggest challenges of the application process is finding quality candidates.

There are many ways companies can try and verify they are getting quality candidates for their interview process. One way is to be connected to an institution or university that will send applicants our way, who may be interested in a role we have available. This is the biggest concern because of how much it can affect the business, with poor workers the quality of what you present the guest goes down. Quality candidates and getting the message out to the public are some of the biggest problems when it comes to the hiring process, but also among the constraints is the hiring process in general. Aside from problems, there are plenty of constraints that lie within. For one, the whole process is vigorous and lengthy. Leading to more time being lost in the process and more strain being put on upper management who should be focusing more on present day-to-day operations.

Another constraint is the time commitment. To not only get good candidates but to make good workers is a whole other process. You can spend all the time getting a good candidate, but the onboarding process and training to get them ready to work is a whole other issue itself that takes valuable time away.

Project Objectives and Business Needs

Delta hiring process involves an evaluation of potential candidates that fit with Delta's culture and values their ability to perform job specific tasks and their potential to contribute to the company's success, through core competencies like customer service, teamwork, and operational efficiency. The hiring process uses a variety of methods, to achieve these methods a

skill assessment, adaptability, a cultural fit to identify if a candidate aligns with core values which focus on integrity, care, resilience, and servant leadership. The process includes virtual job-tryouts, on-demand and in- person interviews that help analyze and test the candidates communication and problem abilities, solving all to predict job performance to identify candidates that will embody Delta.The business needs to make the application process simpler for the potential candidates. So that it could be less time consuming.

Enhance their communication skills throughout the hiring process to ensure that the candidates and delta are transparent of what the job details are and if the candidate is honest about their skills as well. This goes along with them needing to make sure that the job description is clear and specific on the application so that the right candidates apply for the job. Some candidates also want Delta to offer more support throughout the hiring process. If Delta adapts to the job market it could create an efficient and effective hiring process that could help attract more candidates.

Scope and Boundaries

Delta's hiring process includes online interviews, online applications, and talent assessments. The application process varies for different positions. For pilots they participate in a panel interview competing for the job. For flight attendants they do on demand interviews which is recording a video to pre-set questions. After an applicant gets hired they undergo background checks and drug tests which is followed by training. Delta may gather the following information which we will use for our tables: age, gender, job experience, address, ethnicity, application number, full name, date of birth, veteran status, and disability status.

Part II. Database Initial Study

Database initial study report (5 pages max) plus appendices for

2.1 business forms used currently for data capture/entry

2.2 business reports

2.3 interview notes (optional – if you develop a database for an actual organization

Part III. Database Design

Business Rules

1. Candidate and Applications
    a. Each candidate can apply to many jobs, but only once per position.
    b. Candidates must upload a resume before submitting an application.
    c. Each application belongs to one candidate and one job position.

2. Job Positions and Departments

    a. Each department can have many job positions.
    b. Each job position must include requirements and belongs to one department.

  c. Each job position can receive many applications.
  d. A recruiter manages job positions within their department.

3. Interviews and Assessments

  a. Each application can have multiple interviews and assessments.
  b. Each interview is linked to an application and may include many interviewers through an interview panel.
  c. Each assessment (test or exam) is linked to one application.

4. Offers and Hiring

  a. Each application can receive one or more job offers, but only one active offer at a time.
  b. Each application can receive one or more job offers, but only one active offer at a time.
  c. When an offer is accepted, onboarding starts automatically.

5. Background Checks and Onboarding

  a. Every candidate must pass a background check before onboarding.
  b. Each candidate can have one onboarding record per hire.
  c. Each onboarding includes training sessions that must be completed before status becomes *Completed*.

6. Documents

  a. Candidates can upload multiple documents (resume, ID, certificates).
  b. Documents must be reviewed and approved before the candidate starts training.

Normalized ERD

Simplified Data Dictionary

Table Name	Attribute	Description
Candidate-1NF	Candidate_ID (FK)	Unique number given to candidates
2NF	Name	Name of applicant

2NF	Email	Email address if applicant
2NF	Phone	Phone number of applicant
2NF	Address	Home of the applicant
3NF	Resume_Link	Website link to get to applicants resume
3NF	Application_Date	Time application was filled out
Job_Position- 1NF	Position_ID	Unique number given for each position
2NF	Title	Specific job they are applying for
1NF	Department_ID	Unique number given for section of company
2NF	Location	Place they will be working
2NF	Salary_Range	Amount of money possible for hirees
2NF	Posting_Date	Time the job was posted
3NF	Closing_Date	Final date available for applying
Application- 1NF	Application_ID(PK)	Unique number given for each application
1NF	Candidate_ID(FK)	Unique number given for each candidate
1NF	Position_ID(FK)	
2NF	Status	Current state of employees hiring

3NF	Submission_Date	Time application is due
Recruiter- 1NF	Recruiter_ID (PK)	Unique number given to recruiter
2NF	Name	Name of Recruiter
2NF	Department	Department Recruited For
2NF	Phone	Recruiter Office Phone#
2NF	Email	Recruiter Email
Interview- 1NF	Interview_ID (PK)	Unique number given for interview
1NF	Application_ID (FK)	Application, tied to interview
2NF	Date	Date of Interview
2NF	Type	(Phone, Virtual, In-Person)
3NF	Feedback	Feedback Given
3NF	Result	Yes, No, Waitlisted
Interviewer- 1NF	Interviewer_ID (PK)	ID of employee who conducted interview
2NF	Name	Name of Interviewer
2NF	Department	Department they reside
2NF	Role	Role of Interviewer
2NF	Contact_Info	How to contact interviewer
Interview_Panel- 1NF	Panel_ID (PK)	ID tied to panel
1NF	Interview_ID (PK)	ID for interview
1NF	Interviewer_ID (FK)	ID for Interviewer
Assessment- 1NF	Assessment_ID	Unique number given for assessment

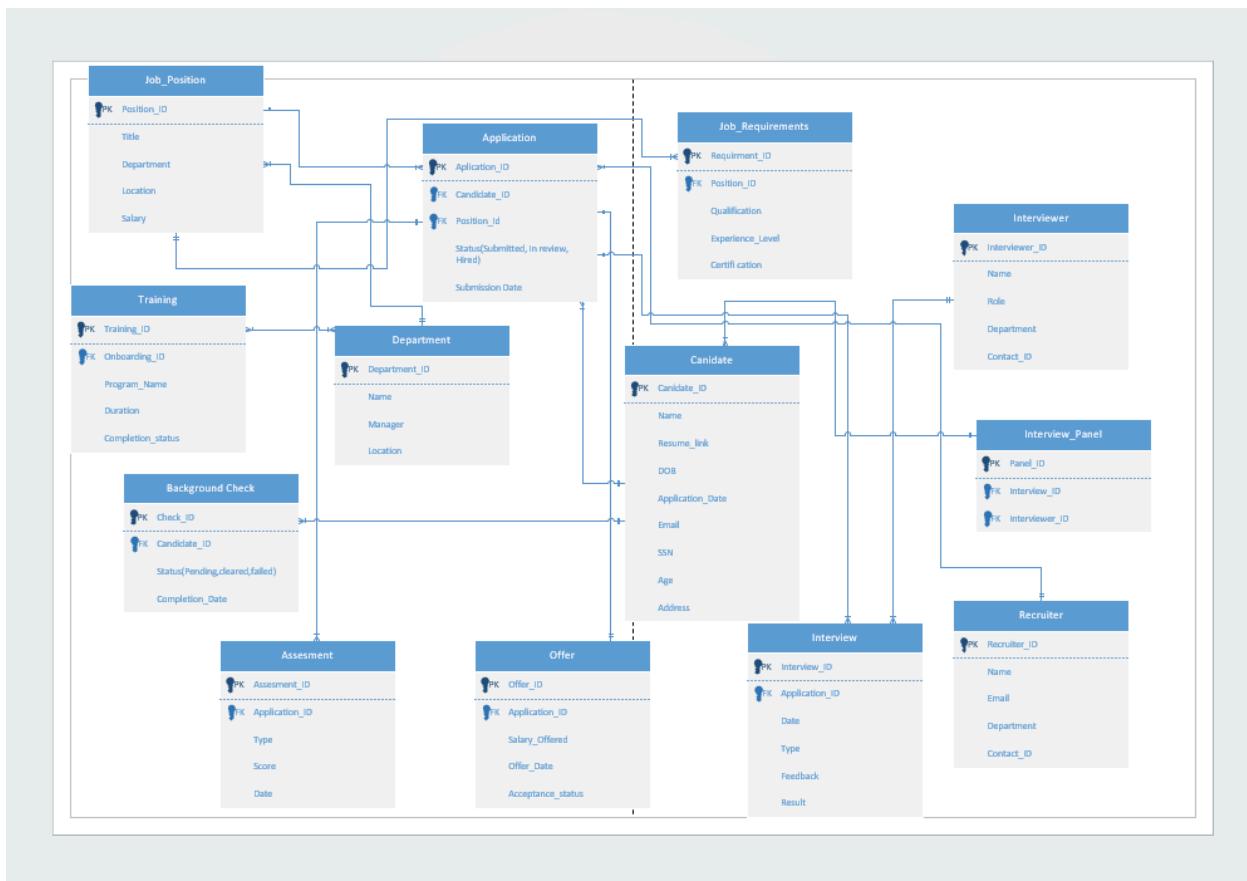| 1NF	Application_ID (FK)	ID for Application
2NF	Type	Video call, phone, In-person
2NF	Score	How well applicant did
2NF	Date	The Interview date
Offer- 1NF	Offer_ID	Unique number given with job offer
1NF	Application_ID (FK)	ID on Application
2NF	Salary_Offered	Money given in job offer
2NF	Offer_Date	Time the offer was sent
3NF	Acceptance_Status	Whether the employee accepted the job invite
Background_Check- 1NF	Check_ID	Unique number given for each background check
1NF	Candidate_ID (FK)	ID attached to candidate
2NF	Status	Pending, Clear, Failed
3NF	Completion_Date	Date of Completion
Onboarding- 1NF	Onboarding_ID (PK)	ID for Onboarding
1NF	Candidate_ID (FK)	ID attached to candidate
2NF	Start_Date	Date of Start of Onboarding
3NF	Orientation_Session	Date and Time of Session
3NF	Status	Pending, Accepted, Etc
Department- 1NF	Department_ID	Unique number given for each department
2NF	Name	Name of department

2NF	Location	Location of department
2NF	Manager	Person who manages department
Job_Requirements- 1NF	Requirement_ID	Unique number given to job requirements
1NF	Position_ID	Unique number given for each job position
2NF	Qualification	Requirements to get job
2NF	Experience_Level	Amount of experience applicant has
2NF	Completion_Status	Status of training employee
3NF	Certification	Applicants
Training	Program_Name	Program that is training employee
2NF	Duration	Amount of time taken to train employee
2NF	Completion_Status	Whether or not the training is finished
Document- 1NF	Document_ID	Number given to document to differentiate
1NF	Candidate_ID	Unique number given to candidates
2NF	Type	Type of document
3NF	Upload_Date	Date when documents were uploaded

Notes explaining design decisions and assumptions

- The initial list of attributes was heavily demoralized, with concepts like offers, training, and documents grouped incorrectly. The primary design decision was to normalize this structure by separating each distinct concept into its own logical

table. For example, tables like "Offer-1NF," "Background_check-1NF," and "Document-1NF." These standard practices helped reduce data redundancy and continue to improve consistency throughout the data.

- To connect these tables, foreign keys were inferred; for example, an "Offer" record must be linked to a specific "Application," so an "Application_ID" was added to the Offer table. Similarly, a Department table was created because both Job_Position and Recruiter referenced a department, avoiding the need to store department names as text in multiple places.

- Other assumptions were made for flexibility and simplicity. The "Resume_Link" in the Candidate table was replaced with a more flexible "Document" table to store various file types like resumes, cover letters, and portfolios. To manage the relationship where one candidate can take many training courses (and a course can be taken by many candidates), a many-to-many junction table named "Training" was created. For simplicity, this design assumes only one interviewer per interview and lists job qualifications as simple text fields, though a more complex system could use junction tables for these as well. Furthermore, a dedicated interviewer table was created to separate the *person* from the *event*. This avoids redundancy, as one employee, like an "Engineering Manager," can conduct many interviews across different applications. The Interview table then simply links to the Application and the Interviewer, tracking the details of that specific meeting.

- Finally, status fields were intentionally placed in multiple tables like Application, Offer, Background_Check, and Onboarding. This design allows each part of the hiring process to be tracked independently. For example, an application's status can be "Offer Made" while the offer's acceptance status is "Pending" and the background check's status is "In Progress," giving a much more detailed view of the candidate's journey.

Part IV. Implementation and Loading

This part is done in MS Access. Please see the relevant file.

Appendices

Business Forms

Employee Information Form

Personal Information

Name

First Name	Last Name

Address

Street Address

Street Address Line 2

City	State / Province

Postal / Zip Code

Phone Number	**Home Phone Number**
(000) 000-0000	(000) 000-0000

Email	**Birthday**
	MM-DD-YYYY
example@example.com	Date

Please upload your photo

⬆
Browse Files
Drag and drop files here

Next

Name	DOB	Email	Address	Experience (yrs)	SSN	Age	Phone Number	Gender
John Carter	1985-03-12	jcarter85@example.com	123 Oak St, Atlanta, GA	12	512-45-6789	40	(404) 555-1290	M
Sarah Mitchell	1990-07-25	smitchell90@example.com	88 Pine Rd, Dallas, TX	9	412-89-2234	35	(214) 555-8843	F
Kevin Brown	1978-11-02	kbrown78@example.com	456 Maple Ave, Denver, CO	18	301-22-9876	46	(303) 555-6677	M
Emily Johnson	1987-04-18	ejohnson87@example.com	92 Birch Ln, Miami, FL	11	221-11-6754	38	(305) 555-9081	F
Michael Rodriguez	1995-09-14	mrodriguez95@example.com	10 Cedar Dr, Phoenix, AZ	5	654-77-1112	30	(602) 555-3421	M
Olivia Smith	1983-01-30	osmith83@example.com	77 Aspen Ct, Chicago, IL	15	332-66-9233	42	(312) 555-2109	F
James Lee	1992-05-21	jlee92@example.com	59 Spruce St, Seattle, WA	7	541-88-7654	33	(206) 555-7782	M
Sophia Davis	1989-12-05	sdavis89@example.com	84 Elm Cir, Boston, MA	10	222-44-9988	35	(617) 555-9911	F
Daniel Harris	1981-02-11	dharris81@example.com	120 Willow Dr, Austin, TX	20	309-55-4456	44	(512) 555-3030	M
Mia Gonzalez	1993-08-19	mgonzalez93@example.com	33 Palm Blvd, Tampa, FL	8	410-33-6741	32	(813) 555-6423	F
Ethan Walker	1986-06-27	ewalker86@example.com	17 Cypress Ave, Portland, OR	12	288-77-1234	39	(503) 555-7745	M
Isabella Martinez	1991-03-08	imartinez91@example.com	67 Vine St, Los Angeles, CA	9	423-19-6655	34	(213) 555-4432	F
William Moore	1984-09-29	wmoore84@example.com	81 Olive Rd, San Diego, CA	14	367-45-9812	41	(619) 555-8733	M
Ava Thompson	1996-12-22	athompson96@example.com	95 Bay St, Orlando, FL	4	554-61-3321	28	(407) 555-2876	F
Benjamin Scott	1979-07-16	bscott79@example.com	12 Birchwood Ln, Detroit, MI	19	401-77-9982	46	(313) 555-8920	M
Charlotte White	1988-05-10	cwhite88@example.com	73 Hillcrest Dr, Raleigh, NC	11	215-34-8790	37	(919) 555-1129	F
Alexander Young	1994-11-07	ayoung94@example.com	64 River Rd, Nashville, TN	6	622-55-2341	31	(615) 555-7399	M
Amelia Clark	1982-04-03	aclark82@example.com	89 Oakridge Ave, Columbus, OH	17	478-12-8763	43	(614) 555-4822	F
Henry Hall	1997-09-15	hhall97@example.com	20 Meadow Ln, Kansas City, MO	3	319-99-4522	28	(816) 555-9981	M
Grace Allen	1980-02-24	gallen80@example.com	11 Summit St, Minneapolis, MN	21	230-54-1287	45	(612) 555-6621	F
Matthew King	1985-10-01	mking85@example.com	43 Glen Rd, Charlotte, NC	13	502-77-9012	39	(980) 555-4400	M
Harper Wright	1998-06-06	hwright98@example.com	27 Valley Dr, Boise, ID	2	658-45-5533	27	(208) 555-1977	F
Christopher Baker	1987-12-13	cbaker87@example.com	78 Ridge Rd, Salt Lake City, UT	12	278-39-6422	37	(801) 555-2211	M
Ella Green	1992-08-02	egreen92@example.com	55 Woodland Dr, Richmond, VA	7	499-21-7745	33	(804) 555-3819	F
David Nelson	1983-11-20	dnelson83@example.com	102 Brook St, Omaha, NE	15	344-66-9021	41	(402) 555-1182	M

Business Reports