

PHASE 2: SUBMISSION CHECKLIST/SIGN-OFF SHEET**GROUP #: 16****GROUP NAME: Little Bobby Tables**

Deliverables:

- ☒ Requirements Description - Includes enterprise/database overview
- ☒ ER Diagram - Includes min/max specifications
- ☒ Constraints not in ER schema
- ☒ Relational Schema with Referential Integrity, each table should have its primary key underlined
- ☒ Functional Dependencies and Minimal Universal Key, Universal Schema including all attributes
- ☒ Transaction Processing Needs: categorized with brief description
 - ☒ Forms
 - ☒ Reports
 - ☒ Queries

Assessment:

- ☐ Group Status Report

By signing below, we, the members of Group #16, acknowledge that we have each fully reviewed the contents of this deliverable and certify its submission as unique.

Role	Printed Name	ASU Email	Signature
Phase Leader	Adam Brossman	Adam.Brossman@asu.edu	
Phase Recorder	Jack Fleitman	jfleitma@asu.edu	
Phase Checker	Ben Hatch	bjhatch1@asu.edu	
Tech. Advisor 1	Patrick Archer	Patrick.Archer@asu.edu	
Tech. Advisor 2	Michael Saul	mesaul@asu.edu	

CSE 412
Database Management
Microsoft Access Project
Phase 2 Deliverable

Due Date: October 7, 2018

Group No: 16

Group Name: Little Bobby Tables

Members: Patrick Archer
Adam Brossman
Jack Fleitman
Ben Hatch
Michael Saul

JOB APPLICATION SUBMISSION/REVIEWAL SOFTWARE (COMPANY)

TABLE OF CONTENTS

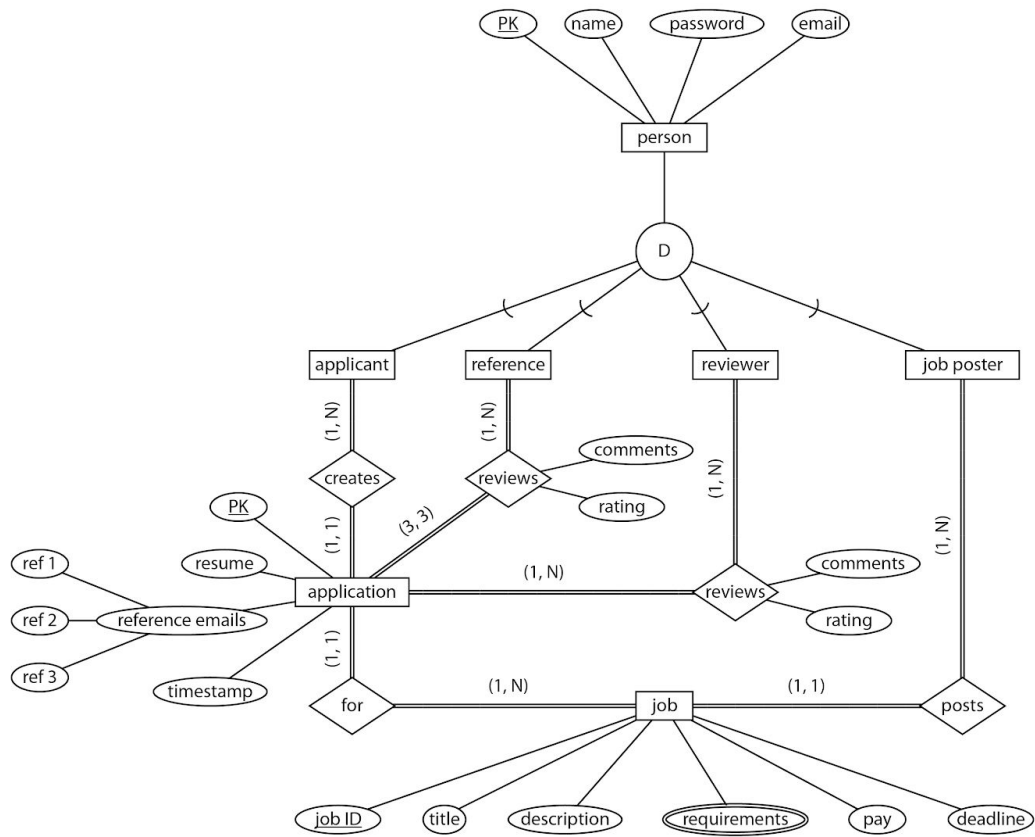
TABLE OF CONTENTS	2
REQUIREMENTS AND DESCRIPTION OF THE ENTERPRISE/DATABASE	3
ER DIAGRAM & CORRESPONDING SPECIFICATIONS	5
ER Diagram Uncaptured Constraints	6
Relational Schema with Referential Integrity	7
Functional Dependencies	8
Universal Schema	8
Processing Needs	10
Forms	10
Reports	11
Queries	12
GROUP STATUS REPORT	13

REQUIREMENTS AND DESCRIPTION OF THE ENTERPRISE/DATABASE

This Job Application System stores information about the applicants, references, reviewers, and job posters for a company's career website. The following data have been identified in the requirements collection and analysis phase and they are to be represented in the System.

- Users:
 - Applicants:
 - May apply for jobs without the use of a prior-made account
 - May create an account and view past applications
 - May apply to any number job listings, including a single job multiple times
 - Must apply for jobs using their name, email, resume, and references
 - Must attach information for 3 references per application
 - Applicants' References:
 - Will have an account created for them when they are marked as a reference by an applicant, after which, they are sent a temporary password
 - Must sign in to review applicant(s)
 - Can see the application on which they were marked as a reference
 - Cannot see reviewer ratings of an applicant, if they exist
 - Must rate the job applicant for each application
 - Can make comments about the applicant or the application
 - Can be associated with multiple applications
 - Reviewers:
 - Must have an account
 - Can see list of assigned applications
 - Can see all information related to applications assigned to them
 - Must rate the job applicant for each application
 - Can make comments about the applicant or the application

- Job Posters:
 - Must have an account
 - Can make job post listings for available job positions
 - Can modify listings for available job positions
 - Can delete listings for job positions
 - Can assign applications to reviewers for review
- Create a job application and application-review system such that:
 - Job Postings:
 - Contain a job id, title, requirements, description, pay, and deadline for applying to the job posting.
 - Application ratings:
 - Are on a scale of 1 (“worst”) to 5 (“best”)
 - Applications:
 - Are submitted by applicants
 - Contain the applicant’s name, email, resume, three references, and the timestamp at which the applicant submitted the application.
 - Can be viewed by reviewers and references (on a permission-basis)

ER DIAGRAM & CORRESPONDING SPECIFICATIONS

ER Diagram Uncaptured Constraints

The following is a list of constraints that are not captured by the ER diagram:

- An applicant cannot list themselves as a reference.
- An applicant cannot review their own application.
- An applicant is not required to specify a password (if it is null they cannot review submitted applications)
- Job Posters, Reviewers, and References must have accounts to do their respective actions.
- An application timestamp \leq it's job's deadline
- An application's ref 1 \neq ref 2 \neq ref 3
- $0 \leq$ reference rating ≤ 5
- $0 \leq$ reviewer rating ≤ 5
- Job pay ≥ 0
- Job deadline \geq current date
- Reviewers and References cannot make reviews for deleted job postings.
- Reference password \neq null
- Reviewer password \neq null
- Job poster password \neq null

Relational Schema with Referential Integrity

person							
<u>personPK</u>	name	password	email	role			
application							
<u>applicationPK</u>	resume	ref 1	ref 2	ref 3	timestamp	personFK	jobFK
job							
<u>job ID</u>	title	description	pay	deadline	posterFK		
requirementsTable							
<u>job ID</u>	requirements						
reviews							
reviewerFK	applicationFK	comments	rating				

Functional Dependencies

Fd1: personPK -> personPK, name, password, email, role

Fd2: applicationPK -> applicationPK, resume, ref1, ref2, ref3, timestamp, applicantFK, jobFK

Fd3: jobID -> jobID, title, description, pay, deadline, posterFK

Fd4: jobID -> jobID, requirement

Fd5: reviewerFK, applicationFK -> reviewerFK, applicationFK, comments, rating

Fd6: email -> personPK

Universal Schema

Universe (personPK/personFK/posterFK/reviewerFK, name, password, email/ref1/ref2/ref3, role, applicationPK/applicationFK, resume, timestamp, jobFK/jobID, title, description, pay, deadline, requirements, comments, rating)

The minimal universal key is {personPK, applicationPK}

The following attribute closure of the minimal universal key shows that the minimal universal key can be used to derive all attributes in the universal schema:

Given	personPK, applicationPK
FD1	name, password, email, role
FD2	resume, ref1, ref2, ref3, timestamp, applicantFK, jobFK
FD3	title, description, pay, deadline, posterFK
FD4	requirement
FD5	comments, rating

The universal key (personPK, applicationPK) is minimal because no subset of it forms a key of the universal schema:

personPK is needed to determine name, password, email, role (FD1).

applicationPK is needed to determine resume, ref1, ref2, ref3, timestamp, applicantFK, jobFK (FD2).

Processing Needs**Forms**

The following table summarizes the forms within the database:

<u>Form Name and Description</u>	<u>Relations Accessed</u>	<u>Explicit Constraints Checked</u>
Job		
<u>Post Job</u> Allows job posters to post jobs for applicants to apply to.	<ul style="list-style-type: none"> • Job (insert) 	Only people with the role of job poster can make poster.
<u>Apply to Job</u> Allows applicants to apply to jobs.	<ul style="list-style-type: none"> • Job (read) • Application (insert) 	Only people with the role of applicant can apply to jobs.
Application		
<u>Score and Comment Application</u> Allows a reference or a reviewer to score and comment an application.	<ul style="list-style-type: none"> • Job (read) • Reviews (insert/update) • Application (read) 	Only people with the role of reference or reviewer can score and comment on applications.
<u>Assign Reviewer</u> Allows a job poster to assign a reviewer to a specified application.	<ul style="list-style-type: none"> • Job (read) • Reviews (insert) 	Only people with the role of job poster can assign job poster.

Reports

The following table summarizes the reports within the database:

<u>Form Name and Description</u>	<u>Relations Accessed</u>
Job	
<u>View Jobs</u> Report content varies by the user: Job posters can view all jobs that they have posted. Applicants can view all jobs that have been posted.	<ul style="list-style-type: none"> • Person • Job • Reviews
<u>View Applications</u> Report content varies by the user: Job posters can view all applications for their job posting. Reviewers can view all application assigned to them. References can view all applications on which they are included. Applicants (if they have an account) can view their submitted applications.	<ul style="list-style-type: none"> • Person • Application • Job • Reviews

Queries

This table summarizes all the queries within the database:

<u>Query Name</u>	<u>Description</u>	<u>Output</u>	<u>Relations Accessed</u>
Get Jobs Applied For	Allows an applicant to view all jobs that they have applied to.	<ul style="list-style-type: none"> • Job title • Job Description 	<ul style="list-style-type: none"> • Person • Application • Job
Get Application by Private Key	Allows a specific application to be found, so that it can be viewed	<ul style="list-style-type: none"> • Job FK • Application Resume • Application PK 	<ul style="list-style-type: none"> • Application
View Applications Greater Than or Equal to Specified Reference Rating	Allows for a job poster to view applications that have a minimum rating value specified by the job poster making the query.	<ul style="list-style-type: none"> • Resume • Ref1 • Ref2 • Ref3 • Rating 	<ul style="list-style-type: none"> • Application • Reviews
View Jobs by Title, Pay, and/or Job ID	Allows applicants to search for jobs by any combination of title, pay, and job ID.	<ul style="list-style-type: none"> • Job ID • Title • Description • Pay • Deadline • Requirements 	<ul style="list-style-type: none"> • Job • Requirements Table
Find Reviewers by Number of Currently Assigned Applications	Allows a recruiter (job poster) to find all reviewers who have less than a specified number of assigned applications. So that reviewers can be found to review more applications.	<ul style="list-style-type: none"> • Reviewer FK • Name 	<ul style="list-style-type: none"> • Person • Reviews

GROUP STATUS REPORT

Group #: 16

Group Name: Little Bobby Tables

Phase #: 2

By signing below, we, the members of Group #16, acknowledge that we have each reviewed the contents of this group status report.

Role	Printed Name	ASU Email	Signature
Phase Leader	Adam Brossman	Adam.Brossman@asu.edu	
Phase Recorder	Jack Fleitman	jfleitma@asu.edu	
Phase Checker	Ben Hatch	bjhatch1@asu.edu	
Tech. Advisor 1	Patrick Archer	Patrick.Archer@asu.edu	
Tech. Advisor 2	Michael Saul	mesaul@asu.edu	

Dates and Attendance Records of All Group Meetings During Phase 2:

Date	Time	Location	Attendance
10/7/2018	12:00 pm - 2:20 pm	Online	Adam, Ben, Michael
10/10/2018	7:30 pm - 8:30 pm	Online	Patrick, Adam, Jack

Overview of Progress as of Phase 2 Due Date (October 1th, 2018):

The Phase 2 Deliverable contains the content from the Phase 1 Deliverable in addition to a relation schema with referential integrity, functional dependencies, a universal schema with the minimal universal key, and updated processing needs.

Contributions of Group Members as of Phase 2 Due Date (October 1th, 2018):

- Phase Leader (Adam Brossman)
 - Phase 2 deliverable formatting
 - Assisted in defining relational schema
 - Assisted in defining universal schema and minimal universal key
 - Assisted in defining universal key derivations
- Phase Recorder (Jack Fleitman)
 - Assisted in defining key derivations
 - Explanation of universal key derivation
 - Assisted in defining query outputs and relations accessed
- Phase Checker (Ben Hatch)
 - Assisted in defining relational schema
 - Assisted in defining universal schema and minimal universal key
- Technical Advisor 1 (Patrick Archer)
 - Assisted in defining forms and linking corresponding relational schema
 - Assisted in defining reports and linking corresponding relational schema
 - Assisted in defining query relations accessed
- Technical Advisor 2 (Michael Saul)
 - Assisted in defining relational schema
 - Assisted in defining universal schema and minimal universal key