To: Whom It May Concern

From: Kyle Salitrik

Subject: Preliminary Scheduling Database Design

Date: September 09, 2017

Included in this document are figures of the tables that will be represented within the database system. Each table will be explained individually in full and it will be noted which tables it will be connected to. A relationship diagram depicting how all of the tables will be associated is attached on the last page. First up is the table for the employee information. Unless otherwise noted, all primary keys (denoted PK) will be numeric and generated by the database in consecutive order.

The employee table will store basic information like the employee's name, SSN, and phone number. It will also include the employee's start and end dates, as well as a flag depicting whether they are Full Time (true) or Part Time (false). Their pay rate can be entered as a decimal number (any pay bumps will be handled elsewhere) and their job will be displayed by selecting one of the 18 jobs that are currently in existence, along with a similar field for their job specialization. The home department can be filled in by using the department ID if it is wanted.

EMPLOYEE	
PK	EID
FK	Home Dept (DID)
CHAR	[50] First Name
CHAR	[50] Middle Name
CHAR	[50] Last Name
CHAR	[12] SSN
CHAR	[13] Primary Phone
CHAR	[13] Secondary Phone
TIME	Start Date
TIME	Left Date
BOOL	Full or Part Time
BOOL	Salary or Hourly
DBL	Pay Rate
ENUM	Job Category
ENUM	Job Specialization

As you may have noticed, the addresses were not handled in the employee table. In the case that the employee may have multiple addresses, this system allows you to store only as much information as needed for each employee. The address records store the associated employee's EID along with the standard address information.

ADDRESS	
PK	AID
FK	EID
CHAR	[50] Address 1
CHAR	[50] Address 2
CHAR	[50] City
CHAR	[50] State/Province
CHAR	[50] Country
CHAR	[50] Zip
CHAR	[50] Zip Extension

If an employee has relevant certifications, they can be linked to the employee by their EID within the certificate table.

CERTIFICATE	
PK	CID
FK	EID
CHAR	[50] Certification
CHAR	[50] Issued By
TIME	Awarded
TIME	Expires

As requested, each department will have the ability to denote their staffing requirements by including a minimum and maximum number of employees required. The department charge nurse will also be linked to the department using their EID. The table will also record the number of beds in order to keep track of the ratio of staff to patients for that particular department utilizing a view within the database.

DEPARTMENT	
FK	Charge Nurse EID
PK	DID
INT	Min Staff
INT	Max Staff
INT	Beds

With all of the necessary background tables out of the way, the following tables will concern all of the actual scheduling matter, starting with the table of weeks. This table simply lists the week's start and end dates in order to organize the shifts for that week.

WEEK	
PK	**WID**
TIME	Start Date
TIME	End Date

The shift table will become the most important table for creating views of the week's assignments. Each employee will be assigned multiple shifts per week, one for each shift they are scheduled to work. The shift requires the EID for the employee, the DID for the department and the WID of the week to show when, where and which employee will be working that shift. The day of the week will be selected through enumeration, as well as which shift out of the specified shifts they will be working for that day.

The status field will be used to denote one of the following: Called-in, Called-off, Requested-off, Requested-shift, none. In the case of schedule request conflicts, seniority will be used to determine which employee gets the shift. The pay increase is a decimal number (default of 1.00) indicating any shift differential the employee may receive from working a special shift (getting called in, nights or weekends) and will be applied to their pay rate when calculating the hours worked throughout the week.

SHIFT	
PK	SID
FK	EID
FK	DID
FK	WID
ENUM	Day of Week
ENUM	Shift
ENUM	Status
DBL	Pay Multiplier

Finally, the break table will be associated with the shift the employee is currently working. When employees clock out and clock in, the times will be recorded and the total time will be calculated and shown when a shift report is generated.

BREAK	
PK	BID
FK	SID
TIME	Time Out
TIME	Time In

When adding shifts for each employee, a two week period is examined and checked to see if they already have 12 shifts scheduled. If so, they will not be allowed to have any more shifts scheduled for that period. A similar procedure follows for adding shifts to a particular week; that week is checked to see if two 8-hour shifts or one 12-hour shift is already assigned to that employee for the day in question.

Summaries will be generated upon request to the database for displaying a full week's schedule. Views will also be implemented to show which full time employees that have less than 5 shifts for a given week, which departments are under- or over-staffed and to generate a payroll for all employees based on their pay rates, multiplied by their shift pay increase.

Sincerely,

Kyle Salitrik

BREAK

Key	Attribute	Type
PK	BID	
FK	SID	
	Time Out	TIME
	Time In	TIME

SHIFT

Key	Attribute	Type
PK	SID	
FK	EID	
FK	DID	
FK	WID	
	Day of Week	ENUM
	Shift	ENUM
	Status	ENUM
	Pay Multiplier	DBL

DEPARTMENT

Key	Attribute	Type
FK	Charge Nurse EID	
PK	DID	
	Min Staff	INT
	Max Staff	INT
	Beds	INT

WEEK

Key	Attribute	Type
PK	WID	
	Start Date	TIME
	End Date	TIME

EMPLOYEE

Key	Attribute	Type
PK	EID	
FK	Home Dept (DID)	
	[50] First Name	CHAR
	[50] Middle Name	CHAR
	[50] Last Name	CHAR
	[12] SSN	CHAR
	[13] Primary Phone	CHAR
	[13] Secondary Phone	CHAR
	Start Date	TIME
	Left Date	TIME
	Full or Part Time	BOOL
	Salary or Hourly	BOOL
	Pay Rate	DBL
	Job Category	ENUM
	Job Specialization	ENUM

CERTIFICATE

Key	Attribute	Type
PK	CID	
FK	EID	
	[50] Certification	CHAR
	[50] Issued By	CHAR
	Awarded	TIME
	Expires	TIME

ADDRESS

Key	Attribute	Type
PK	AID	
FK	EID	
	[50] Address 1	CHAR
	[50] Address 2	CHAR
	[50] City	CHAR
	[50] State/Province	CHAR
	[50] Country	CHAR
	[50] Zip	CHAR
	[50] Zip Extension	CHAR