MySQL Database (JPA Entities)

Needed additions listed as bullet points

Notes:

* enums will be changed to store as int values
* enums on new/edit forms will be dropdowns
* additions/changes in next iteration listed as bullet points
* form validations will go in next iteration
* @Id specifies a primary key
* @GeneratedValue means it will be auto generated by the db
* @Column specifies db column constraints
* @ManyToOne specifies there will be a foreign key to that table

### **Employee (table = employees)**

* form (newE): admin only
* form (register): specific to user by email link
* form (editE): specific to logged in user
* form (adminEditE): editE + admin only fields

@Id @GeneratedValue() int empId; INT(11)

* should create 5 digit ids

@Column(length = 32, unique = true, nullable = false) String username; VARCHAR(32)

@Column(length = 32, nullable = false) String password; VARCHAR(32)

* should be stored as hash instead of plain text
* form validation: max characters, must contain special/number/capital

@Column(length = 64, nullable = false) String email; VARCHAR(64)

* form validation: must be valid format (@)

@Column(length = 32, nullable = false) String firstname; VARCHAR(32)

@Column(length = 32, nullable = false) String lastname; VARCHAR(32)

@Column(length = 1, nullable = false) int permissionLevel; INT(11)

* should be enum PermissionLevel { default, admin, owner } stored as int

@Column(length = 120, nullable = false) String address; VARCHAR(120)

@Column(length = 64, nullable = false) String city; VARCHAR(64)

@Column(length = 32, nullable = false) String state; VARCHAR(32)

* should be enum State { AL, AK... } stored as int

@Column(nullable = false) LocalDate hireDate; DATETIME

* admin only

@Column(nullable = false) boolean active; BIT(1)

* should be default 1, might change to enum
* admin only

@Column(length = 1, nullable = false) int payPeriod; INT(11)

* should be enum PayPeriod { weekly, biweekly } stored as int
* admin only

@OneToMany(mappedBy="employee") List<ProjectEmployee> projemps;

@OneToMany(mappedBy="employee") List<Timesheet> timesheets;

* Additional:
  + enum registrationStatus { active, locked } //system only
  + registrationHash //for email registration link //system only
  + LocalDate endDate //has value if active is false

### **Project (table = projects)**

* form (new): admin only

@Id @GeneratedValue() int projectId; INT(11)

* should create 9 digit ids

@Column(nullable = false) BigDecimal billingRate; DECIMAL(19,2)

@Column(length = 64, nullable = false) String name; VARCHAR(64)

@Column(length = 64, nullable = false) String clientName; VARCHAR(64)

@Column(length = 64, nullable = false) String clientLocation; VARCHAR(64)

@ManyToOne @JoinColumn(name = "vendor\_id") private Vendor vendor; FK INT(11)

* db type will match 5 digit id
* form: dropdown populated by vendor list w/ option to create new

@OneToMany(mappedBy = "project", fetch = FetchType.EAGER, cascade = CascadeType.ALL) List<ProjectEmployee> projemps;

### **Project-Employee (table = projects\_employees)**

@Id @GeneratedValue(strategy = GenerationType.IDENTITY) int projectEmployeeId; INT(11)

@Column(nullable = false) BigDecimal payRate; DECIMAL(19,2)

@Column(nullable = false) LocalDate dateStarted; DATETIME

@Column(nullable = false) LocalDate dateEnded; DATETIME

@ManyToOne @JoinColumn(name = "projectId") Project project; FK INT(11)

* db type will match 9 digit id

@ManyToOne @JoinColumn(name = "empId") Employee employee; FK INT(11)

* db type will match 5 digit id

@OneToMany(mappedBy = "projemp") List<ProjectTimesheet> projTimesheets;

### **Vendor (table = vendors)**

@Id @GeneratedValue(strategy = GenerationType.IDENTITY) int vendorId; INT(11)

* should create 5 digit ids

@Column(length = 32, nullable = false) String name; VARCHAR(32)

@Column(length = 50, nullable = false) String primaryEmail; VARCHAR(50)

* form validation: must be valid format (@)

@Column(length = 64, nullable = false) String contactName; VARCHAR(64)

@Column(length = 50, nullable = false) String address; VARCHAR(50)

@Column(length = 16, nullable = false) String city; VARCHAR(16)

@Column(length = 2, nullable = false) String state; VARCHAR(2)

* should be enum State

@Column(length = 20, nullable = false) String phone; VARCHAR(10)

* should not include dashes in db, length 10
* form: dashes should be rendered

### **Timesheet (table = timesheets)**

@Id @GeneratedValue int timesheetId; INT(11)

@ManyToOne @JoinColumn(name = "emp\_id") Employee employee; FK INT(11)

* db type will match 5 digit id

@Column(nullable = false) LocalDate weekStarting; DATETIME

@Enumerated(EnumType.STRING) TimesheetStatus status; VARCHAR(255) @OneToMany(mappedBy="timesheet", fetch = FetchType.EAGER, cascade = CascadeType.ALL) List<ProjectTimesheet> projTimesheets;

@OneToMany(mappedBy="timesheet", cascade = CascadeType.ALL) List<Paystub> paystubs;

### **ProjectTimesheet (table = project\_timesheets)**

@Id @GeneratedValue int projectTimesheetId; INT(11)

@Column(nullable = false) int projectId; NOT FK INT(11)

* db type will match 9 digit id

@Column(length = 164) String imageUrl; VARCHAR(164)

@Column(nullable = false) LocalDate weekStarting; DATETIME

@ManyToOne @JoinColumn(name = "timesheet\_id") Timesheet timesheet; FK INT(11)

@ManyToOne @JoinColumn(name = "project\_employee\_id") ProjectEmployee projemp; FK INT(11)

@OneToMany(mappedBy="projTimesheet", fetch = FetchType.EAGER, cascade = CascadeType.ALL) List<TimesheetRow> weeks;

@ManyToMany(cascade = CascadeType.ALL) @JoinTable(name="PROJECTTIMESHEET\_INVOICE", joinColumns = @JoinColumn(name = "projectTimesheetId"), inverseJoinColumns = @JoinColumn(name = "invoice\_id")) List<Invoice> invoices;

### **TimesheetRow (table = timesheet\_rows)**

@Id @GeneratedValue(strategy = GenerationType.IDENTITY) int timesheetRowId; INT(11)

@Column(length = 1, nullable = false) int weekNo; INT(11)

@Column(length = 2, nullable = false) int hours1; INT(11)

* default all hours to 0

@Column(length = 2, nullable = false) int hours2; INT(11)

@Column(length = 2, nullable = false) int hours3; INT(11)

@Column(length = 2, nullable = false) int hours4; INT(11)

@Column(length = 2, nullable = false) int hours5; INT(11)

@Column(length = 2, nullable = false) int hours6; INT(11)

@Column(length = 2, nullable = false) int hours7; INT(11)

@ManyToOne @JoinColumn(name = "project\_timesheet\_id") ProjectTimesheet projTimesheet; FK INT(11)

### **Invoice (table = invoices)**

* form (new): admin only; specifies vendor and time period from dropdowns; there will be a method for seeing which vendors have not had invoices made for the recent pay period
* no edit form - only a view which is admin only
* most of the attributes are automatically generated from other tables

@Id @GeneratedValue int invoiceId; INT(11)

private int projectId; NOT FK INT(11)

* db type will match 9 digit id

private int vendorId; NOT FK INT(11)

@Enumerated(EnumType.STRING) InvoiceStatus status; VARCHAR(255)

@ManyToMany(fetch=FetchType.EAGER, mappedBy = "invoices", cascade = CascadeType.ALL) List<ProjectTimesheet> projTimesheets;

@Column(updatable = false, columnDefinition = "TIMESTAMP DEFAULT CURRENT\_TIMESTAMP") LocalDate createdDate; TIMESTAMP

@Column(nullable = false) BigDecimal rate; DECIMAL(19,2) //timesheet.projemp.project.pay\_rate

@Column(nullable = false) double totalHours; DOUBLE //sum(timesheet.no\_hours) over timesheet list

@Column(nullable = false) BigDecimal totalAmt; DECIMAL(19,2) //total\_hours \* rate

@Column(nullable = false) LocalDate periodStart; DATETIME

@Column(nullable = false) LocalDate periodEnd; DATETIME //pay period start and end (14/7 day interval)

@Column(nullable = false) LocalDate paymentDue; DATETIME // one month from period\_end

@Column(length = 64) String recruiter; VARCHAR(64)//from vendor.contact\_name

//from vendor

@Column(length = 64, nullable = false) String name; VARCHAR(64)

@Column(length = 120, nullable = false) String address; VARCHAR(120)

@Column(length = 64, nullable = false) String city; VARCHAR(64)

@Column(length = 64, nullable = false) String state; VARCHAR(64)

* should be enum State

@Column(length = 64, nullable = false) String phone; VARCHAR(64)

### **Paystub (table = paystubs)**

* no new/edit forms
* admin generate on the approve timesheet page
* employees can view all their own paystubs
* most of the attributes are automatically generated from other tables

@Id @GeneratedValue int paystubId; INT(11)

int empId; NOT FK INT(11)

* db type will match 5 digit id

int projectId; NOT FK INT(11)

* db type will match 9 digit id

int checkNo; INT(11)

@Column(updatable = false, columnDefinition = "TIMESTAMP DEFAULT CURRENT\_TIMESTAMP") LocalDate createdDate; TIMESTAMP

@Column(nullable = false) LocalDate periodStart; DATETIME

@Column(nullable = false) LocalDate periodEnd; DATETIME //pay period start and end (14/7 day interval)

@Column(nullable = false) LocalDate payDate; DATETIME //advice date (period end + 10?)

@Column(nullable = false) BigDecimal netPay; DECIMAL(19,2) //net pay same as amount of check //total - deductions

@Column(nullable = false) BigDecimal ytdNetPay; DECIMAL(19,2) //ytd\_gross - ytd\_deductions

@Column(nullable = false) BigDecimal total; DECIMAL(19,2) //federal taxable wages //sum(timesheet.no\_hours \* timesheet.projemp.pay\_rate) over timesheet list

@Column(nullable = false) BigDecimal ytdGross; DECIMAL(19,2) //previous paystub ytd\_gross + this.total

//from employee

@Column(length = 32, nullable = false) String firstname; VARCHAR(32)

@Column(length = 32, nullable = false) String lastname; VARCHAR(32)

@Column(length = 120, nullable = false) String address; VARCHAR(120)

@Column(length = 64, nullable = false) String city; VARCHAR(64)

@Column(length = 32, nullable = false) String state; VARCHAR(32)

* should be enum State

// may not be implemented default as 0

private BigDecimal ytdDeductions; DECIMAL(19,2)

private BigDecimal deductions; DECIMAL(19,2)

private BigDecimal federalTax; DECIMAL(19,2)

private BigDecimal stateTax; DECIMAL(19,2)

private BigDecimal ssTax; DECIMAL(19,2)

private BigDecimal medicareTax; DECIMAL(19,2)

private BigDecimal medInsurance; DECIMAL(19,2)

private BigDecimal a401k; DECIMAL(19,2)

private BigDecimal ytdFederalTax; DECIMAL(19,2)

private BigDecimal ytdStateTax; DECIMAL(19,2)

private BigDecimal ytdSsTax; DECIMAL(19,2)

private BigDecimal ytdMedicaretax; DECIMAL(19,2)

private BigDecimal ytdMedInsurance; DECIMAL(19,2)

private BigDecimal ytd401k; DECIMAL(19,2)

@ManyToOne @JoinColumn(name = "timesheet\_id") Timesheet timesheet; FK INT(11)