Line Up Contractors

Statement of Work

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Business Problems and Opportunities

Line Up Contractors is already a successful business but we believe that addressing their current problems and implementing cost effective solutions could significantly improve profitability. One of the biggest hurdles that they are currently dealing with is communication issues. Communication is essential not only for our client's internal operations but their customers' needs and goals. We plan to work together as a team with our client to put those needs and goals into a cohesive and actionable strategy. Additionally it's how we will generate revenue for our clients while ensuring that the customers do not experience buyer's remorse. Due to a lack of communication in the business projects are not always completed on time and employees are not on the same page when it comes to fulfilling expectations.

Another problem that the company encounters is keeping track of inventory. Their inventory changes constantly consequently, sales, new receipts, damaged goods, as well as theft could affect the materials in their stock. While it is tedious and time consuming, keeping track of it all in real time is one of the most important jobs in a successful business. Although Line Up Contractors uses Quickbook to track their inventory it is not updated regularly and has multiple databases. Accessing multiple databases to retain information about their inventory is very inefficient and has proven to affect sales at the company. In the past they have missed out on sales because they were not quick to figure out what they had in their inventory to complete a project and give their customers an estimated date for when the job would be done.

Project Scope

Job Request System:

As of now, Line Up Contractors does have a method of submitting a job request present on their website. Although this is the case, Line Up's management admitted that this was not a system they have ever relied on. Currently all of their job requests come via telephone call leading to potential missed calls or miscommunication. Our team would like to revamp and remodel how job requests are submitted, viewed, and accepted. Customers will have the ability to view, adjust, and submit their job request to the system. Customers will have the ability to input a request and describe the conditions for their desired job and describe how specific length of completion they would like for their project. Management will then have the ability to view, adjust, and approve the job requests. Following approval by both parties, a project manager will then visit the job site to create an official job contract once they have the chance to physically see exactly what they should be expecting to charge based on the determined labor and material cost. Once management approves a quote, we will send a quoted price back to customers to which they will be able to view it through their user account. If the customer agrees to the quoted price from management and a contract has been agreed upon, the customer will then also have the option to pay online using our system - the payment system will take different forms of payment including credit cards and paypal. Customers also have the ability to view the job status. In addition to this the system we plan to create will also have the capability to adjust inventory counts based on how much material the manager decides is needed for specific jobs. This will be very useful as it will keep management informed of when and what material or tools need to be purchased. The approved request can then be assigned to a labor crew, allowing them to only view the jobs assigned to them to be informed and prepare for the project. This feature will be very helpful in order to assign crews to jobs and to keep them informed. Finally, we believe this will help Line Up with their sales as more people will feel comfortable submitting requests online as opposed to a phone call.

Inventory:

Line Up Contractors currently has inefficiencies in regards to their inventory management. As of now management does not have a clear picture of what inventory they have or what inventory they may need. As a result, they find themselves unnecessarily spending money buying materials or tools for a job due to the fact that they did not know it was in their storage units. This may not be a significant expense the first time, but this was expressed to be a regular occurrence according to management. In order to solve this we would like to create a system where Line Up can track exactly how much or how little they have of a specific material or tool. In order to do this we plan to create an integrated system that would serve the purpose of tracking inventory and do so in a way where the inventory will be affected as job requests are accepted as

mentioned above. This system will be available to the employees and management only, as managers have the ability to adjust the inventory as they are using it, keeping management informed of any extra material that was used.

- **Customers** - Will make a request directly on the website - a request will include name, address, contact information, and details of the job request. Customers will receive a quote back from management verbally after visiting the job site, and here, the customer will have the ability to either accept or reject. If the offer is accepted by the customer and there's a contractual agreement with management, customers will have the function to pay for the job on our portal.

- **Management** - Management will have the function to view all of the job requests from customers. Here, management will decide if they want to accept a project. Once accepted, they will visit the property and examine the amount of labor hours, materials, and employees needed to complete the project in order to properly quote the price of the job request. After management settles on a price, they will assign employees to different jobs. Managers also have the ability to update inventories for usage in the future.

- **Employees -** Are assigned by management to work on the site, providing them with the ability to view their assignment. To track inventory, employees will have the ability to log into their employee account and view the inventory supply. Employees can mark jobs assigned to them as in progress and completed when finished. Upon completion of a job, that inventory will be adjusted to reflect the amount of material that was needed for the quote given by management.

Project Objectives

Our objective is to further improve Line Up Contractors' efficiency, growth, and profitability. Once we implement the items mentioned in our project scope onto the business, we would expect to see major improvement in the business operations. This will further enhance the productivity within Line Up Contractors, making the company run more efficiently. With the inclusion of our sales management and inventory system, Line Up will receive a major help in tracking and storing sales data as well as inventory. As a result of our efforts, Line Up Contractors can expect to see major growth in their company which can lead to significantly higher profitability.

As mentioned in the project scope, we plan on adding an inventory component in our solution as well as a more complex job request component that consists of a payment option, inventory management, and the ability to modify a job request after it is initially submitted. This will help us achieve our goals and objectives to increase worker productivity and increase the total number of job requests by at least 25 percent. By decreasing the need to constantly refill inventory by keeping track of it and forecasting the necessary materials, worker productivity will inevitably increase. Also, by providing an online avenue for job requests, we can realistically expect a sufficient increase in customer traffic.

Constraints, Limitations, Special Challenges

System Users

- **Customers** - Will make a request directly on our website - a request will include name, address, contact information, and details of the job request. Customers will receive a quote back from management, and here, the customer will have the function to either accept or reject. If the offer is accepted by the customer and there's a contractual agreement with management, customers will have the function to pay for the job on our portal.

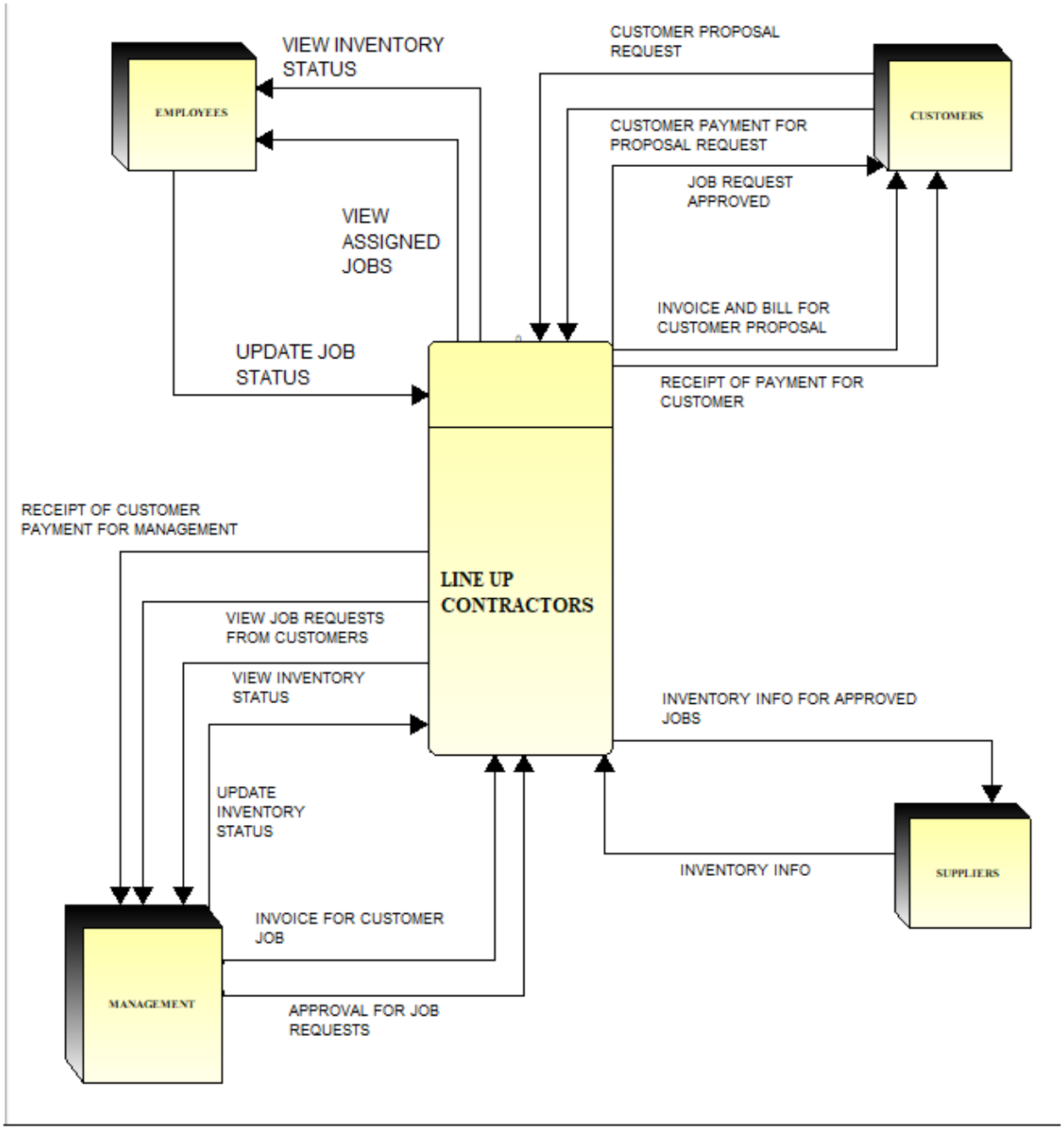
- **Management** - Management will have the function to view all of the job requests from customers. Here, management will decide if they want to accept a project. Once accepted, they will visit the property and examine the amount of labor hours, materials, and employees needed to complete the project in order to properly quote the price of the job request. After management settles on a price, they will have the function to send a quote back to customers. Additionally, managers will have the ability to assign supplies/inventory to jobs as needed and have the ability to adjust the inventory amount as necessary. Management has the right to create an employee account.

- **Employees -** Are assigned by management to work on the site, providing them with the ability to view their assignment. To track inventory, employees will have the ability to log into their employee account and access the website to make changes in supplies. Employees can mark jobs assigned to them as in progress and completed when finished. Upon completion of a job, that inventory will be adjusted to reflect the amount of material that was needed for the quote given by management.

Task List and Timeline

Task Name	Duration	Start	Finish	Resource Names
Project Management for Line Up Contractors Database	**19.06 Days**	Mon 1/24/22	Fri 3/18/22	JA, JG, IC, KM, MA, ZA
Group Selection	0 Days	Mon 1/24/22	Mon 1/24/22	JA, JG, IC, KM, MA, ZA
Statement of Work Presentations	0 Days	Tue 2/8/22	Wed 2/9/22	JA, JG, IC, KM, MA, ZA
Statement of Work Report	0 Days	Thu 2/3/22	Thu 2/3/22	JA, JG, IC, KM, MA, ZA
Client & Industry Background	0 Days	Thu 2/3/22	Thu 2/3/22	JG
Business Problems & Opportunities	0 Days	Thu 2/3/22	Thu 2/3/22	JG, KM, MA
Project Scope	0 Days	Thu 2/3/22	Thu 2/3/22	JG, KM, MA
Project Objectives	0 Days	Thu 2/3/22	Thu 2/3/22	JG, KM, MA
Constraints & Limitations	0 Days	Thu 2/3/22	Thu 2/3/22	JG, KM, MA
Task List & Timeline	0 Days	Thu 2/3/22	Thu 2/3/22	JA
Systems Design Report	0.06 Days	Sun 2/13/22	Sun 2/13/22	JA, JG, IC, KM, MA, ZA
Updated SOW	0.01 Days	Sun 2/13/22	Sun 2/13/22	JG, IC
DFD	0.01 Days	Sun 2/13/22	Sun 2/13/22	JA
ERD	0.01 Days	Sun 2/13/22	Sun 2/13/22	KM
CRUD	0.01 Days	Sun 2/13/22	Sun 2/13/22	JA
Physical DFDs	0.01 Days	Sun 2/13/22	Sun 2/13/22	JA
Input & Output Designs	0.01 Days	Sun 2/13/22	Sun 2/13/22	JG, IC
Peer Evaluation #1	0 Days	Fri 2/25/22	Fri 2/25/22	JA, JG, IC, KM, MA, ZA
Sublime Text Setup & Installation	0 Days	Sun 2/27/22	Sun 2/27/22	JA, JG, IC, KM, MA, ZA
Website Design Planning	7 Days	Sun 2/27/22	Sun 3/6/22	JA, JG, IC, KM, MA, ZA
Benchmark #1 - Initial Website & Design Layout	12 Days	Sun 3/6/22	Fri 3/18/22	JA, JG, IC, KM, MA, ZA
Visual	6 Days	Sun 3/6/22	Sat 3/12/22	JA, JG, IC, KM, MA, ZA
Code	6 Days	Sun 3/13/22	Fri 3/18/22	JA, JG, IC, KM, MA, ZA
Benchmark #2 - Initial PHP Implementation	6 Days	Fri 3/18/22	Fri 4/8/22	JA, JG, IC, KM, MA, ZA
Final Website Deliverable	7 Days	Fri 4/8/22	Fri 4/15/22	JA, JG, IC, KM, MA, ZA
Final Presentations	7 Days	Sat 4/16/22	Sat 4/23/22	JA, JG, IC, KM, MA, ZA
Final Systems Design Report	7 Days	Sun 4/24/22	Sun 5/1/22	JA, JG, IC, KM, MA, ZA
User Manual	7 Days	Mon 5/2/22	Mon 5/9/22	JA, JG, IC, KM, MA, ZA

Line Up Contractors: Context Level Diagram



External Entities

- Customers: This external entity represents a customer making any type of job service at Line Up Contractors. Customers can make request proposals for jobs including demolition and debris removal, framing, structural beams, windows (interior and exterior), electrical work, plumbing, cabinets, glass doors, appliance installation, drywall repairs, tile work, and countertops.
- Management: This external entity represents the current owner of Line Up Contractors

- Employees: This external entity represents personnel hired by the owner or management personnel to operate the business.
- Suppliers: This external entity represents a broad array of vendors that Line Up Contractors purchases items from. These items include shingles, cement, lumber, flooring, power tools, and equipment.

System Inputs

- Inputs from **Customer**
    a. **Customer proposal request**: *a proposal request can be made online or through the phone*
    b. **Customer payment for proposal request**: *payment can be made through check, credit/debit card, and cash.*
- Inputs from **Management**
    a. **Invoice for Customer Job:** *after arriving at the job site management provides a quote for their service*
    b. **Approval for Job Requests:** *once a job request is sent management can approve or decline the request*
    c. **Update Inventory Status:** *Managers are able to update the availability of items in the inventory and add items.*
- Inputs from **Employees**
    a. **Update Job Status**: *employees update the system, indicating whether or not they are done with a job*
- Inputs from **Suppliers**
    a. **Inventory Info:** *suppliers provide information about the products they have on-hand*

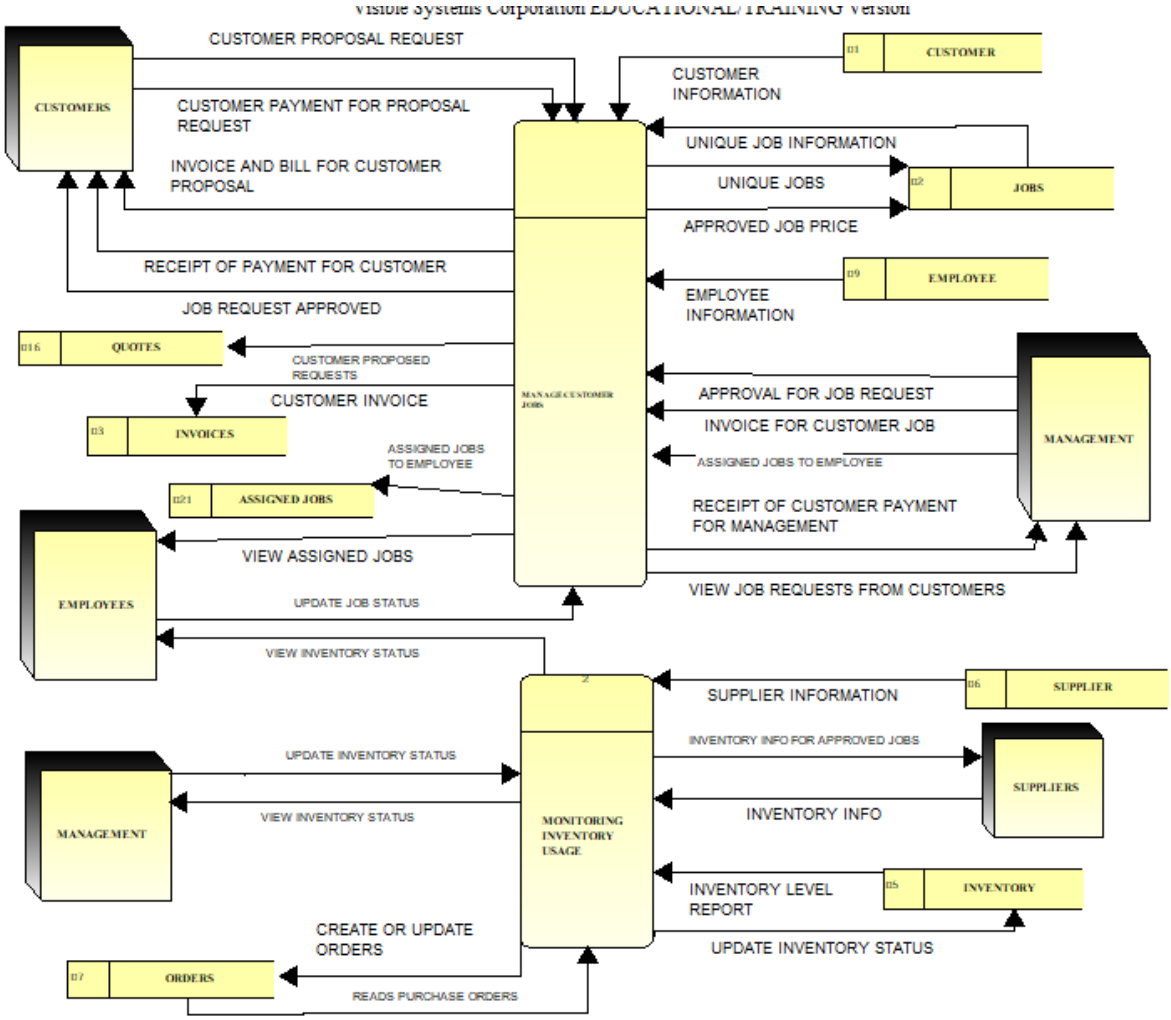
System Outputs

- Outputs to **Customer**
    a. **Invoice and bill for customer proposal**: *Customers receive their confirmation by email, phone, or person, and their bill which can be adjusted based on the difficulties encountered on the job.*
    b. **Receipt of payment for customer**: *Payment processed at the end of the job to complete the transaction*
    c. **Job Request Approved:** *The customer can see that the job has been approved*
- Outputs to **Management**
    a. **Receipt of customer payment for management**: *At the close of the job, payment information is given to management*
    b. **View Job Requests From Customers:** *Managers are able to view the the customer's information and the job description*

- Outputs to **Employee**

    a. **View Inventory Status:** *Employees are able to see the availability of items in the inventory*
    b. **View Assigned Jobs:** *Employees are able to see what jobs the managers have assigned them and the time period they are expected to work*
- Outputs to **Suppliers**
    a. **Inventory Info for Approved Jobs:** *Suppliers can view the inventory items management has requested from them*

Line Up Contractors: Level 0 Diagram



Process for Manage Customer Jobs and Monitoring Inventory Usage

The process begins when a customer enters their personal details and services they are in need of to request a quote from Line Up Contractors. Managers are able to view this request and have the option to accept or decline the request. If they accept the request, they will send employees to the jobsite to come up with a quote for their service. Once the managers come up with a quote, it is sent to the customer who could either accept, decline, or send a counteroffer. If the customer decides to send a counteroffer, the offer will be viewed by management for one last time for it to be approved or declined. Afterwards employees will be required to input their schedule in the system which will allow managers to assign specific employees to specific job sites depending on their availability. Lastly, managers are able to

update inventories if new items are being added or old items are getting deleted. The inventory status can be viewed by both the managers and the employees.

Data Stores

- **Jobs**: Contain data on all current and past jobs made by the managers for the customers who request a job. Includes information on customers, payment details etc
- **Invoices**: Contains payment and invoice information made by customers
- **Inventory**: Current list of available resources to be used for daily operations including supplies and machinery. Managed primarily through the employees who utilize the inventory the most.
- **Orders**: List of orders made by the employees to replenish the inventory approved by the manager and fulfilled by the supplier
- **Customer**: List of all current and past customers who have made service requests with our system.
- **Supplier**: Contains data about the suppliers, whether it be a retailer or other source. Contains information about purchase details, previous orders, prices, contact info, etc
- **Employee:** Contains data about the employees' availabilities, employee IDs, names, addresses, and their job preferences
- **Quotes:** Contains data on all of the jobs that customers submitted. Information here will detail the customers name, address, job request, and etc
- **Asigned Jobs:** Keeps track of all the jobs employees have

1. **Manage Customer Jobs:**
    a. Input from Customer Data Store:
        i. Customer Information
    b. Input from Jobs Data Store:
        i. Unique Job Information
    c. Input from Employee Data Store:
        i. Employee Information
    d. Input from Management:
        i. Invoice for Customer Job
        ii. Approval For Job Request
    e. Input from Customers:
        i. Customer Proposal Request
        ii. Customer Payment For Proposal Request
    f. Input from Employees:
        i. Update Job Status

    a. Output to Jobs Data Store:

i. Unique Jobs
ii. Approved Job Price

b. Output to Customers:
    i. Invoice and Bill for Customer Proposal
    ii. Receipt of Payment for Customer
    iii. Job Request Approved
c. Output to Employees:
    i. i. View Assigned Jobs
d. Output to Quotes
    i. Customer Proposed Request
e. Output to Management:
    i. View Job Request from Customer
    ii. Receipt of Customer Payment For Management
f. Output to Invoice Data Store:
    i. Customer Invoice

g.Output to Assigned Jobs:
    i. Assigned jobs to employees

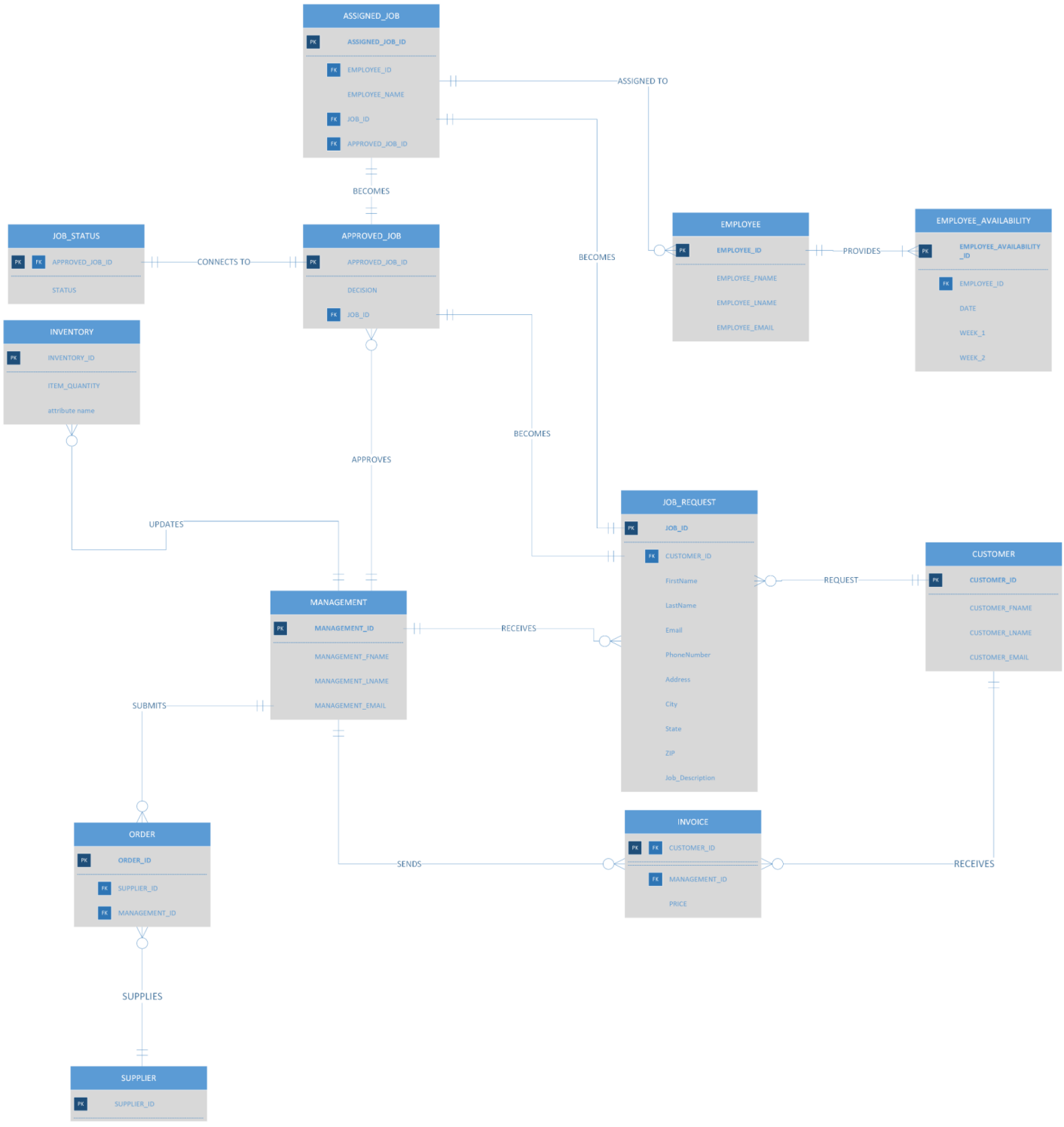
2. <u>Monitoring Inventory Usage:</u>

a. Inputs from Management
    i. Update Inventory Status
b. Inputs from Suppliers
    i. Inventory Info
c. Inputs from Orders Data Store
    i. Reads Purchase Orders
d. Inputs from Supplier Data Store
    i. Supplier information
e. Inputs from Supplier
    i. Inventory Info
f. Inputs from Inventory Data Store
    i. Inventory Level Report

a. Outputs to Management
    i. View Inventory Status
b. Outputs to Employee
    i. View inventory status

c. Outputs to Suppliers
    i. Inventory information for approved jobs
d. Output to Orders data store
    i. Create or update orders
e. Output to Inventory data store
    i. Update inventory status

Entity Relationship Diagram (ERD)

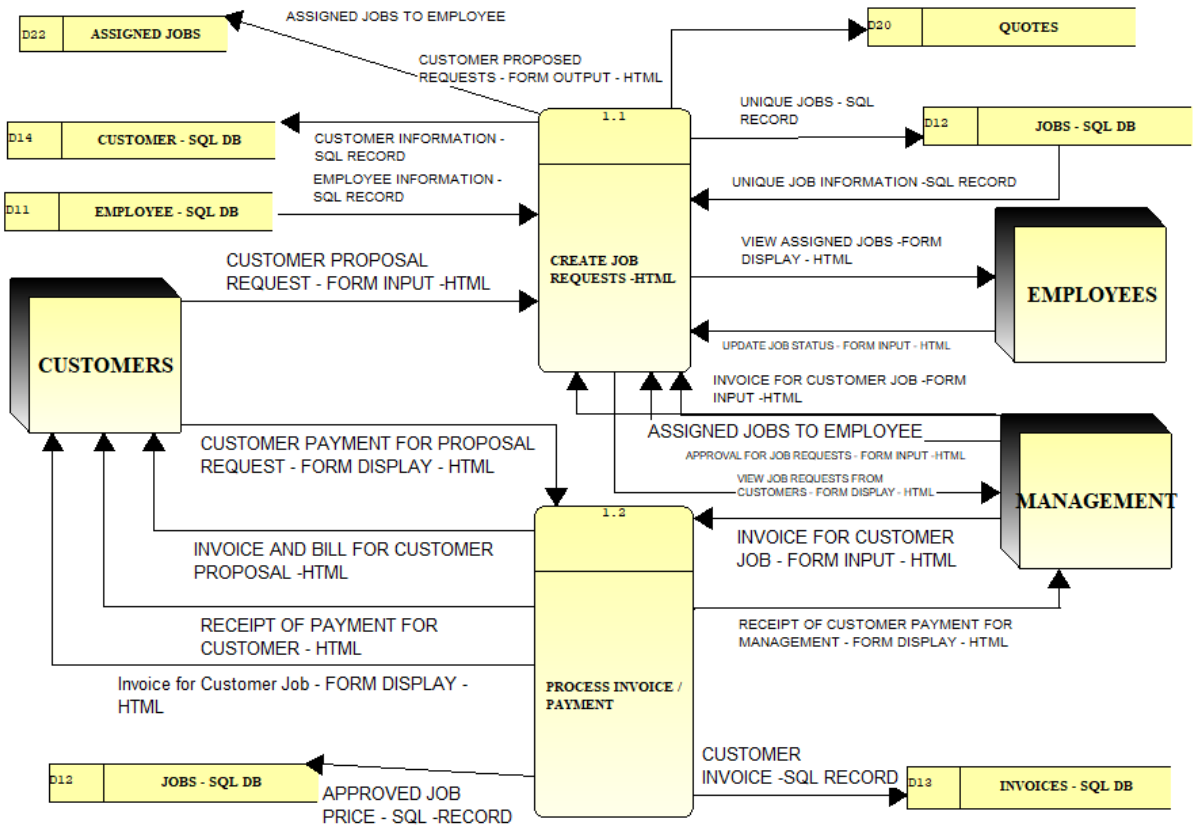

ASSIGNED_JOB
ASSIGNED_JOB_ID
EMPLOYEE_ID
EMPLOYEE_NAME
JOB_ID
APPROVED_JOB_ID
ASSIGNED TO
BECOMES
JOB_STATUS
APPROVED_JOB_ID
STATUS
CONNECTS TO
APPROVED_JOB
APPROVED_JOB_ID
DECISION
JOB_ID
BECOMES
EMPLOYEE
EMPLOYEE_ID
EMPLOYEE_FNAME
EMPLOYEE_LNAME
EMPLOYEE_EMAIL
PROVIDES
EMPLOYEE_AVAILABILITY
EMPLOYEE_AVAILABILITY_ID
EMPLOYEE_ID
DATE
WEEK_1
WEEK_2
INVENTORY
INVENTORY_ID
ITEM_QUANTITY
attribute name
APPROVES
BECOMES
UPDATES
JOB_REQUEST
JOB_ID
CUSTOMER_ID
FirstName
LastName
Email
PhoneNumber
Address
City
State
ZIP
Job_Description
REQUEST
CUSTOMER
CUSTOMER_ID
CUSTOMER_FNAME
CUSTOMER_LNAME
CUSTOMER_EMAIL
MANAGEMENT
MANAGEMENT_ID
MANAGEMENT_FNAME
MANAGEMENT_LNAME
MANAGEMENT_EMAIL
RECEIVES
SUBMITS
ORDER
ORDER_ID
SUPPLIER_ID
MANAGEMENT_ID
SENDS
INVOICE
CUSTOMER_ID
MANAGEMENT_ID
PRICE
RECEIVES
SUPPLIES
SUPPLIER
SUPPLIER_ID

AS

CRUD Matrix

Processes	1.1 Create Job Request	1.2 Process Invoice/Payment	2.1 Monitor Inventory Usage	2.2 Updating Inventory
Order				
Order_ID			CUR	
Supplier_ID			CUR	
Employee_ID			CUR	
Inventory				
Inventory_ID			R	RU
Item_quantitiy			R	
Employee				
Employee_ID	R			
Employee_Fname	R			
Employee_Lname	R			
Employee_Email	R			
Qoute				
Job_ID	CRUD			
Customer_ID	CUD			
FIrstName	CUD			
LastName	CUD			
Email	CUD			
PhoneNumber	CUD			
Address	CUD			
City	CUD			
State	CUD			
ZIP	CUD			
Job_Description	CUD			
Invoices				
Customer_ID		C		
Management_ID		C		
Price		C		
Customer				
Customer_ID	CUD			
Customer_Fname	CUD			
Customer_Lname	CUD			
Customer_Email	CUD			
Customer_ZIP	CUD			
Customer_Street_Name	CUD			
Customer_State	CUD			
Job				
Appoved_Job_ID	CUD			
Decision	CUD			
Job_ID	R			
Assigned Job ID				
Assigned Job ID	CUD			
Employee ID	R			
Employee Name	R			
Job ID	R			
Approved Job ID	R			

Line Up Contractors: Level 1 Diagram From Manage Customer Project Requests and Billing



1. Create Job Requests- HTML

a. Inputs from Customer
   i. Customers Proposal Request Form Input HTML
b. Inputs from Management
   i. Approval for Job Requests Form Input HTML
   ii. Invoice for Customer Job Form Input HTML
c. Inputs from Employees
   i. Update Job Status Form Input HTML
d. Inputs from Job SQL DB Datastore
   i. Update Job SQL Record
e. Inputs from Employee - SQL DB Datastore
   i. Employee Information SQL Record

a. Outputs to Management
   i. View Job Requests from Customers Form Display HTML

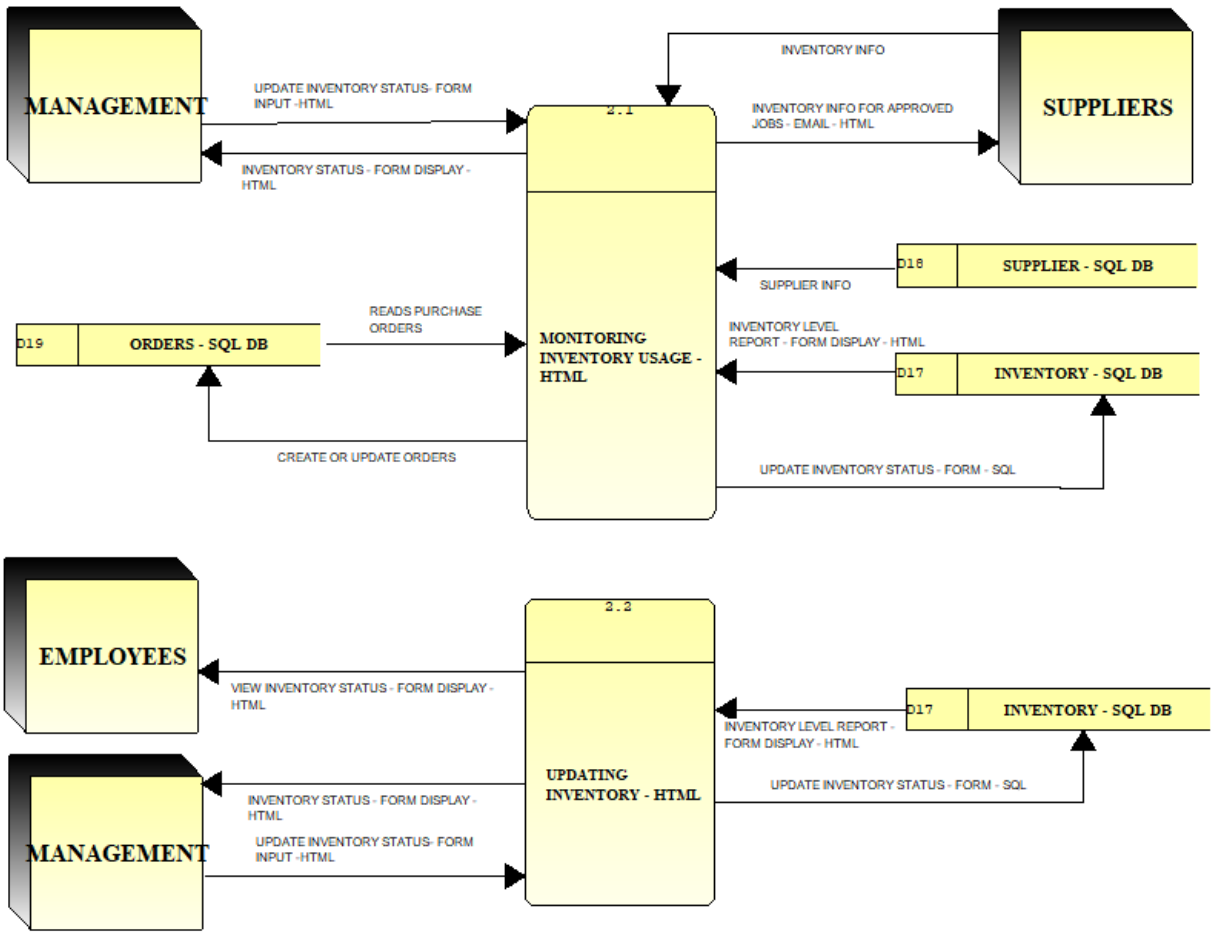
b. Outputs to Employees
    i. View Assigned Jobs Form Display HTML
c. Outputs to Jobs SQL DB Database
    i. Unique Jobs SQL Record
d. Outputs to Customer Information SQL-Record Database
    i. Customer Information SQL Record
e. Output to Quotes
    i. Customer proposed request- Form HTML
f. Output to Assigned Jobs:
    i. Assigned jobs to employees

2. Process Invoice/Payment (Paypal)

a. Inputs from Customers
    i. Customer payment for proposal request- from display-HTML
b. Inputs from Management
    i. Invoice for job- from input- HTML

a. Outputs to Customers
    i. Invoice and bill for customer proposal-HTML
    ii. Receipt of payment for customer-HTML
    iii. Invoice for Customer Job- from display-HTML
b. Output to Management
    i. Receipt of customer payment for management- from display-HTML
c. Output to Invoice data store
    i. Customer invoice-SQL-record
d. Output to Jobs SQL - Record Database
    i. Approved Job Price HTML

Line Up Contractors: Level 1 Diagram from Monitoring Inventory Usage



1. **Monitoring Inventory Usage-HTML**

    a. Inputs to Management
        i. Inventory status-from display-HTML
    b. Inputs to Suppliers
        i. Inventory info- email-HTML
    c. Input to Orders data store
        i. Create or update orders

a. Outputs to Management
    i. Update Inventory Status-form input-HTML
b. Output to Suppliers
    i. Inventory information
c. Output to Orders data store
    i. Reads purchase order
d. Output to Supplier data store
    i. Supplier information
e. Output to Inventory data store
    i. Inventory level report- from display-HTML

2. Updating Inventory-HTML

a. Inputs From Management
    i. Update Inventory Form HTML
b. Inputs From Inventory SQL DB Datastore
    i. Inventory Level Report Form Display HTML
a. Outputs to Employees
    i. View Inventory Status Form Display HTML
b. Outputs to Management
    i. Inventory Status Form Display HTML
c. Outputs to Inventory SQL DB Datastore
    i. Update Inventory

Line Up Contractors: Input/Output Forms

Job Request System:

Input Forms

Customer: