Webfactory

Our Project is based on a small company/start-up named '**Webfactory**' consisting of less than 10 employees that focuses on delivering Web development services.
The process we have undertaken is to '**Build and Deliver a Website**' to our client.

Workflow:

A client approached our company to make a website. We offer him/her a set of templates they can select based on their requirements. Any additional request/change apart from the one mentioned in the template is treated as a chargeable customization like including a world map etc in the website.
The Account Manager handles the request, gathers requirements, assigns a developer to the project. Once the project is built, the Invoice is generated(includes the template charges and additional customization charges) and sent to the client. Once the payment is made, the built website is then hosted on the company's in-house server (client chooses a hosting plan from a list of packages prior) and the end product website link and access are delivered to the client.
Note: We are not responsible for the maintenance of the website. We are just responsible for developing the website and hosting it onto the server.

So the **Entities** in our System are Client, Work-Order, Website, Hosting, Template_Type, Invoice, Customization and Employee(indicated in Yellow). Additionally, there are 3 more **Associative Entities** (Indicated in Blue), Website_Template_Assosiation, Work_Emp_Assosiation and Website_Customization_Assosiation.

Business details and User requirements for our process are as follows:
1) Whenever a client approaches the company with a requirement, every requirement results in a work order; thus a customer can have one or many work orders but a work order would belong to one and one customer only as work order is unique for a customer to avoid confusion.
2) Each work order can have one or many employees and at the same time each employee can work on zero or many work orders in parallel to increase

efficiency and thus to resolve this, we introduced Work_Emp_Association, as a bridge connecting Employee and Work_Order.

3) Each work order can have one or more websites belonging to a single client as one client can order multiple websites in the same work order. But each website belongs to a single work order.

4) Each website will have an invoice associated with it which will track the overall charges incurred- cost of templates chosen, cost of customizations if any and cost of hosting the website. This is a one-to-one relationship as each website will have only one invoice and each invoice will belong to only one website to avoid redundancy.

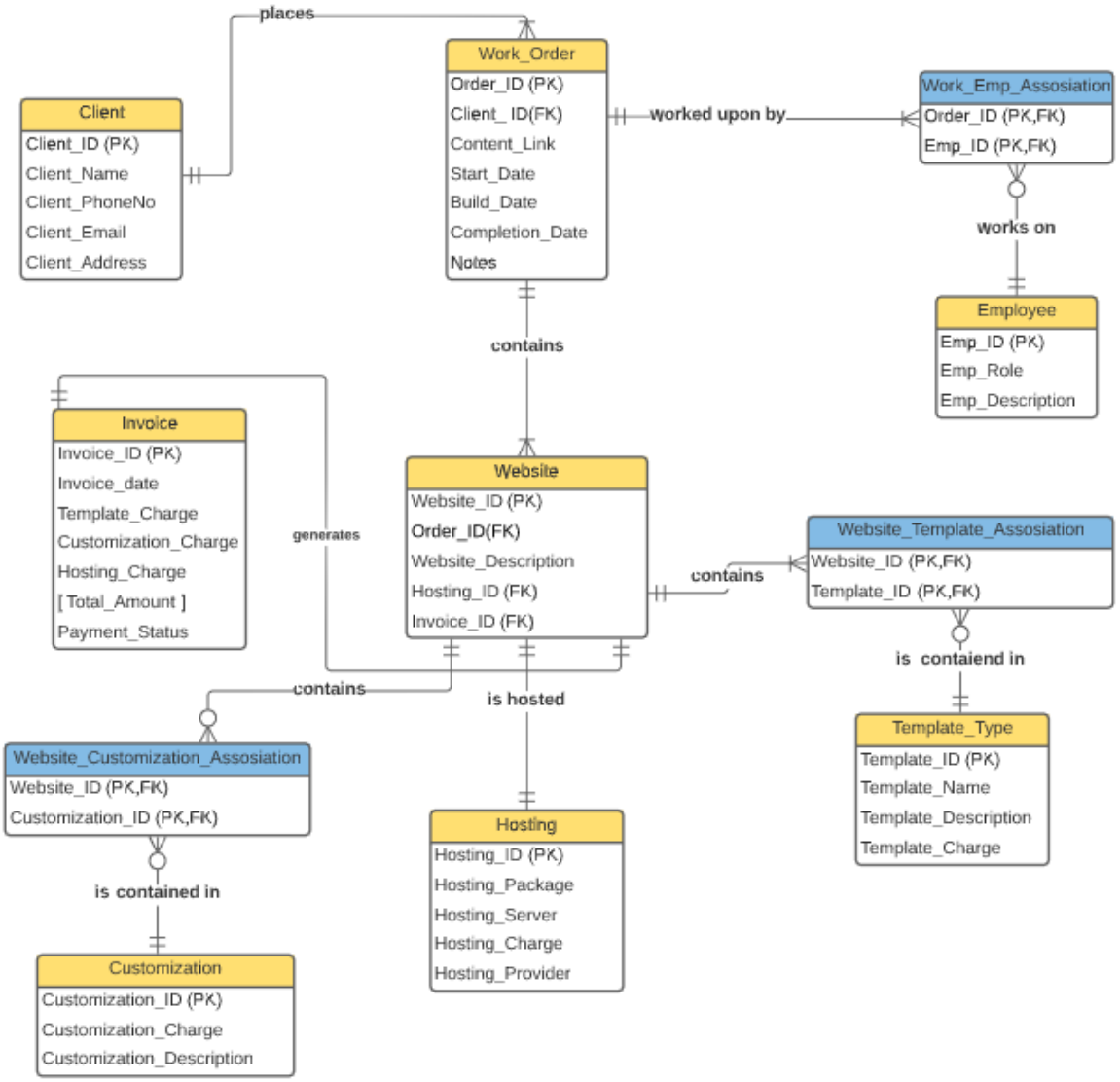
5) A client can choose 1 or more templates or a combination of them for the website. Hence a website can have 1 or more templates to provide client flexibility to choose multiple templates for the same website and a template can belong to multiple websites. Thus to resolve this many to many relationship, we introduced a Website_Template_Association between them.

6) Each website once built is hosted on the server. Hosting plan which will be unique to each website, and one hosting cannot be shared by multiple websites thus it is a one to one relationship as 1 website will only have 1 unique hosting plan.

7) There can be zero or more customization requirements for a website and a particular customization can belong to zero or more websites to give customers a variety of customizations to choose from and thus a many to many relationship. This was resolved using an associative entity: Website_Customization_Association.

Note: Here when we say customization, we refer to an additional specific feature that is not present in the template. Eg.Photo Gallery or Map Feature.

ERD : Data types for each field are mentioned in the data dictionary



Problems faced with the current model:

-> Too much time elapsed between customer request and end-product delivery.

-> Excel sheets were used to maintain Employee, Template and Customization data. It was too tedious to handle them and to assign Employees to Work Order with necessary requirements.

-> Manual task delegation and follow up.

-> Manual delegation of Developer to Website.

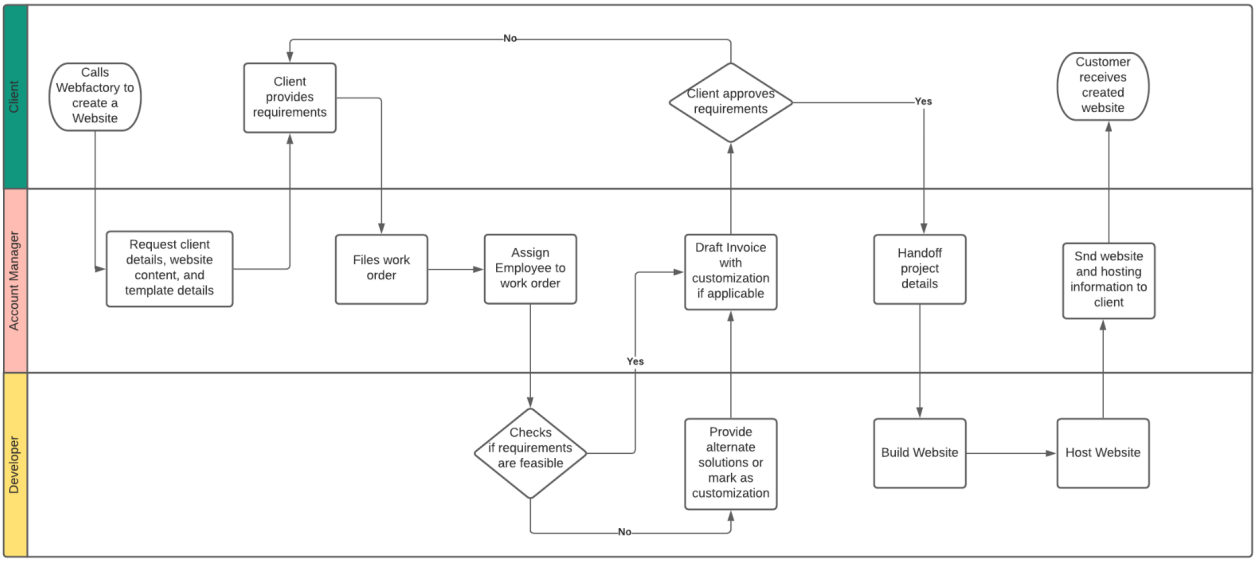
-> In case of an existing client, no prior record of client details or pre-existing projects/preferences. Every customer is treated as a new customer.

-> The client does not get timely updates.

-> Accumulation/Pile-up of projects.

-> Low efficiency of process.
-> Too many handoffs
-> Feasibility of requirements.

We can clearly see these Issues in our Model's **As is diagram** :



Our solution :

Enabler: Information Systems, Workflow design

->We Introduced a database system that helps optimize workflow and reduce need of human intervention in process

How has the introduction of Database System helped workflow?
->Database stores client details. Hence, returning customers and their information is identified.
-> Database stores Employee details, template details and customization details which makes it easier to assign employees to work order with necessary requirements.
->Client directly logs all of their requirements- template, website content, preferences, hosting details, customizations etc into the system through a google sheet. This automatically triggers creation of a Work order.
-> Employees and developers who are available, are automatically assigned to the work order and respective employees and developers are notified as well.

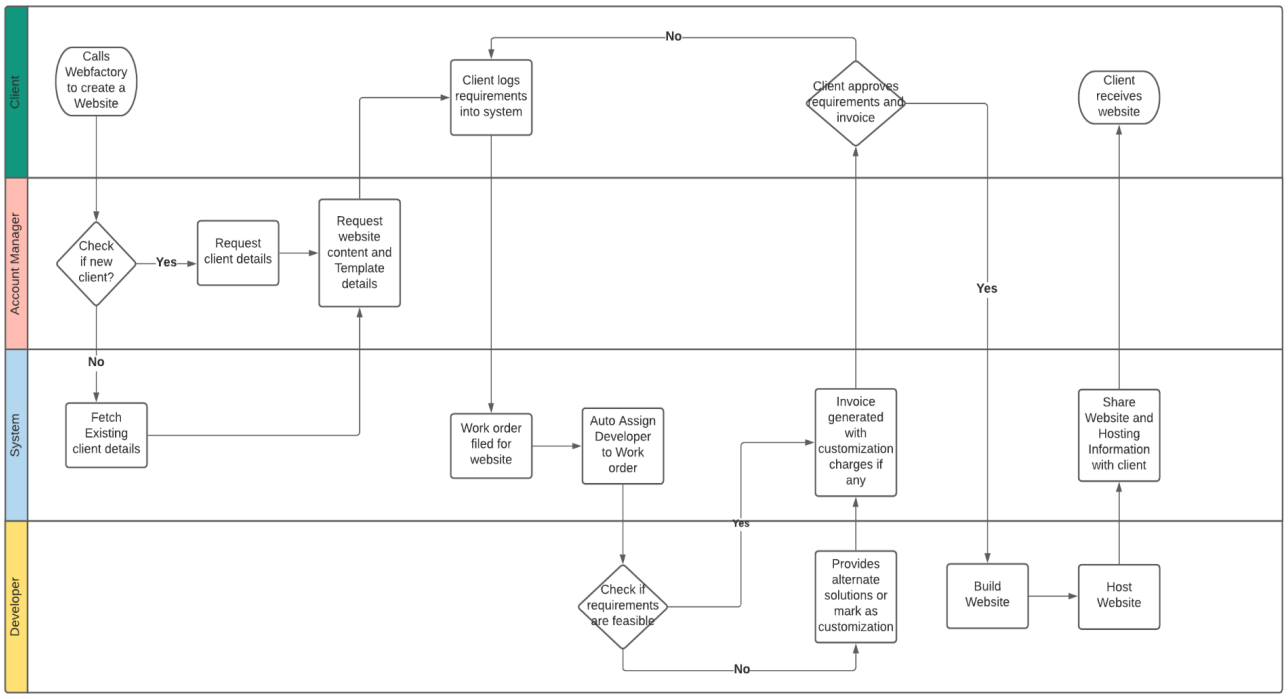
-> Invoice generated by the system, consisting of all agreed upon charges - customization, hosting, template etc.
->Chances of error are reduced as manual work is reduced. Efficiency is increased.
-> Once the website is built, website and hosting details are automatically sent to the client.

Objectives and Benefits:

-> Improve process efficiency.
-> Reduce time elapsed between project request and completion.
-> Create a database that tracks every client, project, requirement, and progress.
-> Auto total cost of customizations and generate invoice to customer.
-> Account Manager can log details into database directly as opposed to manual handoff to developer.

How will our diagram look like after the solution :

To be diagram :



Data Dictionary :

Data Dictionary

Field Name	Table	Data Type	Field Length	Constraint	Description	Example
Client_ID	Client	int	10	PK	Unique client ids	3452756385
Client_Name	Client	varchar	25	Not Null	name of each client	Billy James
Client_PhoneNo	Client	int	12	Not Null	phone no of the clients	8634856105
Client_Email	Client	varchar	25	Not Null	email address of the client	billy.james@gmail.com
Client _Address	Client	varchar	50	Not Null	address of the client	100 wells street, hartford CT
Order_ID	Work_Order	int	10	PK	unique order id	4563856285
Client_ID	Work_Order	int	10	FK	unique client ids	3452756385
Content_link	Work_Order	varchar	70	Not Null	work order link	https://isssportal.uconn.edu/
Start_date	Work_Order	date	15	Not Null	date when the workoder starts	19/10/2021
Build_date	Work_Order	date	15	Not Null	date when the workorder is built	20/10/2021
Completion_date	Work_Order	date	15	Not Null	date of completion for the workorder	30/10/2021
Notes	Work_Order	varchar	100	Not Null	additional information related to workorder	put world map as customization
Order_ID	Work_Emp_Association	int	10	PK,FK	unique order id	4563856285
Emp_ID	Work_Emp_Association	int	10	PK,FK	unique employee id	6452856275
Emp_ID	Employee	int	10	PK	unique employee id	6452856275
Emp_Role	Employee	varchar	15	Not Null	role of the employee in the organization	developer
Emp_Description	Employee	varchar	70	Not Null	description of employee	works in 9am-5pm shift
Website_ID	Website	varchar	20	PK	unique website id	www.google.com
Oder_ID	Website	int	10	FK	unique order id	4563856285
Website_description	Website	varchar	50	Not Null	information regarding the website	website contains world map, coloured links
Hosting_ID	Website	int	10	FK	unique hosting id	6453826653
Invoice_ID	Website	int	10	FK	unique invoice id	6452746275
Website_ID	Website_Template_Association	varchar	10	PK,FK	unique website id	https://www.sdfh.com
Template_ID	Website_Template_Association	int	10	PK,FK	unique template id	101
Template_ID	Template_Type	int	10	PK	unique template id	101
Template_Name	Template_Type	varchar	15	Not Null	name of the template	Classic
Template_Description	Template_Type	varchar	50	Not Null	description of the template	a basic template with company name, logo,contact details, and a hamburger for the customer to navigate through the various aspects of the website
Template_Charge	Template_Type	int	10	Not Null	charges associated with each template	$1,100
Hosting_ID	Hosting	int	10	PK	unique hosting id	6465827583
Hosting_package	Hosting	varchar	5	Not Null	package	premium
Hosting_server	Hosting	varchar	5	Not Null	hosting server details	AWS
Hosting_charge	Hosting	int	10	Not Null	charge for hosting the website on the server	1100
Hosting_Provider	Hosting	varchar	10	Not Null	hosting provider details	Amazon
Customization_ID	Customization	int	10	PK	unique customization id	6552856275
Customization_Charge	Customization	int	10	Not Null	charge associated with each customization	$900
ustomization_Descriptic	Customization	varchar	70	Not Null	description of the customization required by the clien	make the following payment options available: visa card, credit card,zell,googlepay
Website_ID	Website_Customization_Association	varchar	15	PK,FK	unique website id	www.fred.com
Customization_ID	Website_Customization_Association	int	10	PK,FK	unique customization id	569895
Invoice_ID	Invoice	int	10	PK	unique invoice id	6452746275
Invoice_Date	Invoice	date	15	Not Null	date on which the bill is created	12/25/2021
Template_charge	Invoice	int	10	Not Null	charge associated with each template	$1,100
Customization_charge	Invoice	int	10	Not Null	additional charges incured as per customization	$900
Hosting_charge	Invoice	int	10	Not Null	additional charges if hosting service is availed	$500
Total_amount	Invoice	int	10	Not Null	total charge for the service	$2,500
Payment_status	Invoice	varchar	5	Not Null	has the payment been made or not	Yes