



MIS – 7610 System Analysis and Design

MEMPHIS BOAT CENTER

TEAM 8

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Project Status Report

A summary of the work of our project team

Our project is based on “Memphis Boat Center”. Initially we have discussed about the several projects and their feasibility as a team. We have taken up project that improves the current Memphis Boat Center system and discussed about how we can improve the user interface using the waterfall methodology we learned so far. We have identified the “As Is” system and also discussed about “To Be” system which we are going to incorporate in this report. We have also assigned project related responsibilities to all team members and created a Gantt chart to track the progress of the project.

Overview of the Project:

Description of the organization:

Since 1950, Memphis Boat Center has been serving the Mid-South's boating Facilities. They have experienced staff that has been helping families which make memories while having fun out of water. Each boater is unique and will work which finds the perfect boat for you and your family.

Prior to 1980 Memphis Boat Center was called as Memphis Sports Center. In 1980, Memphis Sports Center was purchased by Cooper Robinson and he operated the business for 8 years on Dunn, off of Airways.

It also specializes in pre-owned boats of all types. They have a comprehensive inspection and service program for their pre-owned inventory so people can feel confident you are purchasing a quality boat.

They carry some of the industry’s best boats from top companies such as Malibu, Axis, Four Winns, Bryant, Berkshire Pontoons, Paddle King mini pontoons, Yamaha outboards, Nissan and Tohatsu outboards.

Description of the As-Is System and problems with it

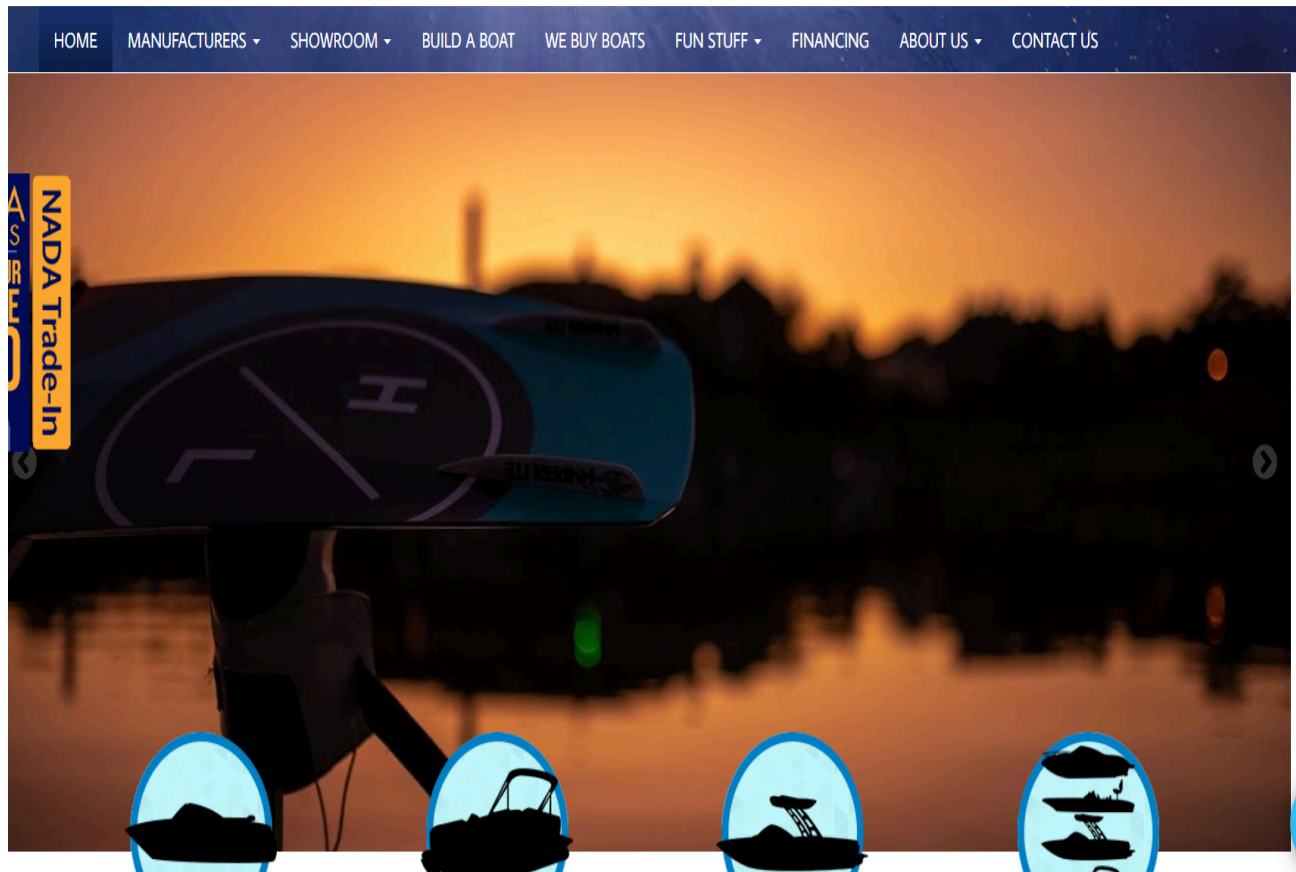
Memphis Boat Center is a retailer company selling boats, wakeboards, wake surfs, kneeboards, tube, skis, service or parts. They carry some of the industry’s best boats from top companies such as Malibu, Axis, Paddle King mini pontoons, Four Winns, Bryant, Paddle King mini pontoons,

Berkshire Pontoons, Yamaha outboards and Tohatsu outboards. Company combines quality wake, ski and surf boats with superior customer service, guaranteeing a smooth ride, in and out of the store. This company has been serving mid south's boating needs since 2000. It also specializes in pre-owned boat. They also have a comprehensive inspection and service program for pre-owned inventory so customers can feel confident when purchasing a quality boat.

This company is an integration of services like **trading** that allows customers to trade their existing with money by putting it up for sale, **financing** that helps in finding the most comprehensive and competitive financing available, to **buy** boats from top boat retailer companies, it **provides latest gear** stuff for sale, allows customers to **build a boat** of their choice based on their requirements and **showcase** new and old inventory where customers can buy a boat.

But recent findings show that a lot of people are not interested in buying a boat or maintaining a boat for many reasons such as price of boat or not having a personal/permanent docking station. So, a need for an alternate service such a renting or leasing a boat takes a hike in this growing business field. As attractive a service it brings a lot of volunteers, considering the mindset these days as they find it easier to rent then buy one. This brings us to a to-be system.

Current Look of As-Is system:



Description of To-Be system:

memphisboatcenter.com is a website which provides users access to rent a boat which is not currently available on any other boat dealership website. This is one of the most important and missing features from any present boat dealership websites. There are so many people out there who either do not have space to park their boat or cannot afford buying boats. Adding a renting feature alongside rest of the features, we have created an affordance that lets users quickly rent their favorite boat in a user-friendly manner. This idea is based on renting a boat for various purposes such as domestic, travel, recreation, sports, fishing, transportation use. Some of the key highlights of this addition are customer safety, affordance and maintenance. It allows the users to choose from different types of boats that fit their needs from fishing boats to luxurious boats and jet ski, kayaking and family boats. Additional features include training and safety workshops teaching all the rules and safety measurements for customers willing to learn.

Our idea revolves around affordability and accommodation. Providing visitors with affordable renting prices and superior quality boats. It also provides an option to book a space to dock their boats in a SpotHero-esque way. With an account, customers can find the details of their booked

ride and history of bookings. Customers can also call rescue service if anything goes wrong. They can also rare their past bookings and write reviews for others to read and make better decisions. All of this comes together as a unified digital platform where users can easily search, navigate, customize, pre book and seek information and rent a boat.

Description of how our project relates to organization’s strategy:

Memphis Boat Center wants everyone to be able to experience the joys of boating. And to offer quality service and meeting customer requirements, safety and hands on experience with boating. It focuses on customer’s necessity. This website helps those who have boat but couldn’t have place for storage or those who can’t afford to buy a boat but are interested in water activities. The customers here are of different ages. This website provides boats to those who have boat license but don’t have boat to drive. There are various varieties of boats available to the customers to choose based on their choice. They not only rent boats but also provide services like workshops, training on how to drive a boat. As an organization they focus more on customer services and their satisfaction.

Description of how our project will add value to the organization:

The most important aspects of our project are to introduce the boat renting and boat parking features that will drive a hefty amount of audience who either cannot afford to buy a boat or do not have a space to park their boat. Both of these features will not just encourage people who cannot afford to buy or park a boat but even those people who want to save money by not buying the boat or a permanent parking space.

Provide an Initial Risk and Issue assessment:

1. By the time we launch the new system, someone else may implement with the same idea and launch it bringing in competition to the system.
2. It takes time after its launch for the people to adapted to it for first few months.
3. Transporting boats from one warehouse to another is a pricey and risky task

The total budget for this project should be considered to analyze, we need to do a cost-benefit analysis for this system.

Our project is based on “Memphis Boat Center”. Initially we have discussed about the several projects and their feasibility as a team. We have taken up project that improves the current Memphis Boat Center system and discussed about how to add the additional features to the website. We have identified the “As Is” system and also discussed about “To Be” system which

we are going to incorporate in this report. We have also assigned project related responsibilities to all team members and created a Gantt chart to track the progress of the project.

Benefits of the new system:

- Newness: the company concept is new as a result there is not much competition and the young are more attracted to new idea.
- Cost effective: the idea of renting reduces the cost of buying a boat and maintaining it. It leverages the extra costs.
- Accessibility: when boats are easily available to rent, people will get more involved in boating then now.
- Offering services: the company is offering many services like safety precaution workshop, rescue operations, training and booking a space other than renting puts the company in more advantage then others.
- Flexible: the idea is flexible and can be updated in many locations.
- Limited startup risk
- Highly visible website

REQUIREMENTS DETERMINATION

A requirement is a statement of what the system need to or the statement of characteristics the system must have

Some of the requirements are:

1.Functional requirements:

- The system must check for age and license every time a customer tries to rent a boat as a mandatory step to ensure that the person renting isn't illegal to drive.
- The system verifies password every time a login stream is processed and displays error page
- The system has to store the sales soon after the payment is done by the customer or visitor in order to track sales report with customer details and all the customer can track the history of payment and boats purchased or rented.
- The data stored in the database needs to be stored for long time and cannot expire.
- Admin has the authorities to delete or add boat models on the website
- Role of the manufacture/owner/vendor is limited to providing information and receiving payment and supplying boats.
- Payment receipts are received after payment verification
- Calculation of boat rent prior to payment takes place first on hourly basis
- Calculation of payment after returning of the boat also takes place based on the extra time.

2.Nonfunctional Requirements

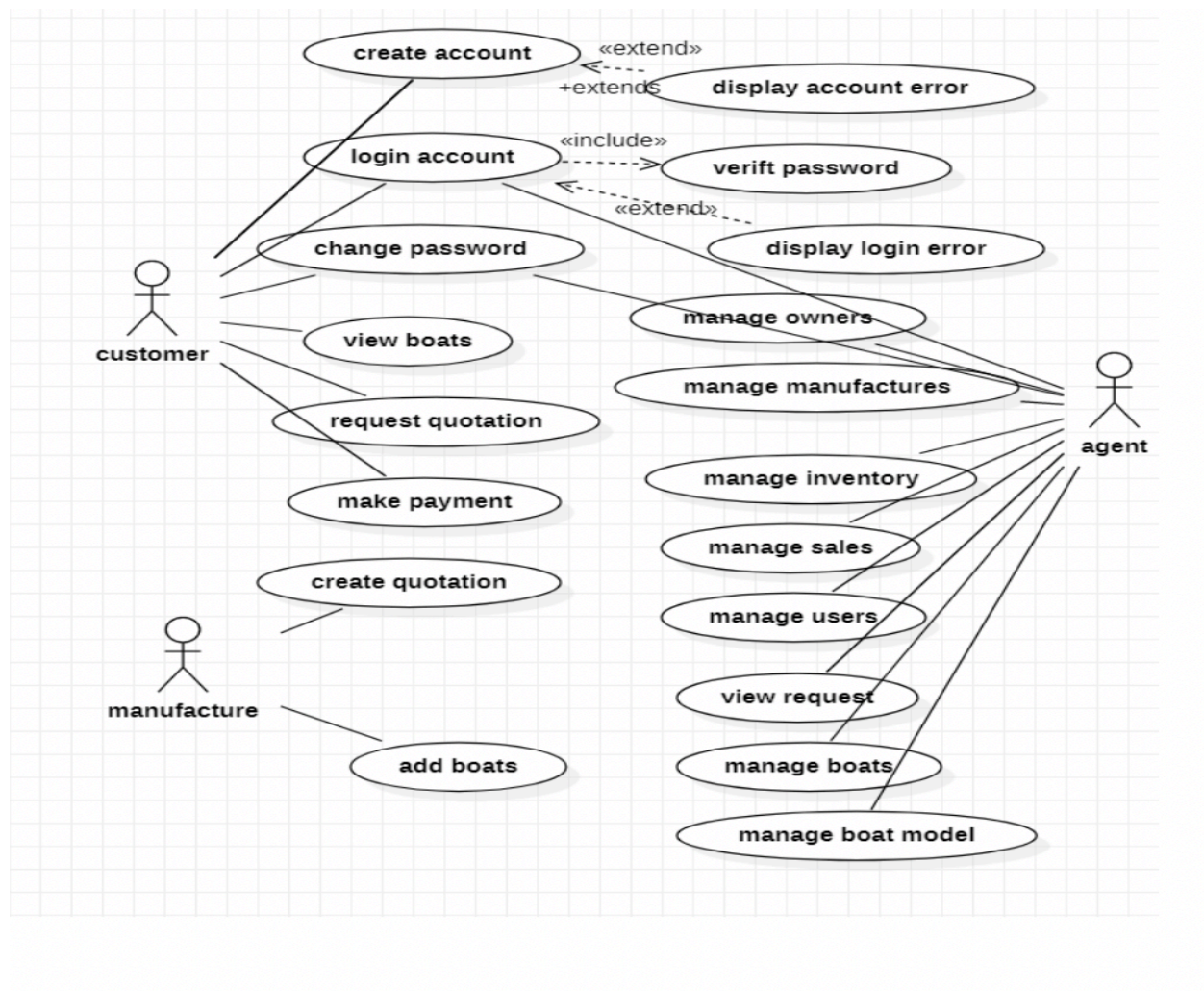
- Operational: the website can be operated anywhere through the weblink. It can be operated on desktop, mobile and tablets.
- Performance it has high speed deployment and the interaction time between the user(students) and the system should not exceed one second. The new system should have a quick download system of course information. Users should be able to use the new system for 24 hours a day and 365 days a year.

- Security website assures that all data inside the system or its part will be protected against malware attacks or unauthorized access.

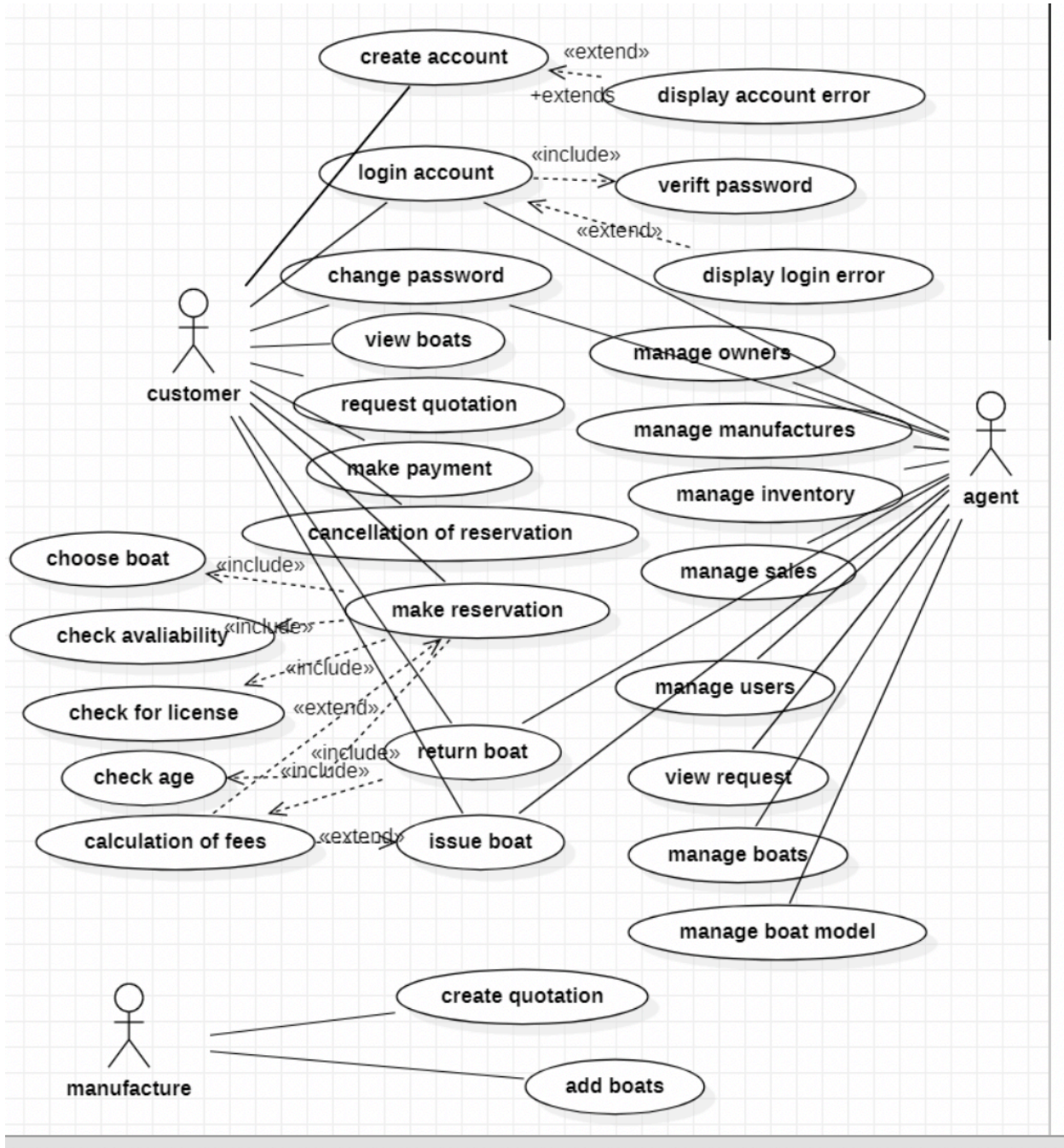
USE CASE ANALYSIS

Use case analysis of this framework recognizes, explains and examinations the necessities of the framework. It additionally assists with planning the framework from the perspective of the client and pass on the framework conduct data. They are anything but difficult to fathom the utilitarian prerequisites in the framework.

As-is system



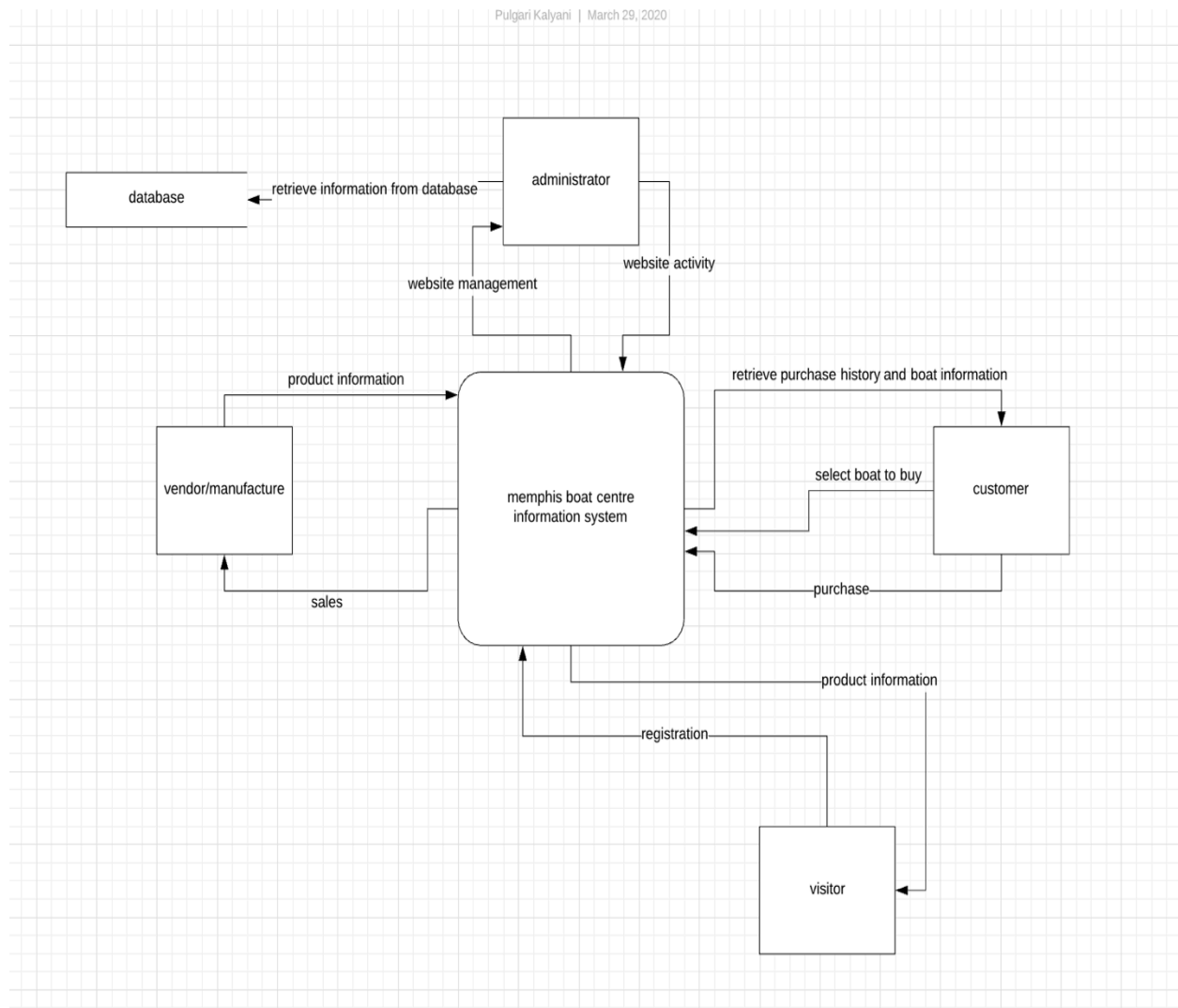
To-be system



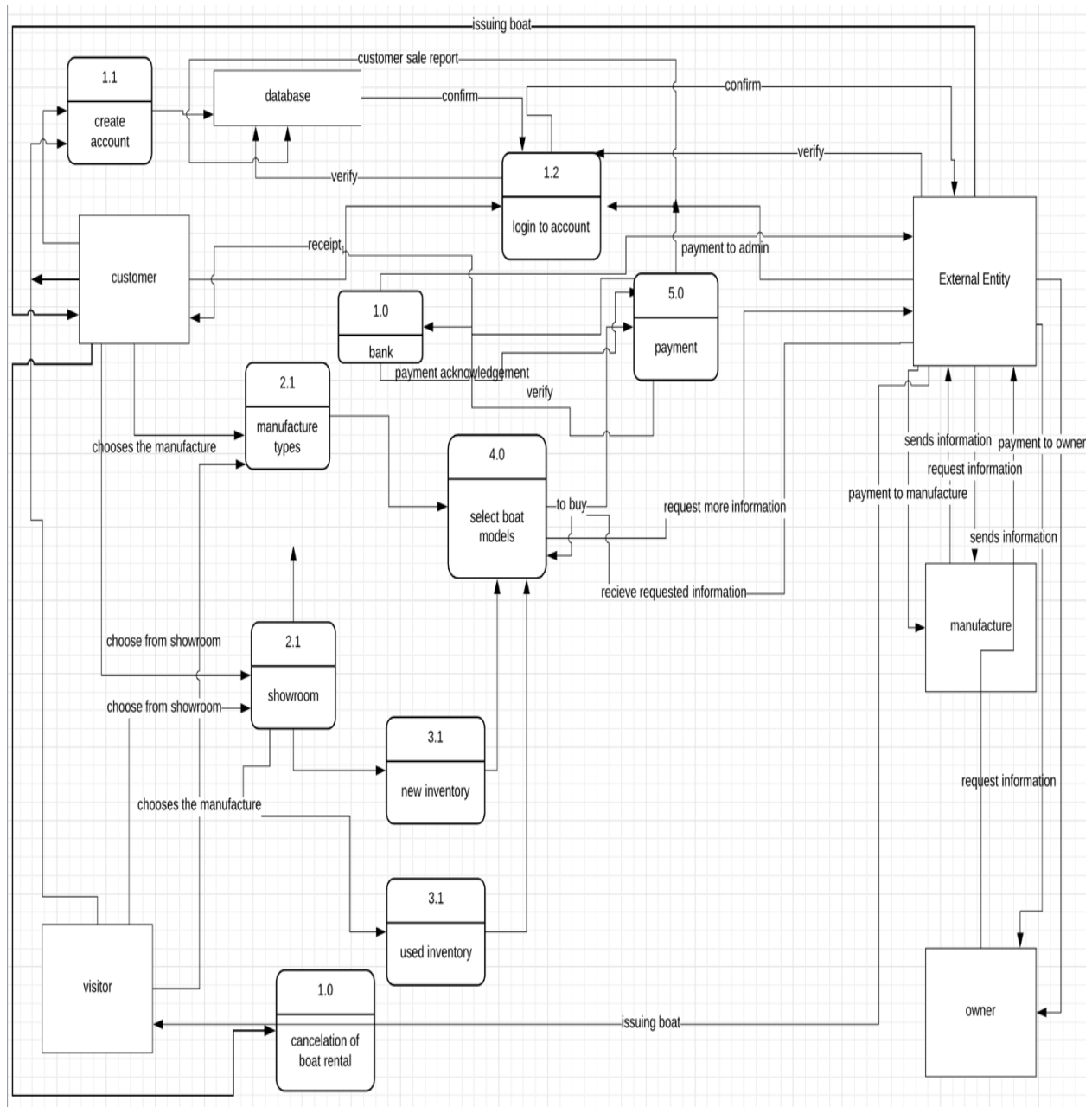
DATA FLOW DIAGRAM

An data flow diagram (DFD) is a method for representing a flow of data of a procedure or a framework (generally an information system). The DFD additionally gives information about the outputs and inputs of every entity and the process itself.

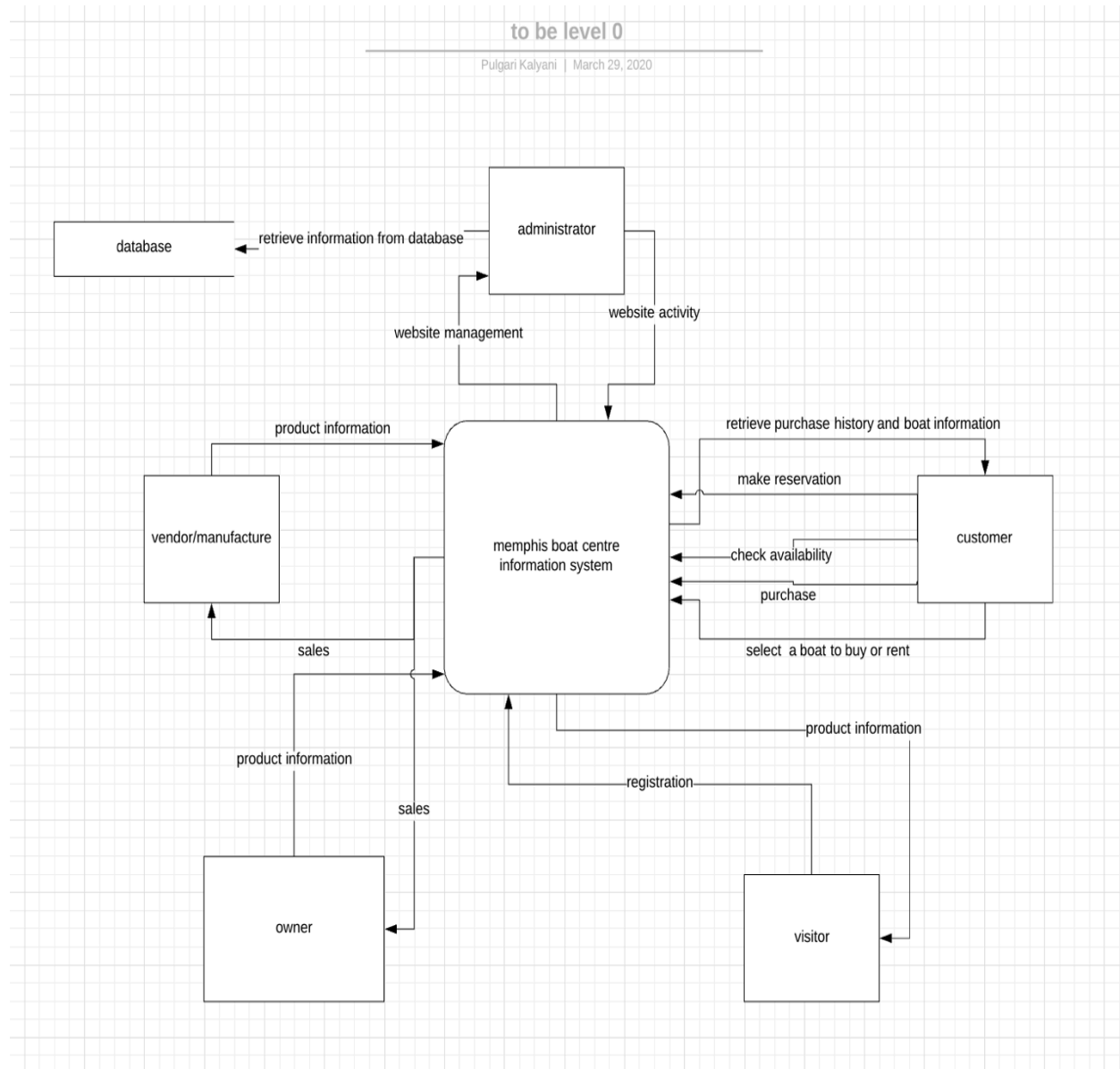
As-is level 0 system



As-is level 1 system



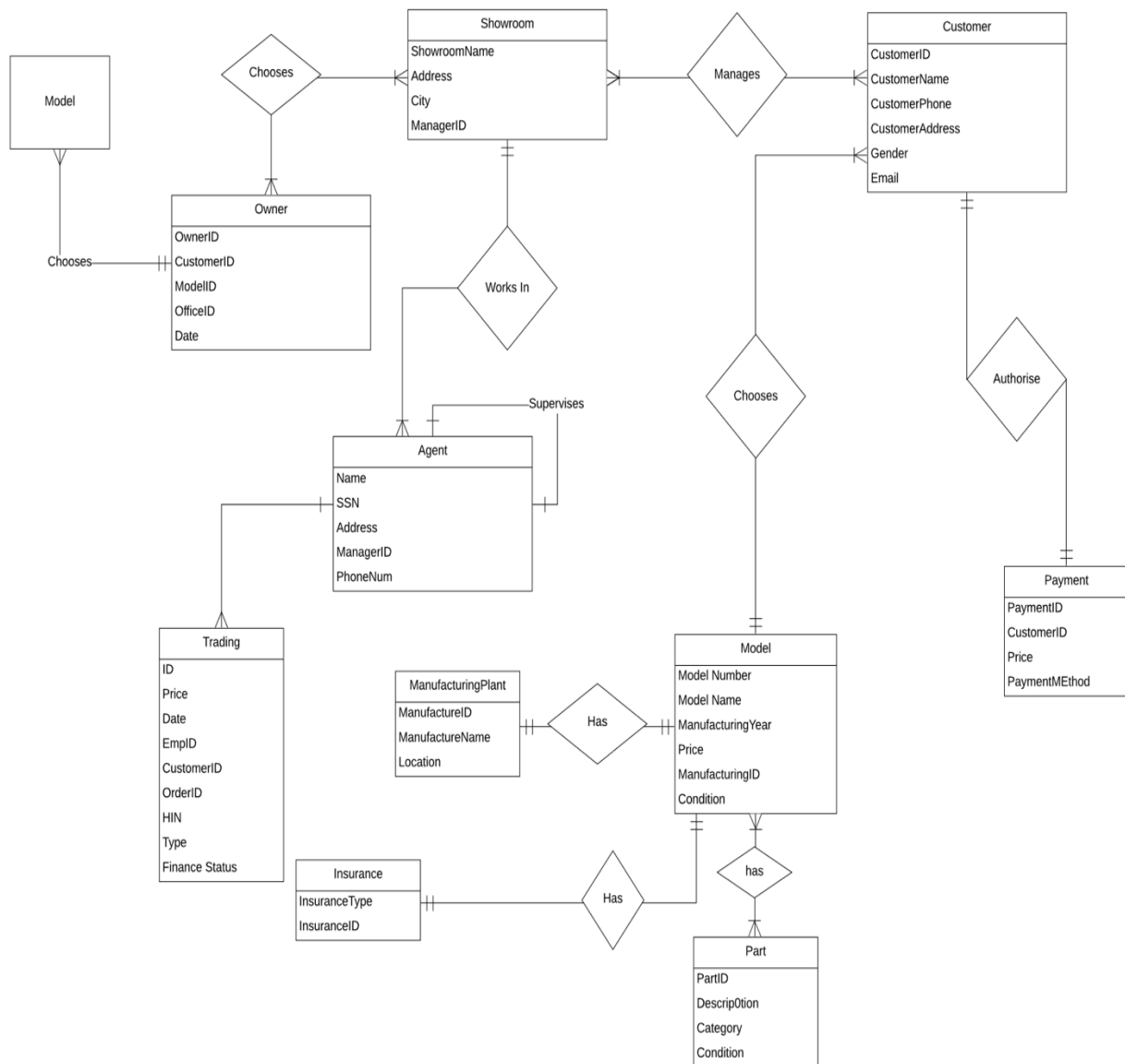
To-be level 0 system



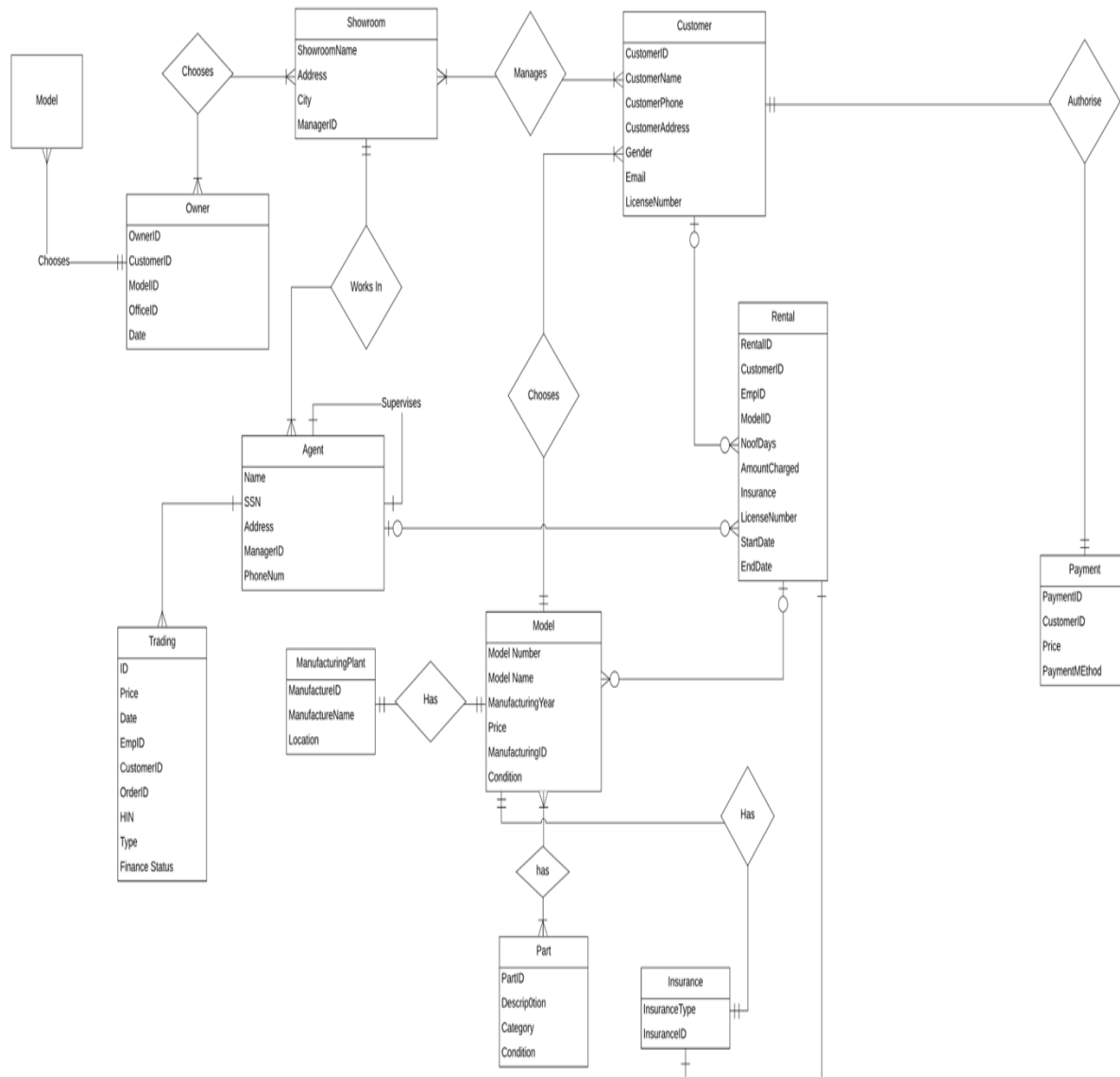
DATA MODELLING DIAGRAMS - ERD's

The **Data Modeling diagram** is used to create or view graphical models of relational database system schemas including a range of database objects. The **diagrams** can be drawn at a logical or a physical level.

As-is system



To-be system



Design Acquisition Strategy

Description of Acquisition Strategy:

The current system is having integration services like trading, financing, build a bear, buying boats. But recent findings show that a lot of people are not interested in buying a boat or maintaining a boat for many reasons such as price of boat or not having a personal/permanent docking station. So, a need for an alternate service such a renting or leasing a boat takes a hike in this growing business field.

The existing system works by – integration of services like **trading** that allows customers to trade their existing with money by putting it up for sale, **financing** that helps in finding the most comprehensive and competitive financing available, to **buy** boats from top boat retailer companies, it **provides latest gear** stuff for sale, allows customers to **build a boat** of their choice based on their requirements and **showcase** new and old inventory where customers can buy a boat.

Alternative Matrix:

The main motto of the Memphis boat center is to provide an extra service to the customers. This idea is based on renting a boat for various purposes such as domestic, travel, recreation, sports, fishing, transportation use. Some of the key highlights of this addition are customer safety, affordance and maintenance. It allows the users to choose from different types of boats that fit their needs from fishing boats to luxurious boats and jet ski, kayaking and family boats. Additional features include training and safety workshops teaching all the rules and safety measurements for customers willing to learn.

The Architecture Design

The architecture design is the plan of distributing information system components across multiple computers. There are two major components including software and hardware. The determination of assigning a software system into a hardware system for designing a 'to-be' system is done by architecture design. The hardware may be input devices, output devices, servers, etc. There is specific software used for each project. For designing the 'to-be' system, there is three primary hardware such as client computers, servers, and the network. There are four basic functions of all software systems such as data storage, data access logic, application logic, and presentation logic.

There are several numbers of ways to place the software system into hardware components. Client-server architecture is most common. We are going to use this for our project.

Client-Server Architecture: Client-Server Architecture tries to balance the processing between client devices and server devices. The client devices will do the logic presentation and the server does the data access logic work and data storage. This architecture design is planning to use our project due to several reasons-

- ❑ To add an extra feature to Memphis boat center, this architecture design is scalable which means it will be easier to increase or decrease the storage and processing capabilities of the servers of Memphis boat center website.
- ❑ It is also supported by many different types of computers and servers. So Memphis boat center, will be supported in both Windows computers and Apple on the same network.
- ❑ The presentation logic, the application logic, the data access logic, and design are somewhat independent. For example, HTML or XML can design the presentation logic of the Memphis boat center, website to specify the page appearance of the screen, which means it specifies the colour of the page, fonts, order of items on screen, command button, type of selection lists, etc.
- ❑ If the Memphis boat center, server is failed then it will be easier to swap out the failed server and replace the active server and also the applications can be restored.
- ❑ Multiple vendors can be used to make the 'to-be' system

Designing the Architecture:

To designing the Architecture of Memphis boat center 'to-be' system, the non-functional requirements need to start at the beginning of the design. The non-functional requirements and architecture design will be used together to develop the hardware and software of the Memphis boat center system. There are four primary types of non-functional requirements such as operational requirements, performance requirements, security requirements, and cultural and political requirements.

The non-functional requirements of architecture design of Memphis boat center are shown in a table below-

1.Operational Requirements	
The environment of Technical Site	a. The Memphis boat center system will work over any popular secured Web environment including Google Chrome, Mozilla, etc. b. customers will able to access the new feature on any popular browser.
System Integration	The internet system of the Memphis boat center will read and write to the main customer database.
Portability	The new system will remain current with evolving Web standards.
Maintainability	Maintenance regularly of Memphis boat center is important for customers.
2. Performance Requirements	
Speed	a. Response time needs to be below 6 seconds. b. Download speed must be standard.
Capacity	a. There should be a maximum of 10,000 simultaneous customers and other users at peak use times.
Availability	The system must be available 24 hours a day and 365 days a year.
3. Security Requirement	
System Value	No requirements
Access Control	customers should be able to access using their Memphis boat center user ID and password
Authentication	Memphis boat center customer information must be in a secured condition.
Virus Control	Users can download their rental data must be verified as virus-free.
4. Cultural and Political Requirements	

Multilingual	No requirements.
Customization	No requirements
Unstated Norms	No requirements
Legal	No requirements

User Interface Design

What is User Interface (UI) Design?

User interface (UI) design is a process of making interfaces in computerized devices or software with a focus on style or looks. Designers aim to create designs users will find pleasurable and easy to use. UI design typically refers to graphical user interfaces but also includes others, such as voice-controlled ones.

User interface elements usually fall into one of these four categories:

- **Input Controls** that allow users to input information into the system, e.g. an entry field that enables users to register with their email address.
- **Navigational components** that help users move around a product or website, such as a hamburger menu on an Android.
- **Informational components**, including notifications, progress bars, message boxes, that share information with users.
- **Containers** that hold related content together, such as accordions—vertically stacked lists of items with show/hide functionality.

Let's look at the website, memphisboatcentre.com designs has control panels and faces; voice-controlled interfaces involve oral-auditory interaction, while gesture-based interfaces witness users engaging with 3D design spaces via bodily motions. User interface design involves building an essential part of the user experience; users are very swift to judge designs on usability and likeability. Designers focused on building interfaces users will find highly usable and efficient. Thus, a thorough understanding of the context's users will find themselves in when making those judgments is crucial. We should create the illusion that users aren't interacting with a device so much as they're trying to attain goals directly and as effortlessly as possible. This is in line with the intangible nature of software – instead of depositing icons on a screen, we should aim to make the interface effectively invisible, offering users portals through

which they can interact directly with the reality of their tasks. Focusing on sustaining this “magic” by letting users find their way about the interface intuitively – the less they notice they must use controls, the more they’ll immerse themselves.

The below image shows the design of our project with rental feature:



Boats to Rent



Jetski boat

2 seater 300 horsepower

RENT NOW



Fishing boat

capacity: 200kg catch per day

RENT NOW



Kayak boat

2 seater and 1 seater

RENT NOW



Sailboat

7 persons

RENT NOW

WORKSHOPS SCHEDULE

8:00am –
9:00amMay Smith
License training

Register

10:00am –
11:00amBruce Adkins
Traning to boat

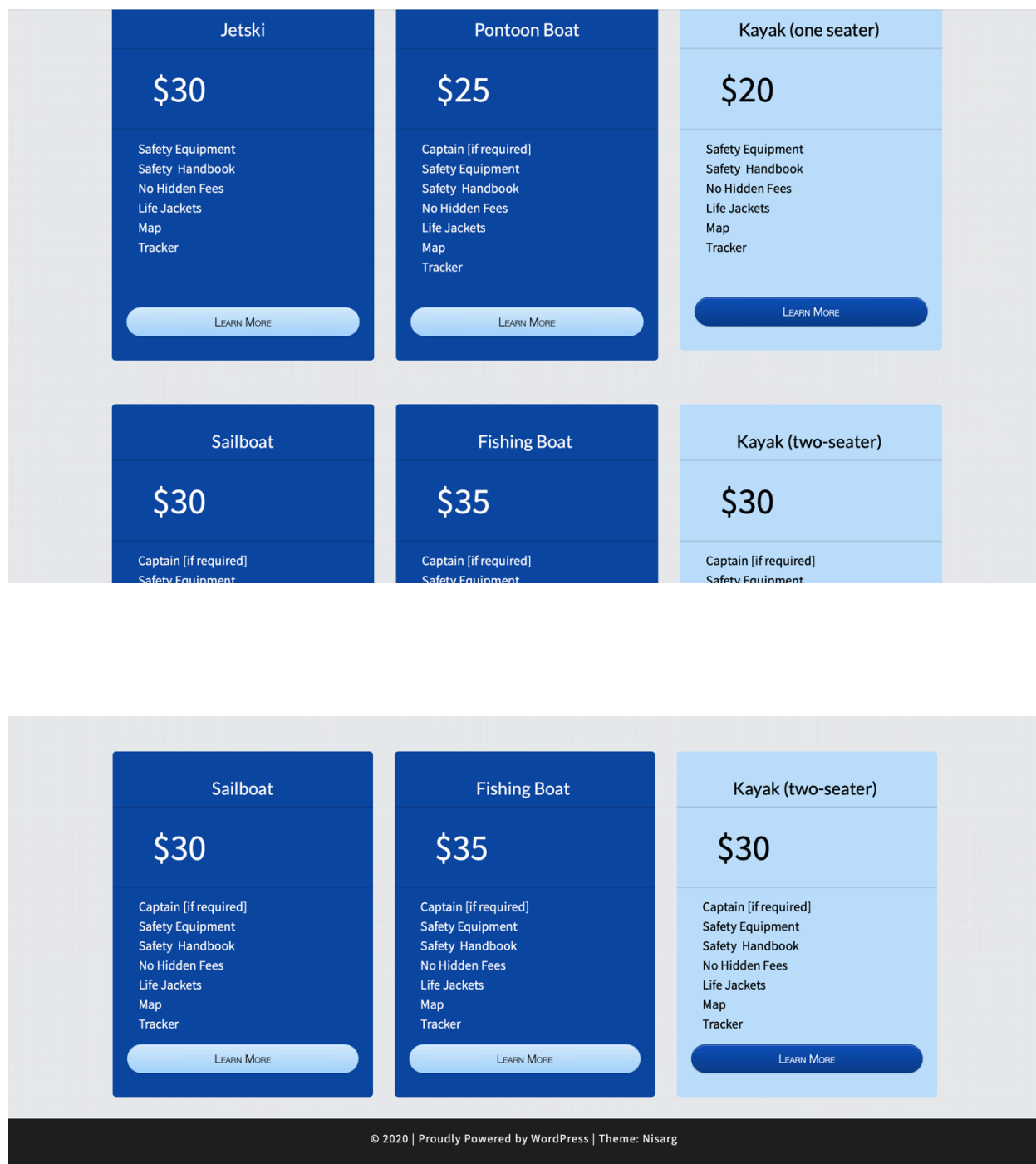
Register

12:00am –
2:00pmMiguel Coleman
Safety and precautions

Register



Leroy Boone



Our design has as many enjoyable features as are appropriate.

Data Storage Design

As many organizations, The Memphis Boat Center uses a relational database for storing the customers, owners, financiers, showroom, boat data.

Data Center CoLo –

The Memphis Boat Center consists of a Data Center Colocation (CoLo), which is a data center for the servers and other computing devices. Here, all the data that is stored is interconnected to each other, i.e. a particular boats used by a customers. Similarly, to know the availability of a Boat in the show room with the help of connected relational database. The Information Technology Service at the Memphis Boat Center provides physical and virtual server hosting at the data center which is also climate controlled and the Data Center CoLo provides regular security scans, backup power, firewalls updates and secure network connectivity.

The Memphis Boat Center used to have two data centers before developing a main and centralized data center to make room for the larger consolidated data related to new applications and customer information.

Data Storage Components –

Based on the Entity Relationship Diagram (ERD) of the relational database, the major components of the data storage plan for the Memphis Boat Center are given below,

- **Customer** – The customer opts for new boats or used boats and he also chooses the manufacturer he want and design the boat as he like.
- **Agent** – will maintain all the boats information along with the customers who opted which boat and all the transaction details.
- **Manufacturer** – consists of the boat manufactured parts and company who are providing their services to the boat center.
- **Financer** – consists of boat details along with the customer details who took financing option on boats.

Implementation and transition plan

Implementation plan:

Our Project “adding the Rental feature accessibility within the Memphis Boat Center system” is one of our dream projects and we achieved several milestones in this project. So far we have analyzed the “As-Is” system and proposed our “To-Be” system using different tools and techniques including use case analysis, data flow diagrams (DFDs), and entity relationship diagrams (ERDs) that we learned during the semester. In this third report we have talked about design acquisition strategy, architecture design, user interface design, and data storage design. Now it’s time to discuss implementation plan, transition plan, and forecast for budget and maintenance.

Implementation strategy:

The implementation phase involves various tasks such as to develop and test the software (a major part of the process), preparation of various documents and plan about how to operate new system. Following tasks are involved for the implementation of our Rental feature online system upgrade project:

- Writing programs for our project as per “To-Be” system design
- Testing the program by unit testing, integration testing, system testing, and acceptance testing stages
- Testing the performance of the system
- Documentation about how the “To-Be” system works e.g. create a “Help” tab with all required information for the end-user
- User training for the new system e.g. video training
- Creation of a support system
- System maintenance plan
- Post-implementation support strategy

Transition plan:

The transition plan is basically a blueprint of the project activities that include the development of the system and post-implementation processes such as a support system and maintenance plan. The challenging part in the transition process is related to training of the people for the new system due to resistance to adopt the new system by people. Transition to the new system requires unfreezing of the “As-Is” system, migration plan, and refreeze the “To-Be” system.

Migration plan:

The transition from the old Memphis Boat Center online system to new and improved Memphis Boat Center system will be facilitated by proper communication with executives, technically competent IT staff, and end-users. Our migration plan will be designed to address the business, technical, and people issues during implementation phase (Table 1).

Table 1:

Strategies to resolve business issues	Strategies to resolve technical issues	Strategies to resolve people issues
By communication with business/c-level executives	By the installation of required hardware	By changing management policy manual
By creating business value creation plan	By the installation of required software	By preparing cost Vs benefit documents
	By preparing a technical document for successful migration	By implementation of motivational strategy

		By proper training about new Memphis Boat Center system
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The success of the migration plan depends on resolving issues on three major aspects, business, technical and people. However, the most difficult part is to resolve people's issues due to resistance to change. It is important to make transition plan that addresses all of these issues for the successful implementation of our project for the Memphis Boat Center system upgrade project.

Training and motivating employees:

As mentioned earlier, resistance to change is the major people issue and for the successful implementation of the project and it is important to create a plan to motivate end-users to use the new system. We need to convince the users that the “To-Be” system will be better than “As-Is” system and cost of implementation and maintenance will be low as compared to its benefits. The major factors to be considered for the successful implementation of the project and to motivate people are:

- Benefits of the “To-Be” system
- Assurance about the benefits of the new system
- The low-cost transition of the new system
- Political strategy implementation for the new system within the organization to motivate people

Forecast for maintenance:

☐ Growth/Flexibility

The new system should be considered flexible if there are continuous support and proper maintenance plan available to either refine or maintain the new system. For our Memphis Boat Center system upgrade project we expect continuous support and maintenance help from the website IT department. One of the support systems will be either “online support” or “helpline” for the new system.

☐ Budget

The budget requirements for our project will not be huge because we are trying to upgrade the existing Memphis Boat Center website. However, budget approval from the sponsor should be done before the implementation of the new system. Budget requirements should be calculated based on following three specifications:

1. Cost of hiring new staff for the new system
2. Cost of technical requirements such as supporting software and hardware costs

3. Cost for the training e.g. development of online training system or special training session from external experts.

Future issues/problems:

During the implementation process, we should also forecast the possible risks associated with the new system such as corrective measures in case of system implementation failure as well as costs associated with such issues/problems. However, system failure can be avoided by careful planning during implementation phase. We are excited to implement our new system to enhance the efficiency of our Memphis Boat Center website for better and user-friendly experience.

Prototype:

A prototype is a test or preliminary model of an idea, design, process, interface, technology, product.

- a) **Requirements Gathering & Analysis:** Understanding the 'As-is' System and defining the mission and goals of the 'To-be' System by using requirements gathering techniques like interviews, group discussions and JAD sessions.
- b) **Design:** Once the blueprint is received then implementing it by using the techniques(Architecture, User-Interface Designs)
- c) **Implementation & Coding:** This is the phase which is managed by the manager, where he/she assign the activities and coordinates schedules.
- d) **Testing:** Testing the performance of a system by using smoke, integration, and creating a document, including required information to the end user.
- e) **Maintenance:** After the product is released identifying the risks and issues associated with the product.

Providing an overview of our team schedule:

- **Project team communication plan:**
 - ☐ WhatsApp Group-created to communicate quickly.
 - ☐ Gmail and Google Drive- To share the documents.
 - ☐ Arranging Weekly Meeting-

- o To make agenda.
- o Discussion on the topics.
- o Questions on the topics.
- o Presentation of the discussion.
- o Deciding to complete the weekly work by dividing in between team members.
- **Deadlines/milestones:**
 - Gant Chart- To manage the project work.
 - Distribute work among group members.
 - Fix time for finishing the weekly report.

Gantt Charts

Task	Start Date	Duration	EndDate	Owner Ship
Industry and Organization Background Information	2/24/2020	5	2/29/2020	All of the Team members
Project Selection and Management	3/16/2020	4	3/20/2020	All of the Team members
Requirements Definition Techniques	3/16/2020	3	3/19/2020	Kalyani,Uma
Project Status Report	3/19/2020	4	3/23/2020	Kalyani,Uma
Use Case Diagram	3/24/2020	2	3/26/2020	Manasa, Teja
Data Flow Diagram	3/26/2020	2	3/28/2020	Venkat, Kalyani
ER Diagram	3/27/2020	2	3/29/2020	Abhi
Design Acquisition Strategy	3/30/2020	3	4/2/2020	Kalyani,Uma
Architecture Design	3/30/2020	4	4/3/2020	Kalyani,Uma
User Interface Design	3/30/2020	3	4/2/2020	Kalyani,Uma
Data Storage Design	4/12/2020	8	4/20/2020	Kalyani,Uma
Implementation Plan	4/13/2020	10	4/23/2020	Venkat
Transition Plan	4/14/2020	5	4/19/2020	Manasa, Teja
Presentation	4/21/2020	5	4/26/2020	Venkat
Final Report	4/26/2020	4	4/30/2020	Kalyani,Uma