Project Proposal

Group 6

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1 Problem

As the paper-based system is dated in every small and large company, a new form of the system is now created. The aim of our project is to provide a powerful online system that can solve your problems upon appointment management in Healing Paws Veterinary Hospital.

1.1 Customer

For a great operational veterinary hospital like yours, it is essential to meet the need of your customers who spend much time online every day. Imagine the following problems your customers are having:

- Without an online system, they would feel reluctant to make appointments for they prefer surfing the internet rather than making a phone call. They have to use their fixed phone number every time when calling in case of forward contact. Here what they are expecting is a method to edit their profile quickly and freely meanwhile being received by the employees. Only our cloud-based system can achieve this securely by having customer login before attempting to make an appointment.
- When making a phone call appointment, they are not able to see the available time and doctors directly. Therefore, customers are unlikely to regard your hospital as reliable. By adopting our online system, customers will be able to get a better knowledge of your timetables. Moreover, our adaptive design of web pages will even guarantee an impressive sight on both mobile devices and PCs.
- Once their pet is in the hospital, it is possible that the pet has serious cases and requires hospitalization. During the time, the customer is usually very concerned, hoping to see the status of their pet. However, it is hard to get the real-time status unless using our online system. We can allow the customer to see 'surgery date confirmed', 'surgery complete', 'pet ready for release' by the recording from employees.
- Another problem in your current system is that when the pet of the customer only gets a trifling skin problem, but it is difficult to describe, the customer must take the pet to hospital in person. Via our online chatting box, the customer can instead send a picture to the employees who can then show it to the doctor quickly. They can get advice from the doctor right at home.

1.2 Employee

On the other hand, your employees would also have problems using your paper-based system:

- A typical 'cut in' situation will probably take place in a full-schedule day. If an emergency patient suddenly comes to the hospital, all the standard appointments have to be postponed. While the employee has no online system to broadcast this situation to related customers, he can merely call them on phone one by one, waiting for them to answer, receiving their complaints. This can be prevented by our system by allowing employees to send SMS notifications to desired customers in a minute.
- When multiple appointments are made by one customer, the employee have to record all the information of the pets by hand. Moreover, it is even harder for employees to cancel and change appointments on the paper. The whole paper would be in a mess if there are too many changes. Via our cloud system, customers can enter their pets' information by themselves, so that the workload of the employees can be largely reduced.

1.3 Language

Last but not least, the interface of our system can switch between English and Chinese for the user which will solve the language problem in communication between employees and customers. This can prevent you from

losing foreign customers.

2 Vision

The goal of our project fits well with the vision of your hospital in the long run. We have all the basic functionalities as well as high-level ones. More importantly, we can achieve a very high level of non-functional requirements which play a pivotal role in the usability and sustainability of the system. These can lead your hospital to a good reputation in the future.

It is worth mentioning that our system has long-term deliverables and is always ready to release updated versions for your company's growth. With our continuous participation in building the system, you can give us any feedback on how to improve each released version of it. We will make the most considerate proposal each time.

3 Benefits

To expand that vision, we paint a detailed picture on the merits we plan to achieve:

- The whole interface will look vivid with intuitive blocks of contents. There will be two entrances on the main page for customers and employees to log in, along with a language switching bar. After logged in, customers will be able to see the navigation bar for two types of appointments, the profile section and online consultation section clearly, while an employee will be able to see all the appointments made by the customer in chronological order which can be dragged to the box of desired date and time.
- While standard appointments and emergency appointments are both required, employees will arrange these appointments for emergency and outpatient doctors respectively. Every standard appointments will have a half-hour interval, so that customers will have an exact schedule before going to the hospital. Emergency appointments can be made at any time, specifying how long will take the customer to arrive. The separation of outpatient and emergency departments will ensure an 'emergency channel' for the emergency appointments, which will meet the need of the customers.
- We will set up an online chat function for employees and customers to enable communication between customers and employees, as well as the handling of emergencies. Employees will be able to ask customers whether the schedule is appropriate for them or not, and customers will also be able to contact employees at any time necessary. In this way, when the customers have problems, employees will be able to deal with them in time.
- Our project will also meet the high-performance non-functional requirements. Stability can be achieved. For example, the page "Jump time" will always be controlled at less than 3 seconds. At the same time, we will optimize the product experience, such as a large amount of data on a page, resulting in a long loading time, by providing users with a loading progress bar indicating the loading time, in order to reduce the anxiety of users. For the input of resources such as servers, we will also find the optimal scheme to achieve the maximum resource utilization percentage. For security issues, we will control the reading and writing of documents and prevent memory stealing and the leakage of confidential data by some technologies.
- Our software will support future upgrades. We are using the flask micro framework with high flexibility to do the background development of the server, so that the emergence of any new functions in the future can be efficiently and conveniently integrated with the flask framework. Therefore, we will be able to change the scheme more flexibly to improve the system to adapt to future development. The function of the system is modular, supporting flexible configuration, so that when the business process changes, it will be conducive to reducing the time of writing repeated code, as the scale of the hospital becomes larger and the number of doctors increases in the future, for example. Customers will be able to select a specific doctor after seeing the doctor's profile, and it will be possible for the previous time selection code to be reused when making further appointments.

4 Deliverables

(1) In the 6th week, we will deliver the basic interface of customers and employees which is adaptive web page on both mobiles and PCs.

(2) In the 8th week, we will deliver an available system with some basic functions realized, including user registration and login, profile editing, appointments making on customer side, appointments organizing on employee side, notification sending to customers.

(3) In the 10th week, we will add the specific functions with integration into the basic ones. This will realize the advanced functions including customers being able to talk with employees and being able to see the status of their pets, users can interface with both English and Chinese.

(4) In the 12th week, we will complete the cloud deployment and complete the first beta of the whole system.

(5) In the 13th week, we will provide a written report to record the implemented software. The report will provide technical details, as well as how to operate the system.

(6) In the future, we will continue to update the software to add new functions if necessary, for example, updating the system to an mobile app that can be installed on Android and iPhone.

5 Success criteria

We will follow the SMART (Specific, Measurable,Achievable, Realistic,Time-related) goal for this area:

- Specific: As we plan, we are committed to providing customers with a stable, safe, efficient and easy-to-use platform, especially focus on the stability. For an online system, it should be able to solve the server pressure caused by the simultaneous use of multiple people, which requires optimized software structure and a reliable sever. So we will pay more attention and budget in these domains to meeting the requirements. What's more, security is also the focus of our consideration. We will learn more about information security to ensure that our customer's information will not be leaked.
- Measurable: During the whole development process, we will make weekly reports to record the development progress. The initial documentation (work package) will be updated as progress is phased in. Therefore, the periodic progress is recorded and viewable.
- Achievable: As the Gantt chart shows,Jiang Zexin and Liu Haoran are the Back-end Employee Manager; Zheng Zhi is the Back-end Customer Manager; Yu Jiayue is the Front-end Employee Manager; Xu Ziting is the Front-end Customer Manager; Long Min is the Back-end Database Manager.
- Realistic: Based on what we have learned and self-study knowledge, we will use the flask framework in web development and import plug-ins to implement the function of online dialogue between customers and employees, following the Problem-Based Learning strategy. It may require more ability of self-study and more effective communication and cooperation between team members.
- Time-related: As the deliverables shows, the whole development process of the project will last for 13 weeks, which means the final product will be released in 2020/5/22.

6 Deadlines/plan/approach

6.1 Deadlines

We used a Gantt worksheet to pinpoint all deadlines. As the Gantt chart shows below, each member in our team will be a manager for each work package. Deadlines for each work package have been set to specify the tasks that should be done before each deliverible.

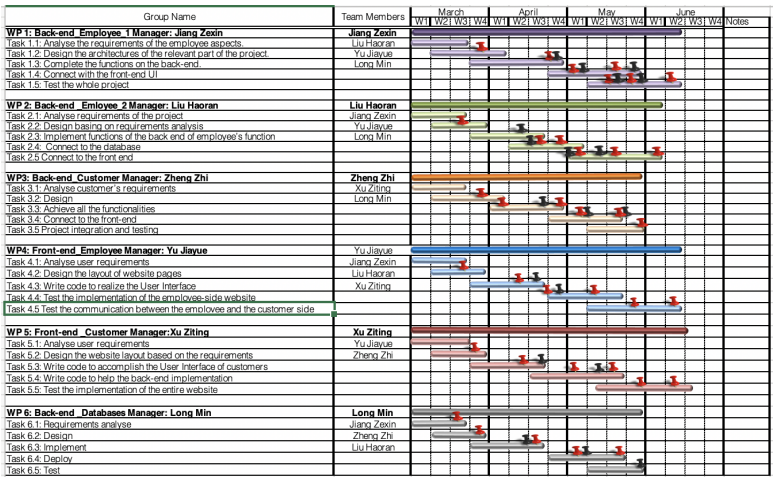

Figure 1: Gantt Chart

6.2 Plan

Our project plan lies in six work packages. As we have clarified in those work packages, there are several contributors to each work package which ensures a collaborative development at each stage of the project. In terms of what each manager is responsible for, generally, we plan to divide our team into two big groups, one for developing the employees' functions while the other for the customers' and in each group, we further divide them into frontend and backend developer as managers for each package. Moreover, a detailed description of every task, milestone and deliverable is specified in each work package, which can be referred to as a customized and detailed plan for every team members.

6.3 Approach

We decided to choose the traditional waterfall development model to complete our project. Therefore, we will spend more time analysing the requirements and designing the project in details at the early stage to avoid backtracking during later process. With the impact of coronavirus, we will adopt more remote discussions and remote collaboration at the implementation stage by using GitHub for code integration. As the deliverables show, the whole development process of the project will last for 13 weeks, which means the final product will be released in 2020/5/22. In this final stage, we take the risk of delivering our system remotely due to the coronavirus. As a result, we have to prepare for more detailed documents and instructions on our system, so that you can install and use it in the remote distance.

7 Cost/budget

According our plan, renting servers will take up most of the cost. At this stage, we plan to rent Alibaba cloud servers to complete the deployment of web application. It will cost 30 CNY per month and we are going to rent it for three months, so the whole development process need 90 CNY budget.