**Business Analysis and Application Development**

**Under the Sea**

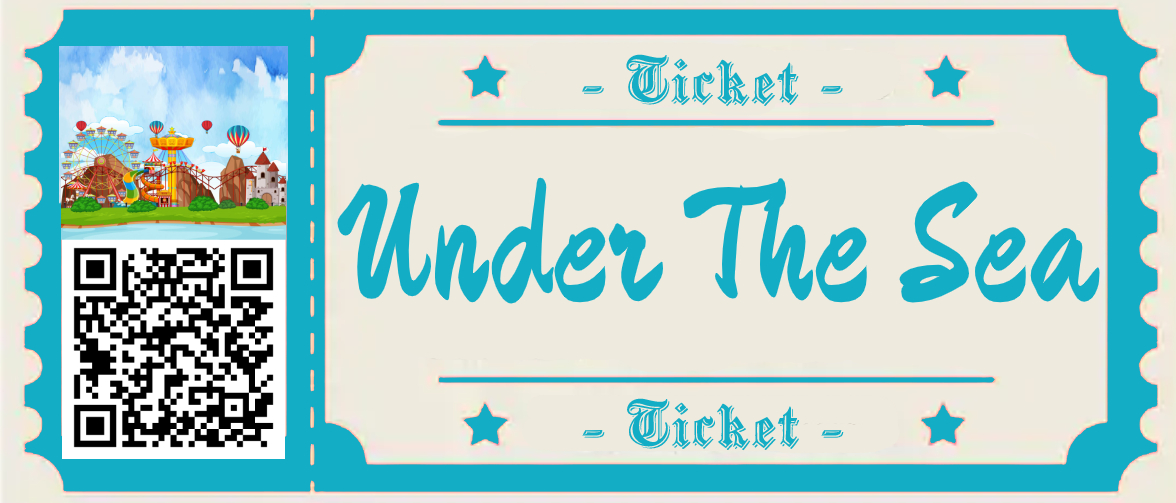
**Under the Sea** is a theme park and amusement park situated in *Bai Li Han* in the Southern District of *Mindonesia*. It is the second largest theme park in *Mindonesia*, after *Mindonesia* Fantasy World. As the business grows, the old system that they have had since it has opened become outdated. In order to improve the business management, *Yong Cheng* as the **Under the Sea’s manager** asked you to develop a system to help them manage the business activity. He also provides you the complete business detail of **Under the Sea** as stated below.

1. **Attraction Department**

**Under the Sea** has over 40 rides/attractions and complies with international standards. It opens from Monday to Sunday at 8 a.m. to 10 p.m. and the admission is chargeable according to the price that has already been decided.

This department will manage anything related to the attraction, such as **checking visitor’s ticket** in the entrance gate, **guarding in several places in** **Under the Sea**, and **selling tickets** in the ticket sales counter. The staff that works in this department will **carry out the task** that is assigned to them, whether checking ticket, guarding or selling tickets and the task may change at any time.

Before the visitor can enter, they need to **buy the ticket first** and they can only buy it on the spot. The **ticket contains a unique QR Code** to identify visitor’s eligibility. The **eligibility for the ticket** is only for **one day**. After buying the ticket, the visitor needs to show the ticket to the staff in the entrance gate and the staff will check the validity of the ticket.



1. **Maintenance Department**

Every amusement park and theme park require Maintenance Department to maintain safe and professional operation for the public. This department will help the visitor to **reduce risk** and **ensure visitor’s safety** throughout their time on a ride. That’s why, there is a need of **schedule for** **maintenance** to stay safe and to stay within industry standards.

Every staff in this department can **see which attraction/ride that needs to be maintained** and they need to change the status if they are maintaining it and after they have finished. If the staff decided to do a maintenance on an attraction/ride, they need to give a note of what and when they did the maintenance.

1. **Ride and Attraction Creative Department**

As time goes by, there is a need of rides/attractions so that the visitor will be interested to visit **Under the Sea**. The Ride and Attraction Creative Department’s task is to think of what ride/attraction that **should be added**. If they decide to add a new ride, they need to plan thoroughly what **kind of ride** it is and **how it works**. But the most important thing is that they also need to think about the ride’s safety. After they have finished planning it, they must **state the ride’s details and safety information**, and then sendit to the **Manager** by system and the Manager will decide whether it will be accepted or rejected. If it is **accepted**, the Ride and Attraction Creative Department will send all the details regarding the new ride’s plan to the **Construction Department**.

If they decide to **add an attraction**, they will have to describe what kind of attraction is this and all the details about the attraction such as who will participate in this attraction, when it will start, etc. After they have finished planning it, alldescriptions will be sent to the **Manager** by system and the **Manager** will decide whether it will be accepted or rejected. If it is accepted, they could **execute the attraction**. Any **purchase request** needed should be sent to **Purchase Department** and any fund request needed should be sent directly to **Accounting and Finance Department**. Both should be sent by system.

The other task from Ride and Attraction Creative Department is also to **change** or to **remove** current ride/attraction. When they decided to change or remove it, they also need to do the same procedure as adding a ride/attraction.

This department will be the one that **manage** all the **ride/attraction data**. Whenever they have requested an addition, change or removal to a ride/attraction and the request is **accepted by the Manager**, they will **change** the data related to it. Especially if it is related to addition or changing of ride/attraction, there will be **status** regarding it. The status will be about the **current status** of the ride/attraction, if it is waiting for the **Construction Department** to start constructing, then the status will be *Waiting for constructing*, if it is in progress of execution, the status will be *In progress of constructing*, etc.

1. **Construction Department**

This department will be the department that **handle all constructions**. When they got a new ride’s plan, a ride’s update plan or a ride’s plan of removal, they will do as they are told. If there is any **purchase request** needed, it will be sent to **Purchase Department** by system and any **fund request** will be send directly to **Accounting and Finance Department** by system.

Anything about the construction progress will be told to the **Ride and Attraction** **Creative Department** and they can **change** the status of the ride by themselves without waiting for the Ride and Attraction Creative Department to change the status.

1. **Restaurant Department**

**Under the Sea** also provides a restaurant for the visitors so that they won’t have to bring food on their own or finding another place to eat. They even **use fresh ingredients** to prepare a tasty and healthy food to ensure their food quality.

To manage the restaurant easier, the **Restaurant Department** is divided into **two** division.

1. **Dining Room Division**

The restaurant opens from Monday to Sunday at 8 a.m. to 10 p.m. The restaurant only serves **Under the Sea**’s visitor. Before the visitor can enter, the restaurant waiter will **check for the ticket**that they have bought before entering **Under the Sea**. After the **ticketis validated** using the **QR Code**, the visitor can choose whether they would like to **take away** the order or **dine in**.

If the visitor wants to **take away** the food, they can **order** it to the waiter and wait for their order to be made in the waiting room inside the restaurant. But if the visitor wants to **dine in**, they will be guided to the empty table and the waiter will **input their order**. The empty table can be seen in the system by the waiter so that they don’t need to look at the table which is empty manually. All **order inputted** by the waiter will be **forwarded** by system **to the Kitchen Division**. Whenever the order is completed by **Kitchen Division**, the **Dining Room Division** will **receive a notification** and they will deliver the food to the visitor to complete the order. The waiter **must change** the **order status** become finished if the order is completed.

When the visitor has finished eating and wants to pay for their order, they just need to **tell their table number** to the staff and the staff will tell the **total amount** they need to pay. The payment details such as **tax**, **total payment before tax** and **after the tax** will also be **displayed in the screen** so that the visitor is able to look at it. They can also give a **rate and feedback** if they want.

1. **Kitchen Division**

The **Kitchen Division** **manages** the cooking sent by the **Dining Room Division**. They will cook the food according to the **visitor who ordered first**. The chef will **change the status** of the order if it is **being cooked** and after the **cook is finished**.

To cook a food, a chef will be using a combination of ingredients. Every ingredient in the kitchen has **its own stock**. While the **chef takes an ingredient to cook**, they also need to see whether the ingredient is going to run out or they think that the ingredient **needs to be restock**, they will send a **purchase request** by system to the **Purchasing Department**.

1. **Purchasing Department**

The **Purchasing Department** manages every purchase needed by other departments. They will **check every purchase request** including the date and time it needs to be bought. They need to send the **funding request** by system to the **Accounting and Finance Department** after they have calculated the **predicted amount of money** needed to buy the purchase request. Purchasing staffs will **buy the purchase request** only if their fund request if **approved by Accounting and Finance Department**.

After buying the purchase request, the staff that bought it need to **give information** such as who bought it, when it is bought, and the total amount used to buy the requested purchase (not the predicted amount). The **information** will be **inputted** to the system.

1. **Accounting and Finance Department**

The **Accounting and Finance Department** is entrusted by **Under the Sea** to manage the financial. Every cent of money must **go through** the **Accounting and Finance Department** first before they can be **spent**. They will manage every fund request that is **requested to them**. They will check the fund request purpose before they decide to **approve** or **reject** the request.

If they decided to **approve** the fund request, the **Accounting and Finance Department** will **notify** the **department** that requested the fund request so that they can immediatelycontinue what they needed to do regarding the fund they requested. But if they decided to **reject** the fund request, they need to tell the **reason why** they reject it. They will still **notify** the rejected request to the **department**.

1. **Hotel Department**

Besides attractions and restaurant, **Under the Sea** also provides a hotel for the visitor that would like to stay near Under the Sea. This hotel is located next to Under the Sea and has a great sea view. The hotel has **10 floors** that consists of **20 rooms** for each floor.

To manage the hotel easier, the Hotel Department is divided into **two** division.

1. **Front Office Division**

The Front Office Division manages visitor that would like to **reserve a room**, **welcoming** people that visit the hotel, manage room including **check-in** and **check-out**, payments, and other visitor needs along with their **feedbacks** (note that the feedback will be inputted from a screen by the visitors themselves).

Every reservation that is made by the visitor **must be recorded** and the receptionist needs to **check** whether there is an **empty** room to be **reserved** or not. When making a reservation, the visitor must **pay** off the payment **before they can check-in**. The time for **check-in is at 10 a.m**. and **8 a.m. for check-out**. When the visitor check-in, the receptionist will ask for the visitor’s **passport** or **identity card** to ensure their eligibility and **register the visitor data** to the system if they are new to **Under the Sea**’s Hotel.

When the visitor decides to check-out, the receptionist will order **House Keeping Division** to clean the room and check whether there is any damage to the furniture or equipment in the room. If there is any damage, the receptionist will **charge the visitor for the damage**.

1. **House Keeping Division**

Every visitor that stayed at **Under the Sea**’s Hotel can decide whether they want the House Keeping to clean their room or simply don’t disturb it. Every morning, the House Keeping will check for the clean-up sign in front of each room. The House Keeping will ignore every room whose visitor is scheduled to check-out on that day since the receptionist will order them to clean the room when the visitor check-out. The House Keeping can **check** who will **check-out** that day from the system. After the House Keeping cleans a room, they need to **note** to the system what is the **room’s number** and what **they have done** (such as changing bed’s cover, changing the towel, etc.).

1. **Sales and Marketing Department**

Sales and Marketing Department’s task is to **increase visitor’s number**. They need to think of attractive, interesting, and creative **advertisement** such as banner, brochure, and videos to attract new potential visitor to visit **Under the Sea**.

While making advertisements, they might need to purchase something or need some funds. For any purchase, they should send a **purchase request to Purchasing Department** by system. Meanwhile for fund needs, they could send a **fund request** to **Accounting and Finance Department** by system. All data regarding the advertisement should be **inputted to the system**.

1. **Human Resource Department**

The **Human Resource Department** is responsible for **managing all employee data**. They can **look** at all employee’s salary amount and can also **raise** employee’s salary. To raise salary, they need to **request** a salary raise and tell the **reason** of the salary raise to the Manager. The employee’s salary can be raised if only the **Managerhas approved** it.

This department will also manage the employee **recruitment** and **firing**. They will monitor the employee and see whether they do their job correctly or not. If the employee does any violation or didn’t do their job correctly, they can decide to fire the employee and they need to **collect the evidence** and the **reason** to fire the employee before sending it to the **Manager** by system.

Besides that, the employee can also **send leaving permit request** due to some reasons, such as personal reason, sick leave, family event leave, etc. The **reason must be stated** when the employee sends the leaving permit request. The **Human Resource Department** can **accept** or **decline** the leave permit request and the employee can view the response.

Every month, the **Human Resource Department** will also **request** fund to the **Accounting and Finance Department** to **pay** for **employee’s salary**.

1. **Manager**

The Manager will manage all the request given to them and decide the steps to be taken to improve **Under the Sea**’s quality services and overall operational activity. To achieve that, the Manager can **see Under the Sea’s income** from the ticket sales, hotel reservations, and restaurant orders. For convenience, the data can be viewed using **data visualization**, which displays data analytics in a chart.

Since **Under the Sea** has more than hundred of employees, there will be employee that decide to **quit their job** or **resign**. Every employee that wants to resign needs to **submit a resignation letter** to the manager. The letter must be submitted at least **2 months before** the resignation. The Manager then will decide whether the employee is allowed to resign or not based on contract, whether there is any work that hasn't been done yet, work performance, etc.

**IMPORTANT NOTES:**

* Analyze which data will be shown to each department and which are not. Only show the necessary data to each department.
* You can write your own analysis assumption in the diagram.
* You must make the application based on C# using WPF and Access / SQL Server / MYSQL for the database.
* Your application must authenticate user based on their role.
* The application must minimalize human error.
* All data must be **soft deleted**.
* Your application must be made **based on analysis diagram you made**.
* You must create the analysis diagram consist of:
  + Activity Diagram (min 5 and not identical)
  + Class Diagram (Updated Class Diagram with **relationship**)
  + Use Case Diagram
  + Full Use Case Description (min 5 and not identical)
  + Multi-layer Sequence Diagram (min 5 with **fragment** and not identical)
* All diagrams must use the **Satzinger** concept.
* There must be at least **four design patterns** used in the program.