ICT284 Systems Analysis and Design

Assignment 1

Worth:	15% of your final grade.
Due	**See LMS**
Submit to:	LMS, via the Assignments tool. Submit as a single Word document including all parts of the assignment. Ensure you complete the declaration that is part of the submission process. You do not need to include a separate coversheet, but you should include your name and student number as part of your document filename. Your name and student number should also be included in the assignment document.

Late assignments that do not have an extension will be penalised at the rate of 10% per day. For example, if your assignment was 2 days late and the original mark was 65%, your final mark will be 45%.

Read the following very carefully before starting the Assignment:

The assignment involves several exercises requiring you to carry out some systems analysis activities based on the material covered in Topics 1-4. The exercises are separate and do NOT form part of a single case study.

- You may need to make assumptions where information is incomplete: state any assumptions clearly.
- Your diagrams should be drawn using Visio or a similar tool, using the appropriate template for each diagram type. Diagrams should be pasted into the Word document.
- Your diagrams must follow the correct notation and naming conventions, and each diagram should include a title and legend.
- Refer to the assignment's rubric file for marks' distribution.
- This is an INDIVIDUAL assignment.
- There are marks allocated to the overall organisation and presentation of the Assignment, please refer to the assignment's rubric for more details.
- Academic misconduct is treated seriously, and penalties may apply. Instances of academic misconduct include submitting work that has been produced either in part of whole by someone else or using Artificial Intelligence tools.

1.Stakeholders and Requirements

The Outdoors Crew Association (OCA) is a group of university students who are very passionate about outdoor recreational activities which are organised regularly throughout the year. OCA specialises in organising and managing Hiking, Camping, Windsurfing and Rock-climbing trips for students (nature enthusiasts). Trips are run on a regular monthly basis, and each month, instructors (coaches) volunteer to lead the planned trips to ensure everything runs smoothly and safely whilst still ensuring participants gain learning and enjoyment from the outdoors experience.

The "Student Leaders" team of the OCA have been arranging the outdoor trips informally for many years and are now looking to make it more formal and organised, which will be auditable and overseen by the Student Affairs Office. They have agreed on a set of policies and guidelines to ensure that the processes work properly, they have decided to commission a new digital system – OutVenture.

The Student Leaders want the OutVenture system to automate the process of assigning instructors, so that volunteers can have advance notice of when they are participating in an outdoors trip, where the trip will be held, and the role that they will play there (lead Instructor or Assistant Instructor etc...). This will combine calendaring and scheduling with a mechanism for advance notice of unavailability and messaging to find a substitute instructor. The OutVenture system will have a central secure database and will be accessible through the web and mobile devices by the Student Leaders, Student Affairs Office, participants and the volunteers.

OutVenture needs to maintain information about the volunteers, including whether they have had training in their specialty outdoor activity, have qualifications or licenses (if needed) for leading trips, and have a current first aid certificate. Of course, it also needs to keep track of the various trips to be run throughout the year.

OutVenture should send out text messages a week before a planned trip, and reminder messages the day before and the morning of the trip. Ideally it should enable a call on a GPS system (such as Google Maps) to show where the start point gathering is being held and how to get there. If a scheduled Instructor is unavailable for a trip, she or he will be able to send a notification to OutVenture, which will then call on remaining volunteers to assign a substitute.

a) List the stakeholders for the proposed OutVenture system, and in each case explain what their interest in the system is.
b) List and briefly describe the functional requirements for the system as identified in the description.
c) Using the FURPS+ categories, identify and briefly describe several non-functional requirements for OutVenture. Address all of the categories (URPS+): if you consider that any of them are irrelevant, explain why.

2.Use case modelling: user goal technique

You have been asked to carry out use case modelling to identify the functional requirements for a new Travel Booking App. The App is targeted at the local tourism market (domestic travel only) and as such, the target users are anyone looking to travel domestically. All type of domestic travellers are to be catered for including leisure tourists, business, family and senior travellers. The App will be designed for iOS and Android platforms, in addition, it will be available as a Web App to work seamlessly across different devices and platforms, including desktops that will provide a variety of additional features as well as those on the App itself.

Use the user goal technique to identify all the use cases that would be relevant to a domestic traveller who would be a potential user of the App. Use your own experience, or that of a domestic traveller of your acquaintance.

a) Present your list in a table giving the use case name and an informative brief description.

b) Draw a use case diagram representing the same information.

3.Use case modelling – Event Decomposition Technique

Use the event decomposition technique to carry out use case modelling for the Wild Waves Expeditions" System (WWES) described below. For each event you identify, name the event, state the type of event, name the resultant use case and give a brief description of it, and name the actors involved. Present your results in the form of a table with the headings:

Event	Type of event	Use case	Brief Description	Actors (Only for external events)

Wild Waves Expeditions (WWE) is a growing fishing and adventure tours company that operates in a coastal city renowned for its rich marine biodiversity and natural beauty. The company specialises mainly in providing guided fishing experiences, and ocean tour adventures for both avid anglers and nature enthusiasts.

The new company was started by a renowned professional Barramundi angler, Sandy Beaches who is keen to see WWE grow and expand. The venture has been very successful in attracting customers; however, it is aiming to further expand its customer base and enhance its overall service offerings. It has 2 charter fishing boats that accommodate small groups, and are equipped with cabins, restrooms, and seatings. The existing manual booking and communication process is becoming a bottleneck as the business grows, leading to inefficiencies, missed opportunities, and difficulties in managing customer inquiries and reservations.

Wild Waves Expeditions would like to implement an Information System. The Wild Waves Expeditions System (WWES) must manage the reservation system for the fishing and adventure tours, and maintain all information about customers, staff, and tours. It must also manage the information about the boats' maintenance and keep track of staff safety induction training.

Customers book online or at the WWE centre. As the tours are heavily subscribed, customers are sent reminder texts about their reservations the week before and the day before. Cancellation without incurring a charge is only possible up to 4 weeks before the tour (after

that the full price is payable). The WWES is not required to handle any payment information as this is done by a third-party system.

A single booking for a tour can cater for a group of 1 to 15 people and must be accompanied by a trained staff member if anyone in the group is under 18 years of age. The staff member who acts as leader must have had a full safety induction within the last 3 months, and a current fishing guide and lifeguard certifications. The WWES must ensure that all staff satisfy "Leader" requirements by recording training and certification dates and sending Sandy an email one week before any staff member's safety induction lapses. This relevant staff member also requires an alert at the same time.

All customers must also meet various conditions: be under 70 years, not be pregnant and not have any medical condition that may pose serious challenges and risks for being on sea fishing trips. This is confirmed when they book, along with a name, address, and contact phone number, and the date and time of the tour required. Group bookings always need a primary contact. Details of all customers in a group are required, and all customers must sign a statutory declaration that the information they provide is true. Insurance and OHS requirements mandate permanent storage of these declarations.

Each tour is booked out at 4 hours, with 15 minutes preparation time, and 5 minutes clean-up time. Fishing tour type 1 provides the basic fishing experience, while 'wild' fishing tour types 2 and 3 also offer deep-sea and night fishing expeditions. These 'wild' fishing tours are more expensive than the basic one, and there is a requirement for the customer to have a swimming competency certificate, which must be sighted when they book.

Safety and comfort of customers is obviously paramount for WWE. Between each tour an inspection is made of the boats (including mechanical, cleanliness and hygiene, any dropped belongings from the previous tour, etc). There is also a technical check of the equipment (fishing rods and other fishing and boat equipment) before and after each tour. These checks are noted by the system.

There is a full check of the boats by a boat mechanic at the beginning and end of every working day, and, in addition, each boat must be fully serviced every six months or every 150 hours of use, whichever is sooner. This takes 3 days, so to keep the centre open Sandy tries to stagger the downtime so there are always one fishing boat in service.

The hours of boat use are logged by the WWES, by adding the number of tour minutes to the usage log at the end of each tour. When a boat reaches 150 hours of use it is removed from the reservation system until the service has been completed (which may not take place immediately). If there are less than 8 hours of bookings over the next three days, these are allowed to take place, but no boat can operate for more than 158 hours without a service. The system records when the boat will be 'bookable' again. Then the number of usage hours is reset for the boat. The information system also records the dates, times, and details about each mechanical service.

Several reports will be required of the new system. The WWES must be able to provide an ad-hoc status report on each boat, showing whether it is in use or being serviced, its current hours of use and date of next scheduled service. Sandy would like a report showing the customer usage of the boats so that she can see what are the most popular times of year and types of bookings and plan for expansion.

4.Domain modelling

Draw a UML domain model class diagram for the system as described here. Be as specific and accurate as possible, given the information provided. If any information you need is not given explicitly, make realistic assumptions and document them.

Hair Express is a new hair salon business that offers a range of high-quality services, and employs skilled and friendly staff who help create a very welcoming and professional salon environment. Hair Express offers the following specialist services: Haircuts, Hairstyling, Hair Colouring and Bridal services. Clients need to register on the website and search the Hair Express database to find a suitable/preferred professional staff and contact them to discuss making a booking. If the staff and the client are happy then a booking is made. The staff charge a rate for their service, but the system does not handle the payments (which needs to be made in-store).

Hair Express needs a new system to keep track of the clients, staff and services provided. The systems analyst has commenced the requirements analysis and has provided a set of notes for you to draw a Domain Model Class Diagram, as follows:

- The Staff providing the service may be Barbers, Hairstylists, Colourists, Makeup Artists, or indeed all four.
- Information held about the Staff is their name, address, suburb, contact phone number, email, and details about the different services they provide along with the rates charged for each service.
- The Staff offer a range of services. Barbers specialise in men's grooming, offering haircuts, beard trims and shaves and have a standard rate per haircut; Hairstylists have separate charges for hair cutting, styling, and other hair-related services; Colourists offer various hair colouring techniques, including highlights, lowlights and full-colour applications, while Makeup Artists offer basic or bridal makeup services.
- Information held about clients is their name, address, contact phone number and email.
- Each client may book many services. Each service has its name and type recorded, along with any special notes about it.
- Each booking is for a single service or number of services for the same client for the same time period (date) (e.g., a client may be booked for hair styling and basic makeup service in the same booking (same date) or may have both services done at the same time).
- The client can add photos, comments and/or a star rating to the booking after the service has been provided. These photos and comments are used as advertising on the Hair Express site and the star rating is used as one of the search criteria that users can use.