Informatics 2C – Introduction to Software Engineering Coursework 1

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Stakeholders

1. Core stakeholders
    a. Customer
        i. Main user of the system who use it to rent bike
        ii. It will be more convenience to rent a bike
    b. Bike Provider
        i. Registering bikes onto the system to rent
        ii. Bike provider will have more customers to rent bikes which brings more profit

2. Additional stakeholders
    a. Scottish tourism board
        i. Proposal of the system which should be notified if the system has succeeded or failed
        ii. Increased number of tourists will bring profit in overall to Scotland
    b. Delivery companies
        i. Delivering bikes for collection and returning
        ii. Get profit when delivering bikes
    c. Tax payers
        i. Wanting to see tax paid is worth it
    d. Bike Industry
        i. As more people using bike to travel, market value of bike will increase and thus bring positive impact to the industry.

System State

Entities	Attributes
Bikes	- Type: String - Daily rental price: Integer - replacementValue:integer - Availability: Boolean - Provider: BikeProvider - BikeId: Integer - Deposit: Integer
Booking state	- Location: String - Order number: Integer - bikeStatus: String
Bike provider	- Name: String - Address: Location - Phone number: Integer - Opening hours: Integer - Email: String - Partner: Collection<BikeProvider>
Customer	- Name: String - Email: String - Phone number: Integer - Address: Location - Payment card info: Integer

1. System must record the current status of all bikes which includes:
   a. BikeId is essential so that system can differentiate one bike from other bikes.
   b. Type of bike, customer can filter out type of bike that they want using the search function
   c. Daily rental price must be shown so that user can know how much it cost to rent the bike
   d. Availability, which can indicate the availability of bike
   e. BikeProvider, so that customer can choose the provider that they trust in

2. Details of booking which system should record are:
   a. Customer should be notified by system about the amount of deposit required
   b. Once booked, system must show an order summary of the booking which includes order number, total price, deposit and the bike will be reserved for the customer on the required dates.

3. There are some details that bike provider needs to enter before registering which are:
   a. Name, shop address, shop postcode, phone number and opening hours are required.
   b. Bike provider must specify the type and replacement value of the bike that they want to register.

c. Each provider must set its own daily rental price and deposit policies for each type of bike included in its stock.

4. System should also keep the information of customer such as:

   a. Personal information of customer (first name, surname and phone number) so that customer can be recognized when collecting bike.

   b. Address of customer if customer has chosen delivery as method of collection

   c. Payment info of customer should also be recorded to ease the next payment process.

Use case

1. Use case name: Getting quotes

   Primary actor: Customer

   Summary: System return a list of quotes from different bike providers to customer.

   Precondition: Sufficient information is provided by customer

   Trigger: Search button within the app is pressed

   Guarantee: System should show customer the result of search

   Main Success Scenario: Customer types in requirement in search box and click the search button. System returns a list of quotes matching the requirement to customer.

   Extensions: System recommends other quotes that almost match requirement of customer if there are only a few matched quotes.

   Stakeholders: Customers are the main user who will use this function to search for bikes. Bike providers need to give quotes to customers according to their needs.

Notes: Previous quotes should be saved so that customer can view them later if they changed their mind.

2. Use case name: Booking quote

Primary actor: Customer

Summary: Customer books quote after viewing quotes.

Precondition: Bike is available

Trigger: Customer presses "Book" button

Guarantee: Status of the bike will be temporally changed to unavailable

Main Success Scenario: Customer clicks to view details of a quote. Customer then click the "Book" button on the page. System asks for the number of bikes to be booked. Bike will be temporally flagged as unavailable to the other customer if there is no stock left.

Extensions: On the page of listing quotes, customer clicks "Book" button without viewing details of bikes. System asks for number of bikes

Stakeholders:	Customers are likely concerned about whether they are able to book bikes online. Bike provider needs to be notified when one of its bikes is booked

3. Use case name: Recording bike return to original provider

Primary actor: Bike provider

Summary: When bike is returned, provider records the return in system to change the status of bike. If bike is broken, bike provider may choose to unregister the bike from its stock.

4. Use case name: Recording bike delivery to customer

Primary actor: Delivery company, Bike provider

Summary: If customers pick up the bike from local store, they pay deposit in full to bike provider. Then, bike provider records it in system to keep track of the bike. If bike is delivered to customer, driver records the delivery after collecting deposit from customer.

5. Use case name: Registering bike provider

Primary actor: Bike provider

Summary: Bike provider register themselves onto the system by providing their information which includes their name, shop address, phone number and opening hours

6. Use case name: Registering bike

Primary actor: Bike provider

Summary: Bike provider provide the information of the bike which are type and full replacement value for bikes of this type.

7. Use case name: Registering user account

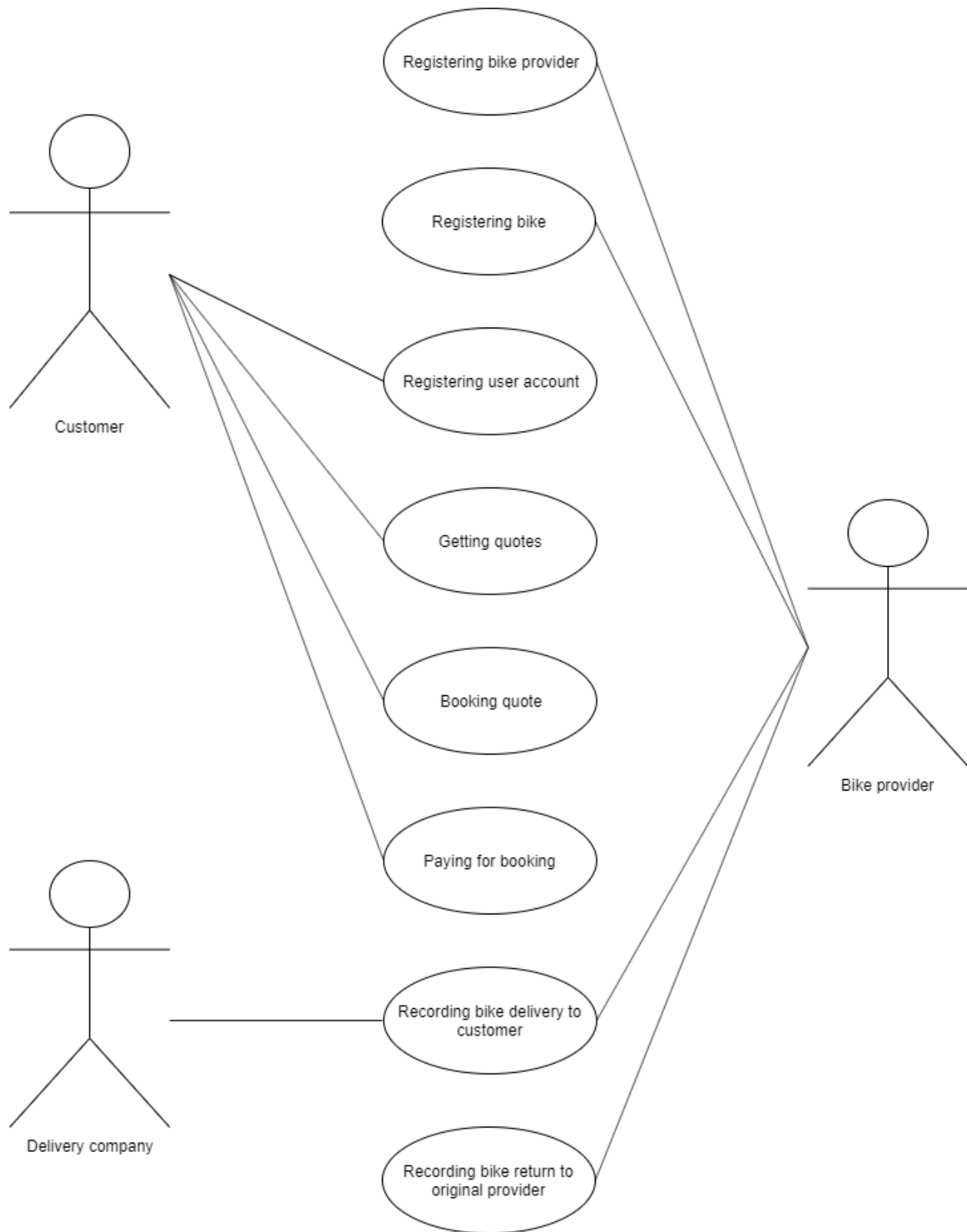   Primary actor: Customer

   Summary: Customer provide their personal information like their first name, surname, address and phone number when registering for an account.

8. Use case name: Paying for booking

   Primary actor: Customer

   Summary: When method of payment is chosen, customer proceed to pay for the booking. After payment, a confirmation for the customer is generated which includes the order number, order summary, deposit, total price, delivery and return information.

Use Case Diagram

Customer

Bike provider

Delivery company

Registering bike provider

Registering bike

Registering user account

Getting quotes

Booking quote

Paying for booking

Recording bike delivery to customer

Recording bike return to original provider

Non-functional Requirement

1) Usability

    a) Only 10 searched quotes should be shown in a single page to increase readability of quotes.

2) Performance

    a) Search function should return result within a second to increase responsiveness of system.

    b) Booking confirmation should be sent within a minute for customer to confirm his booking as soon as possible.

3) Security

    a) Payment should be done within 15 minutes to prevent suspicious activity.

    b) All passwords should contain at least a letter and a digit to decrease the chances of getting password stolen.

    c) Information of customers and bike providers can only be accessed by authorized user.

4) Running cost

    a) Quotes should only be updated every 5 minutes or when customer wants to reduce cpu load.

Ambiguities, subtleties, incompleteness

1. What if bike is stolen when being rented?
   Customer should pay full responsibly in this case.
   Therefore, deposit shouldn't be returned to customer.
2. What should the driver do if there is no one to collect the bike?
   Customer might not be present when bike has been delivered. Booking should be cancelled and money can't be refunded.
3. What can customers do if they found out the bike is faulty?
   If bikes rented are found to be faulty, customer can make a complaint and the bike provider will be charged.

Self-assessment

Q 3.1   Identify stakeholders

- Identify core stakeholders of the system
  - All core stakeholders are stated   5/5
- Identify additional stakeholders
  - Wide range of stakeholders are stated   5/5
- Describe how the system affects each stakeholder
  - Effect is clearly explained   5/5

Q 3.2   Describe system state

- Include state essential to the operation of the system

- o All entities and attributes are written in a clear format **5/5**
- Include additional state mentioned in the description
  - o A lot of descriptions which possibly includes some additional states **5/5**

Q 3.3   Describe use cases

- Identify use cases
  - o A lot of use cases are stated **10/10**
- Describe use cases using the appropriate templates
  - o Full template given in tutorial 1 is used but we are not sure what else is missing **22/30**

Q 3.4   Use case diagram

- Correctly use UML use case notation
  - o Notation used should be correct **5/5**
- Include key actors and use cases
  - o All key actors and use cases are stated **5/5**
- Identify connections between actors and use cases
  - o All use cases connect to appropriate actors only **5/5**

Q 3.5   Describe non-functional requirements

- Identify non-functional requirements within the context of the system

- o There are 2 non-functional requirements which we are not sure about   5/7
- Provide means for assessing non-functional requirements
  - o All non-functional requirements are explained
    3/3

Q 3.6   Ambiguities and subtleties

- Identify some ambiguities in system description
  - o Ambiguities are clearly stated in the first sentence of each part.   3/3
- Discuss potential options for resolution of ambiguities
  - o Solutions are provided after stating ambiguities
    2/2

Q3.7   Self-assessment

- Attempt a reflective self-assessment linked to the assessment criteria
  - o Each criteria has been considered and reasonable score is given   5/5