Exercise Sheet 3 – Identifying Classes
Possible Solutions
F28SD [Introduction to Software Engineering]
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1.

a) **Assumptions:** Hires will be calculated on a daily basis; the system is not required to handle payments; the system is not required to handle deposits; the system is only required to record bicycles as either *on-hire* or *available-for-hire*; managing late returns is out with the scope of the system.

b) *Noun-Verb* analysis:

EasyBicycle has a fleet of one hundred hire bicycles. They have a set of existing customer records. Their bicycles come in one size and are fully adjustable. EasyBicycle operates a first come first served basis, i.e. no reservations. In order to hire a bicycle a customer must specify their name, address, mobile number and the return date. A customer can borrow up to six bicycles per hire, but they can only have one active hire at any moment in time. Each bicycle has a unique identifying number, as does each customer and hire. Records of past hires are kept for future reference.

c) *Class-Responsibility-Collaboration (CRC)*:

Class:	BookingSystem

Responsibilities	Collaborators
Obtaining dates of hire	
Obtaining customer name	
Finding customer record	Customer
Ensuring hire is allowable (single hire at any time)	Customer
Finding an available bicycle(s)	Bicycle
Checking out a bicycle	Hire
Checking in a bicycle	Hire
Adding bicycle records	Bicycle
Deleting bicycle records	Bicycle
Adding customer records	Customer
Deleting customer records	Customer

Class:	Hire

Responsibilities	Collaborators
Knows ID of hire	
Knows start date of hire	
Knows end date of hire	
Knows customer associated with hire	Customer
Knows bicycles associated with hire	Bicycle
Ensures bicycle count for customer is correct	Customer

Class:	Customer

Responsibilities	Collaborators
Knows customer's name	
Knows customer's ID	
Knows customer's address	
Knows customer's email address	
Knows number of bicycles on loan to customer	

Class:	Bicycle

Responsibilities	Collaborators
Knows ID of bicycle	
Knows availability of bicycle	

2. Analysis Stereotype

Door +
Sensor

Door
Interface

Power
Unit +
Sensor

Power Unit
Interface

Weight
Sensor

Weight Sensor
Interface

Users

Console

MwC

Log