School of Computing, Napier University

Assessment Brief

1. Module number	**SET08103**
2. Module title	**Software Engineering Methods**
3. Module leader	Alistair Lawson
4. Tutor(s) with responsibility for this Assessment	Baraq Ghaleb, Kevin Sim , Alistair Lawson *(please see in Labs or at end of Lecture or email for appointment)*
5. Assessment	Coursework Parts 1 & 2
6. Weighting	50% of module assessment
7. Size and/or time limits for assessment	see attached for coursework spec.
8. Deadline of submission Your attention is drawn to the penalties for late submission	Part 1: Week 8, on Monday 26/02/2018 at 10:00am via Moodle Part 2 Week 12, on Monday 09/04/2018 at 10:00am via Moodle, plus demonstration at lab assessment See Moodle for submission link
9. Arrangements for submission	Your Coursework must be submitted via Moodle. **Further submission instructions are included in the attached specification, and on the Moodle Webpages**
10. Assessment Regulations	All assessments are subject to the University Regulations**.**
11. The requirements for the assessment	See Attached
12. Special instructions	See Attached
13. Return of work	Mark sheets will be provided within three weeks of submission. Your original coursework will be retained.
14. Assessment criteria	See attached.

SET08103 Software Engineering Methods Coursework Assignment 2017/18

Hand in Date: Weeks 8, 12 via Moodle, plus have a copy ready to run for your Lab Assessment timeslot in JKCC from week 12, where your submission will be marked and you will be given verbal feedback.

This Assignment is worth 50% of the module mark, and covers the following L.O.s:

- LO3: Define and analyse systems requirements and needs, and specify a system design to deliver these requirements.
- LO4: Apply software engineering methods and techniques to a software development project.

"Build-A-Bike"

"Build-A-Bike" offers customers the ability to custom design and purchase their own Road Bike or Mountain Bike using a simple stage based system that lets them pick between standard and custom components: Details of the customers choices are entered into the system by the receptionist. First the user chooses a frame (Size and Colour), then "group set" (gears and brakes), then wheels, and then "finishing set" (handlebars and saddle). The system displays the cost of the bike, based upon the price of the individual components and an additional £100 surcharge for building and testing. Each bike comes with a 1-year warranty, in addition to the customers statutory rights. Customers can optionally take out an extra £50 warranty on the bike to upgrade the warranty to 3 years. A customer can order more than one bike in the same transaction.

The system checks that the individual components required for an order are in stock, calculates an estimated time for completion and the total price of the order. If the customer agrees the cost and the timescale then the receptionist takes the customers personal details (Name, Address, email) and enters them into the system. The system should validate that the details are not blank, and ideally that the postcode and email address of a valid format. A 10% deposit must be paid by debit or credit card, and the receptionist records that the payment has been successful on the system. If the payment request is rejected by the customer's bank, and the customer has no other valid method of payment by debit or credit card then the order and is cancelled. If at a later time the customer cancels their order then the customer loses their deposit (only the store manager can authorise a cancellation on the system). If the transaction is approved by the customer's bank then the system generates a receipt detailing the order and remaining balance. The automated stock control system generates orders for any components that are low in stock and sends them electronically to the various suppliers (e.g. Shimano, Campagnolo, Rotor). The store manager can order items via the system if required.

The completion time of the order is calculated based on the availability of stock, the estimated delivery time for out of stock components and the anticipated build time. Standard components take up to a week to arrive. Specialised components such as the Rotor Uno hydraulic groupset can take up to 2 weeks to arrive. Building and testing each bike is estimated to take half a day unless there is no mechanic available. Currently there are 3 mechanics available and they each work 5 days a week Monday to Friday. If there are not sufficient mechanics available, an additional mechanics can be brought at one day's notice. A mechanic cannot start work on a bike until all the parts are available in the store.

Bike parts that are delivered to the store are recorded onto the system by the stock controller. At the start of each day, each mechanic logs onto the system and prints a schedule detailing the orders that are to be built that day. At the end of their shift, each mechanic records details of the bikes that have been completed. The receptionist checks for completed orders at the start of each day and contacts customers to inform them that their order is ready for collection.

The receptionist and the stock controller are able to generate reports detailing stock levels, sales and outstanding orders that are awaiting delivery of components. The store manager is able to carry out all of the functions that the receptionist can as well as being able to remove, add and update components in the system. The system also records personal details about each employee including their name, address, staff number, annual salary, email and phone number. Only the store manager can add / remove and modify staff records.

SET08103 Assignment Deliverables and Schedule 2017/18

The coursework will be handed out in week 5 at the Lecture on 08/02/2017. It is due to be submitted in two stages as follows:

Part 1: Due in: Week 8, on Monday 26/02/2018 at 10:00am via Moodle

(50)

(a) Create a High Level UML Use Case Model for the System based on the scenario given. With Actors, Use Cases including at least one extends use case and one includes use case.

20 Marks

(b) Create an UML Activity Diagram that focuses on activities of a Customer selecting components for a bike and the calculation of cost and delivery time. For this diagram you should have swim-lanes, and include notation for selection, iteration, and parallelism where appropriate.

20 Marks

(c) Sketch a User Interface design that focuses on activities of a Customer selecting components for a bike and the calculation of cost and delivery time.

10 Marks

Part 2: Due in: Week 12, on 09/04/2018 at 10:00 noon via Moodle, plus demonstrated at lab assessment

(50 Marks Total)

(a) Create a UML Class Diagram for the scenario from 1b above.

10 Marks

(b) Implement the UML Class Diagram for the scenario from 1b above (independent of any user interface) and Unit tests that show it is working (you can develop in any programming language of your choice, but you must be able to demonstrate in your allocated cluster and assessment slot).

20 Marks

(c) Develop a functioning application with User Interface for the scenario from 1b above that connects to the code from 2b above, and appropriate User Interface Testing that show it is working (you can develop in any programming language of your choice, but you must be able to demonstrate in JKCC in your allocated cluster and assessment slot).

20 Marks