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| **COMP1807 (2023/2024)** | **Agile Development with SCRUM** |  | **Contribution: 100% of course** |
| **Course Leader:**  **Matt Pritchard** | **COMP1807 Main Coursework** |  | **Deadline Date:**  **05 August 2024** |
| This coursework should take an average student who is up to date with tutorial work approximately 50 hours Feedback and grades are normally made available within 15 working days of the coursework deadline | | | |
| **Learning Outcomes:** 1 Gain substantial experience in working in an agile scrum team environment and follow the Scrum method to resolve a problem from its conception through to its implementation. 2 Demonstrate the ability to analyse, design and develop creative solutions and systems for contemporary problems. 3 Understanding through experience the practical challenges associated with working as a member of an agile Scrum software development team. | | | |

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| Plagiarism is presenting somebody else's work as your own. It includes copying information directly from the Web or books without referencing the material; submitting joint coursework as an individual effort; copying another student's coursework; stealing coursework from another student and submitting it as your own work.  Suspected plagiarism will be investigated and if found to have occurred will be dealt with according to the procedures set down by the University. Please see your student handbook for further details of what is / isn't plagiarism.  **All material copied or amended from any source (e.g. internet, books) must be referenced correctly according to the reference style you are using.**  **Your work will be submitted for plagiarism checking.  Any attempt to bypass our plagiarism detection systems will be treated as a severe Assessment Offence.** |

#### Coursework Submission Requirements

#### An electronic copy of your work for this coursework must be fully uploaded on the Deadline Date of 5th August 2024 using the link on the coursework Moodle page for COMP1807.

#### For this coursework you must submit a single PDF document.  In general, any text in the document must not be an image (i.e. must not be scanned) and would normally be generated from other documents (e.g. MS Office using "Save As .. PDF"). An exception to this is handwritten mathematical notation, but when scanning do ensure the file size is not excessive.

#### Make sure that any files you upload are virus-free and not protected by a password or corrupted otherwise they will be treated as null submissions.

#### Your work will not be printed in colour. Please ensure that any pages with colour are acceptable when printed in Black and White.

#### You must NOT submit a paper copy of this coursework.

#### All coursework must be submitted as above. Under no circumstances can they be accepted by academic staff by email.

**Case study: CheapDeals.com LTD**

CheapDeals.com LTD is a medium-size chain company spread across the UK that specialises in selling affordable mobile, tablet and broadband deals. Customers can locate the company by recommendations from others, advertisement in newspapers and magazines, by visiting the shops in person or by visiting its online website. Its customer base consists of adults with ages ranging from 16 – 65.

The company has an automated Customer Relationship Management (CRM) system which allows Customer Sales Representatives (CSR) to manage the subscriptions. At present, most orders arrive by phone, or in person, although the company’s website has been live for a few years now and these are handled by the CSR. The CSR will discuss the new packages and deals, and they may also suggest alternative packages based on specific preferences provided by the customer. They can also provide customised deals, based on the customers’ requests. If this is the first time that a customer has requested a specific subscription with the company, then a customer record is set up by the CSR. As of late, senior management are very concerned by the decline in subscriptions over the past few years and this is due to increased competition. In order to succeed and maintain its place in the market, management believe that they need to be innovative and provide a better customer experience.

Currently, there is no real-time assistance on their online portal and the company’s customers often experience significant lag-time between purchasing a package and receiving e-mail confirmations and/or a statement in the post. When customers call to amend their subscriptions or make any other enquiries, they have to wait an average of 10-15 minutes before they are put through to a CSR and this is mostly because there are not enough staff to handle the calls. In a recent customer satisfaction survey, 68% of customers did not feel that the CSRs had enough information to fully understand the customer’s issues and needs. In order to provide a richer and faster customer experience, the company plans to develop a mobile application for recent operating systems such as (Android 10) which will be supporting and enhancing their already existing online presence. The app, among other, will allow customers to view and amend their account (e.g. upgrade or customise packages) and also pay their bill in real-time.

Executives hope that this will help ease customer sales staff and allow them to focus on additional customer queries. The mobile application initiative is mainly driven by the Marketing department of the company, with the Marketing Director, Mr John Smith, believing that this will help boost their subscriber base and help them build new, meaningful customer relationships. He believes that the key to increased market share is having both pure online and hybrid telephone ordering capabilities, as well as recognising the need to “go out and find customers and not wait for them to come to us”. Therefore, the mobile application is seen as a way to target the younger audience and more business-oriented people, who are always more inclined and more used to using their mobile phones and/or tablets for purchasing. With the development of the new app, the company will have to move to a new CRM system which will allow them to ‘push’ sales by profiling customers and offering special deals directly through their mobile app. You are consultants, called to assist CheapDeals.com LTD with the development of their mobile app for customers. They have a tight deadline of 8 months for the app to go live, any needed staff training should happen within 3 weeks and the analysis, design and development of the new app should be within the budget of 70.000 pounds as decided by the Senior Management of the company.

The Product Owner representing stakeholders of CheapDeals.com, Mr Andrew Fowler, has provided a list of requirements, outlining the functionality of the new mobile app and of the CRM system for the new system in the Product Backlog. Please see his list below.

1) Allow a customer to register thus creating a profile containing all relevant information to the customer, such as name, email, address, telephone number and credit card details. Once registered, a confirmation will be emailed to the user.

2) Customers and potential customers can browse and search for packages or deals of interest via their Android mobile phone. A package is a combination of a number of products, such as the actual device (mobile, tablet or router) and also the number of free minutes, number of free SMS, number of free GB etc. Customers can choose from a number of packages, such as MobileOnly, BroadbandOnly, TabletOnly, which are considered to be the default packages provided by the company. However, they can also even customize their own package based on their individual mobile and/or broadband usage (which they would be able to view via the app) and any other special requests. Customers can also choose from a number of deals such as the DoublePackage deal (including a combination of any two packages) or the TriplePackage deal (including all three packages).

3) Customers can make a general enquiry or an enquiry about a specific package or deal.

4) An order can be placed either online, in person, through phoning the Sales department or by the customer via the mobile app. Ordering via the app, however, is given an automatic 15% discount, for promotional purposes.

5) If the order is made via the app, then the customer will have to first register by creating an account with their personal details (thus creating a profile containing all relevant information to the customer, such as name, email, address and credit card details), then choose the new/upgrade package via a menu that appears on-screen and then the order is processed electronically by the new CRM.

6) Customers can also use the app to view or amend their account and also settle their bill in real time. When customers would like to settle the bill, they should be able to login first. The only means of payment permitted is credit card. The checking of credit card details will be done by the company’s bank, through a link to a system known as VISACheck. After the payment is finalised, the system sends an automatic email receipt to the customer.

7) If a customer phones the Sales department to place an order, then the CSRs will have to follow a verification process to attempt to identify the person calling, even if they are new, and will then be able to bring up an existing customer account or create a new account for new customers.

8) The CRM system should also allow sales representatives to access all packages in order to inform the customer accurately about prices and products and also allow them to deal with any enquiries submitted from a customer via the app.

9) The CRM system should furthermore be able to check whether the packages selected by customers are available, calculate the total, process a payment and verify card details. The total of an order would be the sum of the deal or package required, minus the discount and/or minus the special offer (depending if the customer would like to use the special offer code).

10) The customer sales representatives should finally have the capability to profile customers based on the packages they use. Based on these profiles, special offers will be created and sent to the customers via their app.

11) The customers can use these special offers by typing the special offer code directly into the app.

IMPORTANT NOTES:

**This is a Group Coursework with an individual report (discussed in the deliverables section).**

**Team Organising:**

All group members should be a part of the Development team. However, one should also have the extra role of the Scrum Master. List the members of the team and their roles at the top of your final group report.

A Group consists of FOUR to SIX people.

**You are expected to submit 1 output on the Moodle submission link**.

**Main Output – ONE report with two sections**

* Each student should individually submit **ONE report with two sections**.
  + Section 1 will include **the group work** and
  + Section 2 will include **the individual report.**
    - Section 2 should include the name of the student who has completed the individual report.

**Both Sections make up the 90% of your coursework**.

* The title page of the report should contain the names and IDs of all students in the group.
* The pro-forma included in this coursework specification should be completed indicating individual contributions to the work and needs to be approved, accepted, and signed by all members of the group.
* **All coursework uploads from a group need to include the same pro-forma.**

**Section 3 - Product Demonstration 10% -** Please note that this assignment will require you to attend a scheduled session where you will demonstrate your work and prototype system to your tutor (for further information please read Section 3 in the specification below).

**Failure to attend and deliver the demonstration will result in an overall mark of zero for this assessment.**

**Your final group report also needs to include:**

1. A title page with the name of your group, the names and IDs of students involved.
2. Table of contents with appropriate sections and Page numbering.
3. A completed copy of the work breakdown form on the last page of this document as agreed by all members of the group. This is compulsory to be included in your final report, should be agreed and signed by all members. The report submitted by members of the same group should include the same pro-forma.

**Remember: Scrum is about working on a bit of everything (analysis, development, testing) in every Sprint. At the end of every Sprint there is a need for a potentially shippable increment to be delivered. You will need to provide evidence of this.**

**We are looking for evidence of your team applying the Scrum process appropriately; This coursework is not about demonstrating that you have the technical skills to build a system as such which could have also been the result of a coursework in a programming course. Much more emphasis is given on how teams have adopted Scrum.**

**Deliverables:**

**Section 1:Group Report – 80%**

***You are expected to adopt the Agile Scrum framework and document your interactions, user stories, product backlog prioritisation, Scrum meetings, sprint planning, poker planning, Scrum/Kanban board, burn down charts, and sprinting appropriately.***

***To support this, you are expected to use the Trello (or an alternative) tool you have been introduced in class. This will allow the group to simultaneously make changes and additions and also allow you to copy all the Scrum elements as listed above in your final report.***

**A final group report (approx. up to 3000 words) which must include the following:**

1. Using the template provided in class, create the **Product Vision** for the above case study.
2. Take the list of requirements provided by the Product Owner and transform these into **“user stories”** by using the “As a :<role>, I want: <some goal>, so that: <some reason>.
   1. Ensure that you add these user stories into your product backlog.
   2. Identify a list of **acceptance criteria** for 10 of those user stories (at least 4 per user story). These acceptance criteria serve as the Definition of ‘done’ for your user stories.
3. Identify your **Minimum Viable Product** and **order/prioritise** the user stories based on importance/value for the organisation. You can **use MOSCOW** to help you with this.
4. Using the **Planning Poker** technique (with Scale is 0 ½ 1 2 3 4 8 13 20 40 100), provide an estimation for the user stories identified in your Product Backlog. Those user stories that have been estimated by your team with 13 20 40 100 points are EPIC and will need to be broken down into smaller stories. This process of planning poker needs to be documented and provided with screenshots in the report. (This could be pictures of your post it notes on the wall etc.)
5. The work needs to be completed in minimum of 3 **Sprints** (Sprint 1, Sprint 2, Sprint 3).

Ideally each Sprint needs to be completed in approximately 2 weeks.

Sprint 3 could also potentially be used as the Release or Hardening Sprint where there are no new features to be added, but as a team you can add finishing touches to the system, create any final documentation etc.

**Remember, every Sprint includes:**

* Sprint Planning
* Sprinting
* Sprint Review
* Sprint Retrospective

You are now in the Sprint Planning phase: These steps need to happen for Every Sprint.

* 1. Create your **Sprint Goal.**
  2. Create the **Definition of Done** for the Sprint.
  3. Based on the prioritisation (MOSCOW) and the estimation of those *must have* user stories, identify the user stories which will be included in your **Sprint Backlog** for the first Sprint. Insert them into your Sprint Backlog.
  4. Breakdown 5 of those user stories into smaller tasks and estimate tasks in days. This should be shown in your Sprint Backlog.

You are now in your Sprinting phase: These steps need to happen for Every Sprint.

* 1. Create a use case diagram of the case study, with key actors and their use cases as “just enough” design representing the user stories to be implemented in the Sprint.
  2. Create your **Scrum/Kanban board**. Identify the TO DO, IN PROGRESS, DONE. Demonstrate how user stories move down the swim lanes as the Sprint progresses.
  3. Update this Scrum board throughout your Sprint and ensure that you provide screenshots of that in your report.
  4. Create your **Burndown charts**. You are expected to provide aBurndown chart for every Sprint (therefore 3 in total).

**Note: Please ensure that you provide screenshots of your system (“potentially shippable increment”) at the end of every Sprint.**

**Students are expected to demonstrate throughout their report, that the system has been developed in 3 Sprints – therefore provide evidence of how the work was divided and how user stories were implemented in those 3 Sprints etc.**

**Section 2: Individual Report – 10%**

*Reflection & Evaluation Report* (500+ words) providing:

* 1. Discuss how the course affected you, reflecting on what you have learnt and achieved. Teamwork is an integral part of this course and Personal Development. In this review, you should also discuss your personal experience of teamwork and how the group dynamics worked in the group coursework. You are asked to assess yourself and each of the other members of your team in terms of:
     1. Contributing to the planning of the work, the leadership and management of the work of the team as it progressed, and to the final products.
  2. Please provide an evaluation of the Scrum process followed. This should be seen as the ***final Sprint Retrospective***, albeit being done individually. This should include appropriate screenshots and comments, with cross references to group documents, evaluative comments on the product and on the agile process and design method used to build it. Is there anything in the process that could be improved and how?

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**Section3*:* GroupPROTOTYPE SYSTEM demonstration (10% of your coursework)**

* Your team is required to build a working prototype of the system. The prototype should reflect the following:

1. It can be built in any technology/programming language you are familiar with.

2. This is just a prototype system; therefore, you are not expected to build a perfect system including all requirements provided in the case study. The prototype system should have enough business and UI functionality to test the business life cycle of your Minimum Viable Product (thus the main Must have stories).

Remember: *We are looking for evidence of your team applying the Scrum process appropriately; This coursework is not about demonstrating that you have the technical skills to build a working system as such which could have also been the result of a coursework in a programming course. Much more emphasis is given on how teams have adopted Scrum.*

* **A** **demonstration of the prototype system** you have built **as a group** to **your** Tutor will take place during the last teaching week of term during your tutorial and lab session and your tutor will provide you with time slots. In the demonstration you will need to present your team and yourselves.
* This demonstration should be seen as the ***final Sprint Review meeting*** before releasing the final system to your clients. Your tutor will act as a representative from the company’s stakeholders.
* You should **“sell”** your system to the **user** (your tutor), explaining how your system meets the ***“definition of done”*** in terms of both **design** and **implementation** (not cost).
* You will also be expected to discuss how you have implemented the Scrum process.

*Please note that marks for the demonstration are awarded to every student individually based on their performance during the demonstration. Marks here are also awarded for the prototype system.*

***Please note that failure to attend and deliver the demonstration will result in an overall mark of zero for this assessment.***

Pro-forma

**In percentage, please indicate the work contribution of each member. This should be agreed by all group members.**

**The total of all members’ work must add up to 100%**

**You must submit this form in the final report. Put your initials in the signature columns. This copy must be signed by all members.**

**Group/Team Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| --- | --- | --- | --- | --- |
| Team member name | Student ID | Individual overall work contribution (%) | Additional notes on task description | Signature |
| Student: |  |  |  |  |
| Student: |  |  |  |  |
| Student: |  |  |  |  |
| Student: |  |  |  |  |
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| Student: |  |  |  |  |
| **Total 100%** | | |  |  |

**Grading Criteria**

Your work will be assessed for the quality of the report you will produce, both the group report and your individual reflection as well as the quality of your prototype system. In particular, marks will be allocated for

* 1. Excellent application of the Scrum process in building your prototype system.
  2. Thorough evidence of the whole process, including product backlog prioritisation, planning poker, sprint backlog, minutes of team meetings etc. Evidence that the work was indeed completed as a part of 3 Sprints.
  3. Presentation, structure and coherence of the report.
  4. How well and efficient you have worked as a Scrum team. Group dynamics with effective interaction and team cooperation and/or management.
  5. Demonstration of independent thinking.
  6. Detailed individual reflection with thorough discussion of the Scrum process, the scrum retrospective and the team dynamics.

Individual student marks may be adjusted according to the pro-forma you will have to complete as a group and attach to your report.

**DETAILED MARKING SCHEME FOR Deliverable 1 and 2**

**The Final Mark will be calculated as:**(Deliverable 1 and 2 = 90%) + (Group Prototype Demonstration mark =10%)

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| **Section for which mark is awarded:** | **Marks** |
| **Group report: *Completeness and correctness***  This is an evaluation of the overall completeness of the report; it is made up of the following components listed below. Students are awarded marks for their ability to use Scrum techniques effectively. |  |
| * + - 1. **a) Product Vision**   Students are expected to use the template provided in the lecture and identify the Vision for the above case study. | **4** |
| * + - 1. **b) Create your User stories based on the list of requirements**   Students are expected to transform the general requirements into user stories by using the template “As a :<role>, I want : <some goal>, so that: <some reason>.   1. *Identify acceptance criteria (at least 4) per user story for 10 of the user stories identified above* | **8** |
| **c) Identify your Minimum Viable Product and order/prioritise user stories with MOSCOW** | **4** |
| **d) Use Planning Poker to estimate User stories**  Students should use planning poker to estimate the user stories. Each story needs to be estimated and those stories with user points more than 13 need to be broken down to smaller stories. This process of planning poker needs to be documented and provided with screenshots in the report. | **8** |
| **e) Sprint Planning Phase (7 points)**  **Create Sprint Goal**   1. **Create Definition of Done for the Sprint** 2. **Identify the user stories to be included in the Sprint Backlog for the first Sprint and show your Sprint Backlog** 3. **Breakdown 5 of these user stories into smaller tasks**   Students are expected to complete their product work in 3 Sprints. There are 3 Sprint Planning phases. Students should demonstrate the Sprint Planning phase for every Sprint. Therefore, for every sprint they are expected to identify the Sprint Goal, definition of Done, user stories to be added to the backlog and breaking down of 5 user stories into smaller tasks. | **Total (7 points x 3 Sprints) = 21 points** |
| **Sprinting Phase (10 points)**   * 1. Create a use case diagram of the case study, with key actors and their use cases as “just enough” design representing the user stories to be implemented in the Sprint.   2. Create your **Scrum/Kanban board**. Identify the TO DO, IN PROGRESS, DONE. Demonstrate how user stories move down the swim lanes as the Sprint progresses.   3. Update this Scrum board throughout your Sprint and ensure that you provide screenshots of that in your report.   4. Create your **Burndown charts**. You are expected to provide aBurndown chart for every Sprint (therefore 3 in total).   Students are expected to complete their product work in 3 Sprints. Therefore, the above steps need to be repeated in every Sprint. ***Students are expected to provide evidence of the potentially shippable increment (product so far) at the end of every Sprint!*** | **Total (10 points x 3 Sprints) = 30 points** |
| ***2) Coherence, structure and sophistication, presentation***  Students are expected to follow the Scrum process thoroughly. This is an agile project, and this should be seen as a way to get true practical experience of applying the Scrum Framework. These marks are awarded for how well the whole report holds together and how sophisticated it is with evidence of the team being agile and truly apply Scrum. Does the analysis show a certain level of complexity? Here we are looking for demonstration of independent thinking. Also, here marks are given for coherence and consistency between the various sections and Sprint elements. Marks are awarded for all elements of presentation, particularly spelling and grammar, editing and diagram presentation. | **5** |
| ***Individual Report***  Marks are awarded for how well the students have reflected on both the course and the group coursework but also on the Scrum process followed, therefore creating their **Sprint retrospective.** | **10** |

**Assessment Criteria – Marking Rubric**

Typically, marks will be awarded as follows:

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|  | ***Less than 40% Fail*** | ***40-49% Satisfactory*** | ***50-59%***  ***Good*** | ***60-69%***  ***Very Good*** | ***70-79%***  ***Excellent*** | ***80-100%***  ***Outstanding*** |
| **D1 Knowledge**  **Understanding concepts and application** **of the Scrum process in building your prototype system.** | Unacceptable standard of work.  Lacks basic knowledge and understanding of the underlying concepts and principles associated with the area of study.  Minimal understanding of the Scrum framework. | Basic knowledge and understanding of the underlying concepts and principles associated with the area of study.  Demonstrates a satisfactory application of the whole Scrum process, with a number of issues and limitations. An adequate coverage of assessment criteria with limited range of information and knowledge deployed. | A sound knowledge and understanding of the underlying concepts and principles associated with the area of study.  Demonstrates a good application of the whole Scrum process | Demonstrates very good knowledge and a clear understanding of the underlying concepts and principles associated with the area of study.  Demonstrates a very good application of the whole Scrum process. | Demonstrates excellent knowledge and critical understanding of the underlying concepts and principles associated with the area of study.  Demonstrates excellent application of the whole Scrum process. | Demonstrates exceptional knowledge and critical understanding of the underlying concepts and principles associated with the area of study.  Demonstrates exceptional application of the whole Scrum process. |
| **D2 Evaluation  Contextualised evaluation of the case study with relevant discussion.** | An inadequate coverage of assessment criteria with lacking information and knowledge and evidence.  Insufficient or inaccurate knowledge of the subject, its models, and techniques | * Some knowledge and simplistic application of relevant models and techniques. * A familiar or limited range of information and knowledge deployed, with some areas of inaccuracy. * Some knowledge and simplistic application of relevant models and techniques. | * Good coverage of assessment criteria with some range of information and knowledge deployed. * Knowledge and some application of relevant models and techniques | * Very good coverage of assessment criteria with a wide range and accurate range of information and knowledge deployed. * Competent application of relevant methods and techniques. | * Excellent coverage of assessment criteria with a thorough range and consistent accuracy of information and knowledge. Excellent understanding of relevant methods and techniques. * Produce of an excellent coherent and well-structured assessment which effectively communicates information, arguments, and analysis in a variety of forms and deploys key techniques of the discipline effectively. | * Exceptional coverage of assessment criteria and extensive range and consistent accuracy of information and knowledge. * Mastery of relevant methods and techniques. |
| **D3**  **Communication**  **Ability to evaluate and discuss the main options critically.** | Inability to evaluate and discuss the main options in an unsatisfactory way.  Inability to develop a reasoned argument | Basic report writing skills that enable you to set out a structured, if weak, argument.  Argument and analysis may not be fully developed. | The ability to critically evaluate and discuss the relevant options in a competent discussion.  Standard and largely accurate range of information and knowledge.  May rely more on knowledge rather than on argument. | The ability to critically evaluate and discuss the relevant options in a concise way.  Produce of a very good assessment which effectively communicates information, arguments, and analysis in a variety of forms and deploys key techniques of the discipline effectively.  Clear argument which may demonstrate a degree of independent thinking or critical insight. | The ability to critically evaluate and discuss the appropriate options in an effective way.  Produce an excellent coherent and well-structured assessment which effectively communicates information, arguments, and analysis in a variety of forms and deploys key techniques of the discipline effectively.  Fluent argument demonstrating independent thinking or critical insight. | The ability to critically evaluate and discuss the appropriate options in a robust manner.  Produce an exceptionally coherent and well-structured assessment which effectively communicates information, arguments, and analysis in a variety of forms and deploys key techniques of the discipline effectively.  Fluent argument demonstrating great independent thinking or critical insight. Publication worthy. |
| **D4 Structure and format  Appropriate use structure, presentation and standard of English proficiency.** | Unacceptable quality of presentation, structure and/or standard of English. | Acceptable quality of presentation, structure and/or standard of English. | Satisfactory quality of presentation, structure and/or standard of English. | High quality of presentation, structure and standard of English | Excellent use of clear, accurate English, well organised, with flow and progression. | Outstanding use of clear, accurate English, exceptionally well organised, with flow and progression. |