**M37COM Research methods in Computing**

**Assignment**

The objective of this assignment is to prepare you for your MSc project at Coventry University. Completing it should give you a ‘head start’ when it comes to undertaking the project. However, you are not obliged to take this proposal forward if you find something else you want to work on in the project module.

This assignment is presented in two parts.

The first section: “Defining your research project” is due by 23:55 on 26/11/2015. Submission is through Moodle. Section one is worth 50% of the assignment total.

The second section: “Abstract and Literature Review” is due by 23:55 on 04/01/2016 Submission is through Moodle. Section Two is worth 50% of the assignment total.

The suggested word length for the whole assignment is 3000 words (in two sections of 1500 words each) Grades and feedback for section one will be provided by 10/12/2015. Grades and feedback for section two will be provided by 18/01/2016.

Please review the marking criteria for each section before commencing work.

**M37COM Research methods in Computing Assignment**

|  |  |
| --- | --- |
| First Name: | Qiaorui |
| Last Name: | Cui |
| Student Number: | 6097248 |

## Section one: Defining your research Project (1500 words suggested)

**1.1 Detailed research question**

**Help:** Your detailed research question is the statement of a problem within the computing domain which you will address in your MSc project. Refining the research question involves narrowing down an initial question until it is answerable using a primary research method(s) that you conduct during the time of your project. The refined research question must not be so general that it is answerable with a yes or no answer. It must not be so broad that you would be unable to achieve a solution during your project. The key to this is BEING SPECIFIC: Narrow down the method or technology you will use, narrow down the group that the question refers to. Avoid using words that cannot be measured, by you, without a huge research budget e.g. 'effects on society', 'effects on business'. *Example:* The initial question "Does cloud computing effect business" needs narrowing down *(for a start the answer is yes) W*hat is meant by cloud computing? Or 'effect'? Or 'business', in this question? Refining this first question will involve narrowing it down to something you, personally, can measure. A refined version of this question might be: "Does implementing a cloud based voting system improve the speed of decision making in a small company in Coventry?" This refined question is implementable: You can now identify a small company to work with, document their current decision making processes, implement a cloud based voting system, compare decision making speeds over a limited time period (say 1 month) and evaluate your findings. *A small piece of genuinely new knowledge is produced.*

|  |
| --- |
| Initial question: Does office automation save time of a company?  Refined version: To what extent does implementing a Web Service based parcel management system increase the productivity of employees that working in a local student accommodation company and provide better services for students? |

**1.2 Keywords**

**Help:** Include up to 6 keywords separated by a semi-colon; what keywords are appropriate to describe your project in an online database like Google Scholar? Keywords should include the general research area and the specific technologies you will be working with. *Example.* A project that proposes a novel way of visualising large amounts of twitter feed data may have the keywords: Data visualisation; twitter; hashtags; database design; graphics libraries. For further help take a look at the ACM keywords list http://www.computer.org/portal/web/publications/acmtaxonomy

|  |
| --- |
|  |

**1.3 Project title**

**Help:** The project title is a statement based on your detailed research question. For example, the research question *'to what extent does a mobile application reduce the number of errors made in class registers at Coventry University in comparison to current paper based registers'* may be stated in the project title*: "A Wi-Fi driven mobile application for large group registers".*

|  |
| --- |
| *A distributed parcel management software system for a student accommodation company* |

**1.4 Client, Audience and Motivation:**

**Help:** Why is this project important? To whom is this project important? A research project must address a research question that generates a small piece of new knowledge. This new knowledge must be important to a named group or specific client to make it worthwhile carrying out. This is the motivation for your project. In this section you should address who will benefit from your findings and how they will benefit. Example: If you intend to demonstrate that a mobile application that automates class registers at Coventry University will be more efficient than paper based registers - the group who would be interested in knowing/applying these findings would be both academic and administrative staff at Coventry University and they would benefit by time saved and a reduction in their administrative workload. If you are making a business case for an organization explain how the organisation will benefit from your findings.

|  |
| --- |
| My client is a local student property management company that had been managing student accommodation blocks, flats, and house in multiple occupancies in Coventry for many years. And they have been using log books to recording students’ information all these years. As a tenant of them, I found it is quite annoying and frustrating to check and get my parcels by the receptionist manually processing related information in a set of heavy log books in the few past months.  In fact, humankind has been using paper as the most reliable information carrier and representation for an extremely long history since it was invented in ancient China during the Han dynasty (206 BC – 220 AD). It may still be the most popular intermediary of data interaction today. But thanks to the significant development of IT technology and Internet, now data processing and representing can be much easier. To illustrate, as I am writing this essay, I am also retrieving information that I need in a reference document named SelectingEmpiricalMethods on my e-mail inbox and out putting information on the computer screen via my keyboard. It sounds not so agile, but if we compare it to the old way: We go to local library by some transportation, then check index to find articles and books we need, and borrow the books (needs to be record on paper by reception as well) or take some notes on notebook. Then we go back home with them and write the ideas down on a paper word by word. If we think about how much time we saved by embracing the automatic methods, it would be considerably necessary to apply these technologies on my client.  Based on these facts above, I decide to design and implement a system that can solve this low productivity problem in a more efficient, modern way. Also provide the interface usability, data safety and system scalability.  Actually, there are quite a few earlier solutions already excited. They can be divided into two general types:  One is more like a temporary solution. For instance, some small companies they use softwares such as Microsoft Excel to keep their data. But it lacks of data consistency, interaction efficiency and data safety. These flaws will be discussed in the next part of this essay.  Another is a typically big management software system. Lager companies tend to use that. It is often detail designed and try to contain everything. But if a relatively smaller company use that, as a consequence, it may leads to higher learning cost and data over separation (not flat enough) even data duplication. These disadvantages will be covered later.  And here comes the interesting part. My client, as an property management company, has it’s own clients which are students who study in Coventry University. Problem is students have to go online websites to check the parcel status every time they bought something. But it is not always correct due to the miss of the postman. The most dramatic thing is that I, myself is one client (tenant) of my client. So, there is a chance that I may know much more about what my client’s clients’ needs. That is the core competitiveness of my product. But to be fair, the company have hundreds of clients, it can’t be subjectively decided by one person.  Therefore, in order to figure out the most suitable solution to this case and provide the best experience. An elaborated research plan is required. |

**1.5 Primary Research Planning**

**Help:** This is plan as to how you will go about answering your detailed research question - It must include a primary research method (an extended literature review is not an acceptable primary method). Think and plan logically. Primary methods may include experiments, applications or software demonstrators, process models, surveys, analysis of generated data …  
  
Example: In the class register example above "to what extent does a mobile application reduce the number of errors made in class registers at Coventry University in comparison to current paper based registers" - the research plan may involve: 1) Collecting and analysing paper based registers in a given class on five occasions. 2) Identifying the error rate average on these occasions 3) Designing and implementing a mobile application that automatically records attendance in class. 4) Deploying the application in the class on five occasions. 5) Identifying the error rate average of the mobile application on these occasions. 6) Comparison of data and summary of findings.

|  |
| --- |
| This is the research plan (paper research is include in each state):  1) find out how low the productivity is and why it's low?  2) find out why some students like me are unhappy with the current procedure?  3) do investigations of questions above and collect data  4) use these data to design software based on reasons I got  5) implement the distributed parcel management system module by module  6) run the system for a period of time and repeat 3)  7) [get feedbacks, analyze data, improve design] = produce some new piece of knowledge  8) iterate software product  9) repeat 6)  8) keep iteration …  To follow these steps. I already have several meetings with my client, so step 1) is basically passed. And to go through step 2) 3) 4), I designed a survey form to achieve these goals.  Forewarn, I consider interesting and luring is the key to get high quality feed back and response rate. [Some psychologist] claimed that [evidence to support my statement]. So the survey will follow a relatively antic style.  ————————  We are going to develop a parcel management system and improve your life quality in [company-name] (It’s something about Wechat, we’d like to keep it as a secret ;) this survey will took you 5 minutes, the more accurate you respond the better service we can offer.  If you prefer to do this online goto [http:\\[shorturl.uk](http://shorturl.uk)]. If your suggestion is adopted, you got a FREE door opening chance :)  How many parcels do you get per month?  what is parcel, 1, 2-3, 3-5, 5-10, I am a freaking online shopping maniac  How many time your spend on getting parcels roughly per month? (include walking and checking status on web)  [ ] hours [ ]minutes, more than 2 hours for maniac :3  How many time you think does it took when the reception lady check your parcel? (exclude finding parcel in inventory room)  [ ]minutes [ ]seconds  How many time you think does it took when the reception lady find your parcel in that room?  [ ]minutes [ ]seconds  General satisfaction level of parcel collecting procedure [1 out of 10]  Do you have any suggestions? (Or make a command :P)  [ your suggestion ] [RoomNumber,Name]  ————————  In order to not cause ethical problems, this survey will come with a terms of service/privacy policy.  Hopefully, this project can be my individual project and maybe extend to other companies in the future. |

This is the end of section one and you should upload your completed section by 23:55 on 26/11/2015

## Section Two: abstract and Literature review (1500 words suggested)

|  |  |
| --- | --- |
| First Name: |  |
| Last Name: |  |
| Student Number: |  |

**2.1 Abstract**

**Help:** An abstract is a short summary of a research project that enables other researchers to know if your report or research paper is relevant to them without reading the whole report. It is usually written retrospectively so that it can include findings and results. It is fully expected that you will rewrite your abstract when you come to write your final paper. For now, you should write an abstract of about 250 words that define the project described in section one. Before writing your abstract you MUST read some abstracts from conference or journal papers on *Google Scholar* or from *portal.acm.org* (to understand their style) and then provide your own abstract that outlines what your question is and what you 'did' to answer it.

|  |
| --- |
|  |

**2.2 Initial/Mini Literature Review**

**Help:** A literature review is a select analysis of existing research which is relevant to your topic, showing how it relates to your investigation. It explains and justifies how your investigation may help answer some of the questions or gaps in this area of research. A literature review is not a straightforward summary of everything you have read on the topic and it is not a chronological description of what was discovered in your field. Use your literature review to:

• compare and contrast different authors' views on an issue  
• criticise aspects of methodology, note areas in which authors are in disagreement  
• highlight exemplary studies  
• highlight gaps in research  
• show how your study relates to previous studies  
• show how your study relates to the literature in general  
• conclude by summarising what the literature says

|  |
| --- |
|  |

**2.3 Bibliography (key texts for your literature review)**

**Help:** Please provide references, in correct Harvard style, for at least three key texts that have informed your literature review. If you are implementing an application, select texts which demonstrate how other researchers have tackled similar implementations? The references should be recent and sufficiently technical or academic. Your markers will be looking for you to identify technical reports, conference papers, journal papers, and recent text books. Avoid *Wikipedia* entries, newspaper reports that do not cite sources, and general or introductory texts.

|  |
| --- |
|  |

This is the end of section two and you should upload your completed section by 23:55 on 04/01/2016