

CE101 Team Report Assignment

Team: U

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Chapter 1 The Executive Summary (339/Joshua Beresford-Davis)

This report details the progress through our creation of a python program from the initial design brief to the project management, keeping up with us every step of the way.

It begins with the first chapter on team working that details what it is to be a team leader, work in a team and how the team has worked. This starts with a document summary all about team leading and being a working team. It progress to talk about the team effort summary table that we all used to self and peer evaluate the entirety of the team, rating each members contribution. This concludes with personal statements from member of the team about what work we have each completed.

A chapter is then dedicated to the project development, first with a literature review of the concept of product development, then with an IEEE standard product specification. This specification will talk about what requirements we had to fulfil for the task. After the specification, the chapter talks of our design and how we chose to make the product fit within its specification. After we finish with the ideas of how we will create the product, we talk about our actual implementation of the product and it's testing.

The second part of the third chapter is talking about the legal, ethical and health and safety contexts of the product, and how it complies with the various rules and regulations of such matters.

The fourth chapter begins with a summary of what project management is and how you are meant to manage a project of any size. It further goes on to talk about the Gantt chart used to give a representation of the given tasks to each member of team and our use of it effectively. The last section of this chapter is about project management and how I handled – or didn't handle – managing the project and allocating tasks to each member of the team.

The final chapter before the appendices is simply one of the conclusions drawn from this project.

Chapter 2 Team Working (1094 words)

2.I An introduction to Team Working (345/Rehan Aqbul)

When working with my team, I have undertaken several tasks which come with being the team leader of my team this included making sure during the duration of the project that everyone would remain on task as well this making sure that everyone was motivated to do task and bring in track with the deadline we set as a team. To achieve this I create a Facebook group which we could communicate on outside of the lectures and lab to maintain communication, this helped to make sure everyone stayed on task and if there were any under lying queries they could get a quick response any of the team member, we also used to set smaller tasks or exchange tasks via this form of communication. As well this we did use the Moodle forum for reminders and formally setting tasks after the team meetings this allow everyone to stay up to date and remain on task during the whole of the project.

As well as keeping the Team working well, I undertook several smaller tasks within the project, which included writing up the specification for project, which meet the IEEE standard. This would allow us to make sure that we are designing the product correctly and in a professional manor. As well as this another one of my earlier contributions to the team were to create a precise from the ideals which we has come up with in our initial meeting, from this everyone choose one topic to do a precise on, after this we could chose idea helping us to have a wide scope. The main idea that I had was to create a football news related product which used the Twitter API, although we didn't go with this idea we did use the social media aspect of the idea in our final product. I also created a PowerPoint presentation on the target market of the product/concept that we had created; this would help the team to understand whom we were making the product for and giving a general wide scope of the audience.

2.II Team Activity Report

2.II.a The team effort summary table (83/Rehan Aqbul)

Overall the team worked well as the was a general balance in those whom were confident in the coding aspect and those stronger in the formal written aspect, although I made sure that everyone had a input in both aspects of the project, the strengths of the member in their areas found themselves. As well as this everyone had an equal contribution as whole on the final product even though some had a greater impact on the code than written and vice versa.

2.II.b Detailed report of each team members contribution to the project (666)

Ketmany Sivilay – While I was working with the team, I have contributed in many part of our project. My first work is involving with thinking of an idea for our product. My idea was not originally brought up by me but the other member of the team but my job was to develop that idea. The idea was about gathering data from Twitter using API. In my first document I did some research about API and did the précis of it so it would be easier for the team to get the idea of what it is in a simple way. The second part of my contribution was the presentation of the similar products of our product that already existed in the market. In this task, I have did some

research and found some software that is really closed to our product. This presentation gave our team some ideas of how our program can be improved to a better program. I have also done our team's chapter 3 on the literature view where it was about the project development. Also, the chapter 4 on the literature view of project management.

Evaldas Senavaitis – My first and main task was to develop Twitter scraping code and stock market price output which was given to us as example, first part of legal context of our product modules. I have saved every website for our product to be created for referencing purposes. Finally I have written the code for the twitter scrapping python code as well as the half of implementation which is in chapter 3, another task that I had undertaken was to create a interface of the product to make it look user friendly. Finally I helped to edit and finalise team report.

Jawhen Abdulla – Amongst that I have done more research linking to the ethical background to our product and developing the design. As well as that I have made a presentation and précis which I have accustomed to be interpreted into the final team report to produce my part of the team report "Product Design".

Rehan Aqbal – When working with my team, I have undertaken several tasks which come with being the team leader of my team this included making sure during the duration of the project that everyone would remain on task as well this making sure that everyone was motivated to do task and bring in track with the deadline we set as a team. To achieve this I create a Facebook group which we could communicate on outside of the lectures and lab to maintain communication, this helped to make sure everyone stayed on task and if there were any underlying queries they could get a quick response any of the team member, we also used to set smaller tasks or exchange tasks via this form of communication. As well this we did use the Moodle forum for reminders and formally setting tasks after the team meetings.

Joshua Beresford-Davis – My contributions to the team project are as follows; I was in charge of programming the majority of the data analysis and reporting sections of the program and to be the project manager. In these positions I created part of the final product, as seen in the programs documentation and across various team logbooks. Since I had helped implement the code I was also responsible for part of the project implementation subchapter of chapter 3, where I talk about how and why I chose to manipulate the data in the ways that I did. As I also had the role of project manager, I was responsible for the running of team meetings and keeping the team log book up to date with the minutes and agendas of each meeting. This is why I also wrote the project management chapter as it came bundled with the other responsibility of my role. At the last minute I was partly responsible for the formatting of the team report and ensuring that it all read correctly.

Chapter 3 Product Development (4877 words)

3.1 An introduction to Product Development (1,403/Ketmany Sivilay)

The term product development refers to a process of creating new or different characteristics of products. This may involve modification/updating of the existing product or creation of an entirely new product. There are several ways to develop the product including ad-hoc, hacking and development methodologies. Ad-hoc is known as build-and-fix where programmers write a software, run it and correct any bugs in the software. There is no development process which makes the product has poor quality [1]. Hacking is either defined as getting the job done but without consideration of elegance or efficiency, or producing a solution using great skill. Development methodologies are used to make the product better. It breaks down a problem down into several tasks. It sharpens focus as well as provides structure. It also shortens time as it supports planning and control, which will then lead to a better program [2].

As it has been mentioned, a product development methodology breaks the development process into tasks. There are four stages in a methodology; the first stage is requirements/specification where the company discusses these with the customer. If the requirement is very simple, the team must produce a more detailed requirements/specification. Next is design solution stage; it is the process of deciding how the program will achieve the requirements/specification. After the design solution stage is done, the product design solution would be turned into an actual product and this is known as the implementation stage. Testing is the last stage; this is the important stage since we do not want to produce a product that cannot be tested to satisfy the requirements/specification. It is better to test the product before implementation stage to avoid producing a useless product.

Classical Waterfall Methodology:

Waterfall methodology is sometimes known as the traditional; the process of project development is divided into several phases. Each phase must be done before the next phase can begin as the result of one phase is the input of the next phase [3]. The first phase of waterfall methodology is requirement analysis then followed by the design, there may or may not be feedback at this stage as it may report the specification that needs to be changed. After that the implementation stage starts. Finally, the testing stage begins to meet of product specifications on the implemented product.

However, there is some disadvantages of the classical waterfall methodology as it is difficult to go back and change something once it reaches the testing stage. This will be an issue when the problems occur over time. Moreover, there is often an unclear of customers' requirements, which will lead to a specification that is poorly defined. It is reasonable to use the waterfall methodology when the product development timescale is short means between 6 months to a year and the goals and solutions are clear [4].

In the waterfall methodology each person has one's own tasks based on one's role and interacts with other members in the team. In a software project, there are several roles including project leader, project manager, business analyst, programmer and tester.

Agile Methodology:

Agile methodology is the alternative to traditional project and is usually used in software development to meet customers' satisfaction. It is suitable for a flexibility of requirements, in other words, unclear specifications as the solutions are discovered along the way of

development process. Agile methodology is becoming popular due to its flexibility and adaptability.

The Agile manifesto states the following that "We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiations
- Responding to change over following a plan."

The most popular agile method is scrum due to its simplicity and flexibility. It is a management framework using one or more cross-functional, self-organizing teams. The team works face to face and the customer is involved in the process if it is not part of the team. The problem is often unclear and the customer can change their minds on the requirements. There are three main roles in the Scrum framework including the product owner, the scrum team and the scrum master. The product owner has a responsible for product vision. He/she decides whether to accept or reject each product increment, whether to continue development and may contribute as a team member. The workload does not set by the product owner instead the team members are the one who set the workload they commit to within a sprint. The Scrum team works as a team; team members work together, and commits to one sprint as a time. They do not have the traditional roles such as programmer or tester. Usually consists of 5-9 people in a team. The Scrum master has ensures the team duties using the values and practices of scrum as well as helps the team to work efficiently by removing difficulties, gathering meetings, and working with the product owner to provide the product backlog [5].

Scrum uses fixed-length period called sprint, which usually lasts for a week to a month. The sprint is made up of four components including a sprint planning meeting where the product owner and the team hold a meeting at the beginning of each sprint to agree which product backlog items they will turn into working product. A daily scrum meeting, which is usually less than 15 minutes. This meeting held every day at the same time and place. Team members report to each other what they have done the previous day, what that do today and what they will do tomorrow. The team holds a sprint review meeting to establish the product increment to the product owner and other stakeholders and this component is known as a sprint review. Lastly, a print retrospective, the team reflects on its own process and analyse improvements for the next sprint.

When deciding which methodology is suitable for your project, it is important to look at the factors that really matter since choosing the wrong methodology will lead to the cancelled of projects when the deliveries are delayed and customers are unhappy. The team has to first define their own process; discuss with the customers about the requirements/specification then the team will be able to decide which method is the most suitable for their project.

There are number of ways to describe the design processes. However here are example of some processes: 'Double diamond' begins with discover (Exploratory phase), this phase is about brainstorming, observation, quantitative surveys, secondary research, choosing a sample. After

that is define (Focusing phase), bringing ideas together into a project, limit and define a clear problem to be solved. Next is develop (Prototyping phase); focusing on and develop a solution such as assessing, revising, building. Finally, deliver (Launching phase), this is all about testing and evaluating product. [6]. Another example is the 'SAFE' process, which stands for Simple, Appropriate, Functional and Economical.

There are six principles in systems design. The first principle is debate, define, revise and pursue the purpose. Think holistic is the second principle. The third principle is follow a disciplined procedure. Be creative is also one of six principles as well as take account of the people. Lastly, manage the project and the relationships.

In design the term creativity is defined as 'the generation of new ideas'. It is new ways of seeing the existing problems or new opportunities by using new technologies or changes in in markets.

There are several problems to solve that you all have experience and these problems are categorized into two types including well defined problem where solver has all data needed to solve and the required information divided into four parts: the initial state of the problem, the goal state, the legal operators and the operator restrictions. Another type of problem is the ill-defined problem where solver has little or no information on the problem to solve. To solve the problem there are four main phases. First of all, we need to understand the problem; research may be required at this stage. After understand our problem is the planning and approaching stage; find the relation of the known and unknown and come up with an appropriate plan is usually a major step of problem solving. Next we would want to execute the plan by checking each step along the process. Finally, look back; review what you done.

3.II The Team Product

3.II.a The product specification

Customer Requirements (162/Rehan Aqbul)

In your team you are asked by your customer, Dr Anthony Vickers, to produce a software product using the python programming language. The product should demonstrate data gathering, analysis, and reporting. You must assume that I have no knowledge of python programming or computer programming in general. I want the programme as part of a business I am developing to provide data mining and sentiment analysis to large companies as I see this as an opportunity to make a profitable company. You can ask me for clarification regarding the product but it is for you to eventually create the specification. You will be introduced to the IEEE specification standard in the lectures on product development in week 6. From your specification you will develop a design solution. This design solution will then be implemented and tested. The fully implemented and tested product will form part of your team report. I will now provide some background information regarding data gathering, analysis, and reporting.

Target Market (55/Evaldas Senavaitis)

Our product targets developers who would want to use twitter scrapping and some analysis of positive and negative feedback and some graphical output, to which could be implemented in bigger projects. We just really hope to target those busy developers from large companies who simply do not have time to create code for this purpose.

Design Brief (17/Rehan Aqbul)

To design a product for our client (Dr. Vickers) this can perform data scraping, analysis and reporting.

Specification (1067/Rehan Aqbul)

1. Introduction

1.1 Purpose

The purpose of this product is to create a product that serves a purpose of being able to data scrape information relating to company, which are located on the FSTE 100 and return feedback effety. This will allow the user to communicate with the general public as well as give feedback to potential investors

1.2 Document Conventions

The software that we are create much follow the IEE standards as well as this the product needs to be written in Python 3, as well as having an element of data scraping

1.3 Intended Audience and Reading Suggestions

Our target market for this product is multiple user such as Investors, General public and Company which are on the FSTE 100 but the final product is being made for our client Dr Anthony Vickers therefore it should meet his expectations

1.4 Product Scope

The scope of this product is to create a program in Python 3, which can perform data scraping of relevant feedback positive or negative about the company in the FSTE 100 from Twitter.

2. Overall description

2.1 Product Perspective

This product is a new product that will come into the market although this product is unique in the sense of the social media aspect; there is many similar programs that can conduct data scraping with companies that are located in the FSTE 100. Therefore the product should have a big aspect of social media implemented

2.2 Product Function

The function of this product is to create a product that is able to perform;

- Data Scraping
- Connection the companies (FSTE 100) with the general public
- Communication with user group and social media
- Feedback from a user group
- Help companies to monitoring social media
- Be effective and easy to use

2.3 User Classes and Characteristics

Our customer Dr Anthony Vickers has asked our to produce a software product using the python programming language. The product should demonstrate data gathering, analysis, and reporting. You must assume that I have no knowledge of python programming or computer programming in general. I want the programme as part of a business I am developing to provide data mining and sentiment analysis to large companies as I see this as an opportunity to make a profitable company. You can ask me for clarification regarding the product but it is for you to eventually create the specification. You will be introduced to the IEEE specification standard in the lectures on product development in week 6. From your specification you will develop a design solution. This design solution will then be implemented and tested. The fully implemented and tested product will form part of your team report. I will now provide some background information regarding data gathering, analysis, and reporting.

2.4 Operating Environment

The platform in which the program is going to be running from is the python programming language, which is a key requirement from our client. This means that the program can be run on any machine that can operate this language.

2.5 Design and Implementation Constraints

The constraint of this product has two make constraints that need to be followed such as;

- Timing – The product much be complete and presents by the 8th March 2015, this means the product much be test etc. by this point
- Cost – The costing of making this product shouldn't be great than £10,000 as this is as such as our client can afford for this product

2.6 User Documentation

The product should also have a manual and tutorial on website or PDF which will help the users to understand the products and help companies to train its staff to be able to use the product

3. Specific requirements

- User - The interface of the software Is going to include sample screen images, as well as GUI standards to followed, as well as this we need to make sure that everything will appear on every screen, keyboard shortcuts, error message display standards, and so on.

- Hardware - The product should work on anything that can run python 3 and should support a wide range of systems and platforms
- Software - The interface of the product should be consist through the product to make sure that the product is professional as well as this the product should have an interface which allows the user to easily input the FSTE of a chosen company and pull up the relevant data from social media

4. Function

4.1 Performance Requirements

There are three key aspects of the products, which relate to the performance of the product and this need to be meet for the product to be successful;

- Response Time - 0.1 second is about the limit for having the user feel that the system is reacting instantaneously, meaning that no special feedback is necessary except to display the result
- Workload - The system should be able to support 4 pages
- Scalability/Lifespan- The product should be relate for 6 months

4.3 Security Requirements

Even though the product is going to be open source the product needs a level of security to stop the product from being misused or the product being use to intercept key data

4.4 Software Quality Attributes

The quality of program is going measure by the program being able to actually run the multiple tasks that are set by the user to achieve the finally goal, as well as this the product should meet the specification set as well as being reliable when the tasks are set.

4.5 Business Rules

The product will be design as a one-off product and this will be prototype that will display the concept of the design and the solution to clients' problem which can be refine and product on a mass scale. As the product going to be a piece of software this means in reality that that he product will be eventually be a one-off product but there could be external costs such as servers

5. Testing

To test this product we will test it against its original specification to determine whether the product falls into the requirement that were set. We will also test each and every function of the product to ensure it works correctly on the lab computers. If possible a testing sheet will b created so one the product is complete multiple tests can be made to push the programme to its limits, to test all edge cases and attempting to break it where possible.

3.II.b The product design (426/Jawhen Abdulla)

The product is a program designed to have two different processes/steps to essentially derive the importation of data which is then analysed and exported; created into pie chart and excel file which is based on the information from the first steps of the program, it gets from social networking site Twitter and Yahoo. The first part of the program ask for stock quote to start scrapping and for stock historical stock prices. Secondly the positive and negative words which have been made about the specific company is being analysed from word lists and then saved in shell session if user does not want to save it to excel. Then the remaining part of the program is using that data and analysing it into creating pie charts of the gathered information. We created our prototype on Twython library however, CSV and Matplotlib and many others were trialled and researched about to make sure which library was the best. Twython library was deemed most easily for the team and most understandable following our actual product which was created with Python.

The product itself has many advantages as well as disadvantages that shape the product design. Some of the advantages are that the product will essentially help build companies to beat their competing market therefore benefits in growing businesses and advancing the customer's needs. This product will also play part in the initiation of future ideas in giving companies a larger instant data source on things companies could contemplate changing or creating for their business. This was one of the big ideas of our products design on helping companies whether they're small or large, well known or known by a few. The product was designed to help all companies and small business owners to gather important information through social media. Twitter being one of the largest social media platforms was a good choice for my team to base the product around because it is approximately used by 288 million people world-wide. Therefore is a good data gathering platform for a product such as my teams. It will be able to provide data very quickly and efficiently for companies. There are 500 million tweets uploaded and sent per day on Twitter so the usage and incoming of data would be reliable, fast and consistent.

With our product (Twitter API) which I and my team created we can get the following functions to work: GET, POST, DELETE, PUT.

These are essentially the functions used to gather the data which would be turned into data folders/graphs and other kinds of data measurement.

Testing (82/Joshua Beresford-Davis)

To test this product we will test it against its original specification to determine whether the product falls into the requirement that were set. We will also test each and every function of the product to ensure it works correctly on the lab computers. If possible a testing sheet will b created so one the product is complete multiple tests can be made to push the programme to its limits, to test all edge cases and attempting to break it where possible.

3.II.c The product implementation (859)

So the program shall meet the user with friendly interface asking to input a desired mode from one to seven. Mode seven will end the program it was created for terminating the product, mode one will launch the program for its full purpose and mode two will only display a pie chart of finished analysis with white colour as positive feedback and red as negative feedback, we choose white and red because of colour-blindness, actual calculations are rounded with two digits after comma and for other modes we will get to them later. The heart of the program is in mode 1 it uses Twython library for product to interact with Twitter API. I decided to use Twython library because I searched on google and Youtube for examples and instantly I found dozens of examples on Twython library and most importantly I found almost completed twitter tweets scraper code [7], for me I just needed to modify it a bit and It worked for our project. Now I will explain how the scraping actual works for our project. When we correct values of application keys, access tokens and their secrets are supplied to API, because it is a vital part of scraping, without them scraping would not work at all, tokens and keys are required for security reasons of Twitter. I got access of these tokens by creating application with twitter developers API and asking Twitter for tokens and keys for our project. When tokens and keys with their secrets are with correct values and checked the program immediately will ask the user for stock market quote starting with "\$" sign, it's because of the Twitter search engine and actually if we would want to we could search for anyone on twitter, it is like searching within a twitter search box and when the input is correct the program shall start to scrape twitter database of previous days tweets up to a 100 and no more than that, next program shall write every single tweet to the list for storage and further analysis and reporting. It will all be done behind the python shell for user safety.

There is an extra feature for our product and it is a historical stock price getter, it will asks the user to input the dates between users liked one's. Feature is using ystockquote python library, for its given capabilities. Ystockquote library uses Yahoo for stock market prices and it can display price from date to date also it can also show real time bid and the actual price of stock itself, but the last two features are not shown in our project but could be added if necessary. For convenience the output is outputted to excel file and storage, it can be saved multiple times with one file name and as expected file will update after each save and previous data will not be lost, this idea was created to compare different companies' stock prices for date to date measure. This feature has immense expansion capabilities for future, for example it could be done that after the data is saved to file excel would show different charts for different price rates.

Evaldas Senavaitis

I had to implement the data analysis, and reporting part of the product. I chose to use two large lists of words, deemed positive [7] and negative [8] and search the tweets for occurrences of these words. I could then determine the attitude of the tweet by the presence of these words. If it contained more positive words than negative words, it was likely a positive tweet. I understand that this could raise some anomalous results however I believed that it was as likely to flag false positives and negatives as it were to miss them entirely. Once given an attitude the tweets could be counted and the analysis could begin. The first method of analysis that came to mine was the direct comparison of positive to negative numbers in the form a pie chart using matplotlib's "matplotlib.pyplot.pie()" which provided an easy method to do so that required no external libraries to be installed, other than the ones already present on the lab computers.

Due to the fact I had coded my program as a series of functions accessed by a menu function, it was easier to adapt Evaldas's work into my format and add it to the menu and further advance

it, than it was to convert my code across to his method. As such I had programmed the menu function to be a series of if statements after an input within a try block, within a while statement, it will run until a function is used to close it, it will alert you of invalid inputs, and will only allow appropriate function use.

Beyond this, if time had not been so much of a constraint, we would have implemented a system to view the data collected about the stock prices and have them plotted as a line graph. The line graph could further be added to with bars at each day ending representing the positive to negative feedback ratio, using the Twitter API to pull tweets from that date.

Joshua Beresford-Davis

3.II.d The product testing (190/Joshua Beresford-Davis)

We did no explicit testing other than basic developer testing when writing and merging the code into the product. This was entirely due to time constraints. What little testing was done did not get documented but normally comprised of, "Does the latest function work properly" and every couple of working versions every function was tested, with the first most then undergoing the more rigorous cycle of tweaking and testing until it is working to a satisfactory manner. Unfortunately this has led to a couple of issues such as the first submission of the product, the one that underwent the presentation and received a 45% rating on a would buy/would not buy comparison, had a final try and except block commented out. This had been carried had from when the programme was being merged and errors had cropped up but had been caught by the try block resulting in use being confronted by an issue without an obvious cause. As such the try block had to be temporarily removed. It appears our final testing of this merged programme must have missed this issue; however it did not arise during the presentation.

3.III Context

3.III.a Legal matters (396)

Our program uses Twython module which is maintained and owned by Ryan McGrath. Permission is hereby granted, free of charge, and can be published, copied or modified [9]. Other module that our program uses is ystockquote it has a GNU LGPLv2+ licence, meaning that we are free to use and distribute the library with the product even if we charge for the product so long as the licencing in the library is unchanged. We may even edit and tweak the library so long as it remains under this licence, the dates of any changes are clearly marked and credited and that any function that exists in the library must be conserved in a working format [10]. In addition to that our program shall use requests module which is owned by Kenneth Reitz, module is in Apache2 License form and it allows us to use it freely [11]. Only thing that we own is a copyrights of the Python code which we developed by ourselves and if someone will ever want to use our code we can sell them, because it is an intellectual property that we own.

Evaldas Senavaitis

We have made sure to only use libraries whose licences allow for derivative work, and do not require royalties to be paid. We used Matplotlib's pyplot library [12] which has its own custom license that allows for free redistribution and allowed us to create derivative works provided

they also adhere to the license. We did not need to create derivative work in the sense of editing the library itself, however the product does utilise the features of the library. Additionally we used the comma separated value file manipulation module [13] that is a library built into Python itself. As such we did not have to worry about its licence as any installation of Python will have it included.

Within the group we have each signed and dated a legal agreement, agreeing not to reuse any of the code of the project for any other use without prior consent of every other team member, and possible monetary compensation. This will should prevent any one of us taking our product and attempting to sell it without informing the remainder of the group. It is also good practise for the real world of business where contracts and agreements are more common to prevent the theft of code from programs for personal gain.

Joshua Beresford-Davis

3.III.b Ethical matters (93/Jawhen Abdulla)

The biggest ethical issue raised in our product is that the people from whom the data has been collected are unaware that their tweets have been collected and analysed by the programme, however since the only tweets collected are public, the users should be aware that they lose control of anything said on the internet. That being said people are often unaware of that fact and would feel like they have had their privacy breached as their twitter feeds would have been accessed and read without their consent, not that it was needed.

3.III.c Health & safety matters (127/Joshua Beresford-Davis)

Health and safety is a very serious matter, and one that could be very costly to a developer if their product could be found to be dangerous, however since our program uses the default Python IDLE editor interface this was not much of a concern. The only real issue was that the displayed pie chart was of colours that are not easily confusable for the colour blind. As such red and white was used to help mitigate the issues caused by red/green and red/blue colour blindness. That is not say this product could cause numerous issues if incorrectly used by another developer such as our target audience. They might hook it into an otherwise unusable interface or use rapidly flashing lights that would cause issues for epileptics.

Chapter 4: Project Management (1279 words)

4.I An introduction to Project Management (820/Ketmany Sivilay)

Project and Project Management

The term project is defined as a set of unique, complex, connected activities, which need to be completed by a specified time, at an agreed budget, and based on specification [14]. A set of parameters can be used to define a project. The following parameters will be used: Scope – the agreement with customer of what needs to be done and what might not be done and it is usually written down in a document. Quality – the quality of product (budget or high end?). Cost – the costs of the whole project (workers/client time, materials, etc.). Time – the deadline of each task. Resources – what is needed to produce such as people, equipment, materials, etc. [15].

Project management refers to the way knowledge, skills, tools, and techniques are applied to project activities to meet the requirements of the project.

Project Characteristics

Projects can be classified by their characteristics so it would be easier to choose the right approach of project management for each project type. The project characteristics include risk; the levels of risk (low, medium, high), business value, length, which is categorized into several categories such as 3 months, 3 to 6 months, 6 to 12 months, etc., complexity (across departments, organizations, countries), technology ; does it exist or it is new?, and cost; money and people invested. [16]

Project Process

A project can be broken down into several processes from the beginning until the end of project. The project management processes are grouped into five categories including scoping where we identify stakeholders, goals, specifications, plan approval. Planning; decide what objective needs to be achieved by when and at what cost. Creating a project plan and assessing risks. Launching stage is to establish the team, set up roles, responsibilities and means of communication. Monitoring and controlling is when we track, review and adjust the processes; analyze any areas that need to be improved and changed, as well as keeping everyone informed. Finally, closing stage, which the process of checking if the product has met the goals and specification. Then deliver the product and sign it off.

Project Planning

A project needs to be planned to reduce concern by communication about the project. Planning helps to increase the understanding and is a process of locating a common direction. It also increases the efficiency and identifies a common path. There are number of planning tools, which are used in the project planning and management process. The tools can be as simple as sticky notes to a range of software:

1. Gantt Charts:

Gantt charts were designed by Henry Gantt to plan, schedule and monitor project progress. These charts can be built in Microsoft Excel but it is better to use Microsoft Project.

2. Work Breakdown Structure (WBS):

WBS breaks the work that needs to be done in order to achieve the project goals into a set of functions, sub-functions, and activities.

3. Monitoring Tools:

It is very important to monitor the progress of a project. Monitoring can be completed as written reports and can be achieved through the use of the Gantt charts and milestone charts. Cost/spend reports, project status meetings and problem escalation strategies are also some of the reporting tools.

Risk

The term risk is defined as a case that might occur to change the achievement of goals. It could be either positive or negative impact. If the risk occurs, you need to monitor and control the project risk by writing down the risk, assessing them and making sure everyone in the team are aware of the risk [17].

Project Closure

When the client tests and accepts the final project deliverable using an agreed testing methodology, the project will then be closed. Generally, there will be final documentation and achieving procedures.

Project Management Methodologies

There are four main types of methodologies that can be used. The first type is Traditional or Waterfall where we have to complete one phase in full before move on to the next phase. The second type is Extreme, this type is the unclear solutions and goals where they may or may not achieve the desired end result. Third is Agile where the solutions are discovered along the process; suitable for the project that has unclear solutions. Lastly, Emertxe; this is similar to Extreme but the process is done backward [18].

Project Failure

Project fails can occur due to the several causes such as poor planning, lack of decision making, the requirements definition is poor or too complex, etc. However, project failure can be prevented by planning, monitoring and reporting, changing processes and reviewing processes. It can also be intervened by the involvement of client as well as root cause analysis. If a project is happened to fail, there is a possibility that the project can be continued. The client determines whether it is reasonable for the project to go forward or to terminate and it is done through a revision of the plan.

4.II Project Management Report

4.II.a. A description of the Gantt chart¹ (92 – Joshua Beresford-Davis)

We did not use the Gantt chart throughout our project extensively as our tasks were simple and did not need the management, however it was set to team members to be updated, and never was until the last day by myself, back filling to represent our efforts. This is one of the signs that my management was poor as the task as never completed by anyone it was delegated to. It does not use the template as we found it easier to simply do it from scratch for our simple task designation.

4.II.b. An evaluation of the project management (367 - Joshua Beresford-Davis)

As project manager I believe that that overall management succeeded as a suitable product was produced. I do however believe there were multiple issues and minor failures with my management which we as a team had to overcome. By overcoming these issues we have become a better team and managers, as we all understand the hazards of poor management significantly better for having first-hand experience in it.

The first issue I identified was a lack of evidenced work during the early stages of the development. Tasks would have been set but no documents uploaded to the Moodle document database to show that the work had been completed, however it was evident from the following meetings that these tasks had been completed as the members assigned to these tasks could verbally explain their work and ideas. Additionally these early tasks tended to be the development of ideas for a product, and brainstorming as a team in meetings resulted in the final design. After this initial setback in management I had to further emphasise to the team the importance of remembering to upload their supporting documents to Moodle prior to our meetings.

Another issue came in the form of a misunderstanding of priorities by everyone in the team. We had thought that the team report was a smaller document that was marked alongside the actual product itself and that the product would bring in the bulk of the marks. This was brought to our attention at a rather late stage of the project since which the team report has become the main priority. We're fortunate that this issue was brought to our attention before it was too late. I believe it shows the importance of properly evaluating the importance of every section of the project and making it clear from the very beginning.

Other than these issues every week the team logbook was filled out so that people who missed the meetings, of which there were a few occasions, or people who wanted to double check their task for that week could do so. I also encouraged individual logbooks to be created and kept up to date so that they could be used for this team report as evidence.

¹ Gantt chart in Appendix C

Chapter 5: Conclusions (282/ Evaldas Senavaitis)

In conclusion we think team did less work than it was possible to do, because some team members were absent or had no intention to contribute to product, many of team members took this project too lightly, and especially the specialists, to our opinion we lacked coding knowledge in the team and we think that if this would not have been an issue more stuff would have been done. Task were not having been done and silly excuses were made for not uploading the task and it just dragged on and in the end some of the members have not uploaded anything useful and it just ended as no contribution to the team report. We believe that this product and the whole team report would have been done in two or three weeks if everyone had putted an effort in it. Overall this project was good experience for us and for some other team members not so good; we learned how a team should work together and how task should be prioritised. The most important thing we learnt to start at the start of the deadline and continuously work from that and in the end it will be easier to close out the project and maybe expand it even more. At the presentation our product scored 45% buy rate and we believe it was a success, because our target market is not as wide as other teams. Team report could be better, because only some member truly contributed to finalising the report. Truly this report is being putted at the last evening till the deadline, just because members had no intentions to put the report before presentation days and for the supervisor.

Appendix

A. Python Code

<https://moodle.essex.ac.uk/mod/data/view.php?id=238045>

Under the team name: U

CE101 TEAM U Stock Analyser

It is a latest upload.

B Team effort summary table

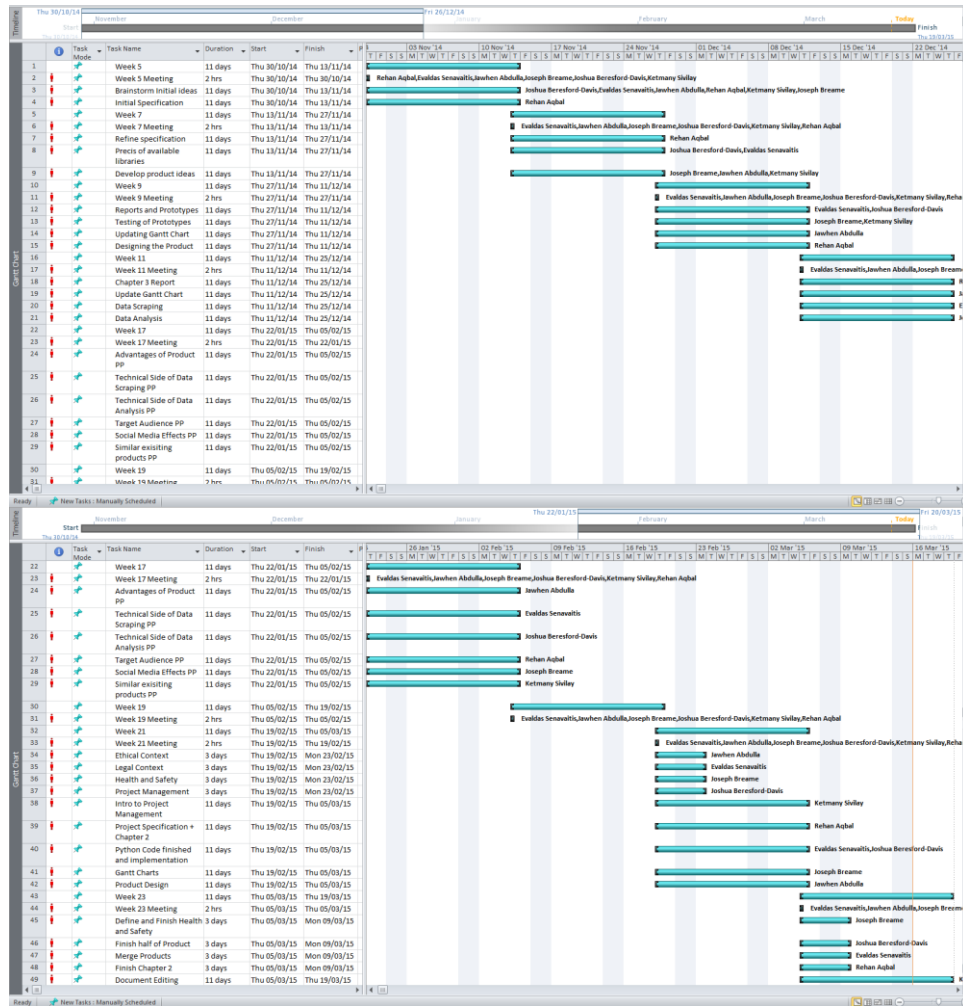
		Meeting Attendanc e	Number of reference s added to the database	Number of précis added to the databas e	PowerPoint presentatio n given to team in week 19	Agenda s in team logboo k	Minute s in team logboo k	Discussion s added to the Team forum[1]	Product Developmen t	Report Writin g	
Team Member	Role	0-10	Rank order[2]	Rank order	0 or 10	0-10	0-10	Rank order	Rank order[3]	Rank order ³	TOTAL
Rehan Aqbal	Leader	8	1	1	10			5	0	3	28
Joshua Beresford -Davis	Project Manager	10	4	4	10	10	10	5	5	5	63
Evaldas Senavaiti s	Specialis t	10	5	5	10			0	5	4	39
Ketmany Sivilay	Specialis t	10	3	3	10			0	0	5	31
Jawhen Abdulla	Specialis t	7	2	2	10			0	0	2	23

[1] Only include top-level posts, not replies.

[2] For example for a team of 6 give 6 to the person with the highest number.

[3] You can give the same rank order to more than one team member so if all have contributed equally then for a team of 6 score 6 for all.

C Project management Gantt chart



D References

- [1] C. W. Dawson, *Project in Computing and Information Systems: A Student's Guide*. Essex: Pearson Education Limited, 2009
- [2] R.P. Knott and R. J. Dawson, *Software Project Management*. Loughborough: Group D Publications Limited, 1999
- [3] Tutorialspoint. "SDLC Waterfall Model", <http://www.tutorialspoint.com/> [online]. Available: http://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm [Accessed: 26 Dec 2014]
- [4] In a lecture by Anthony Vickers to Product Development in 2014
- [5] J. Michael, "Scrum Reference Card". <http://scrumreferencecard.com/> [online]. Available: <http://scrumreferencecard.com/ScrumReferenceCard.pdf> [Accessed: 27 Dec 2014]
- [6] Innovation And Entrepreneurship in Education. "Double Diamond", <http://innovationenglish.blogs.ku.dk/> [online]. Available: <http://innovationenglish.blogs.ku.dk/model/double-diamond-2/> [Accessed: 27 Dec 2014]
- [7] twitter-sentiment-analysis-tutorial-201107, twitter-sentiment-analysis-tutorial-201107/data/opinion-lexicon-English/positive-words.txt, [online] 2007, <https://github.com/jeffreymbreen/twitter-sentiment-analysis-tutorial-201107/blob/master/data/opinion-lexicon-English/positive-words.txt> (Accessed: 1 Dec 2014).
- [8] twitter-sentiment-analysis-tutorial-201107, twitter-sentiment-analysis-tutorial-201107/data/opinion-lexicon-English/negative-words.txt, [online] 2007, <https://github.com/jeffreymbreen/twitter-sentiment-analysis-tutorial-201107/blob/master/data/opinion-lexicon-English/negative-words.txt> (Accessed: 1 Dec 2014).
- [9] GitHub, twython, [online] 2015, <https://github.com/ryanmcgrath/twython> (Accessed: 15 February).
- [10] GitHub, ystockquote, [online] 2015, <https://github.com/cgoldberg/ystockquote> (Accessed: 16 February).
- [11] Python-requests, requests-license, [online] 2015, <http://docs.python-requests.org/en/latest/user/intro/#requests-license> (Accessed: 16 February).
- [12] Matplotlib, pyplot, [online] 2015, http://matplotlib.org/api/pyplot_api.html (Accessed: 26 November 2014).

- [13] Python 3.4.3 documentation, CSV File Reading and Writing, [online] 2015, <https://docs.python.org/3/library/csv.html> (Accessed: 26 November 2014).
- [14] Wysocki, Robert K. *Effective Project Management: Traditional, Agile, Extreme*. 7th edition, Indianapolis: John Wiley & Sons, Incorporated, 2003, ch.1, pp. 4
- [15] Vickers, Antony J., *Week 6 - Lecture: Product development* [online]. Available: <https://moodle.essex.ac.uk/mod/book/view.php?id=208150&chapterid=1893> [Accessed: 28 Feb 2015]
- [16] IEEE Computer Society, *IEEE Guide – Adoption of the Project Management Institute (PMI ®) Standard – A Guide to the Project Management Body of Knowledge (PMBOK ® Guide)*, 4th edition, New York: Software & Systems Engineering Standards Committee, 2011, ch. 4, pp. 71
- [17] Wysocki, Robert K. *Effective Project Management: Traditional, Agile, Extreme*. 7th edition, Indianapolis: John Wiley & Sons, Incorporated, 2003, ch.3, pp. 83
- [18] Aitken, A. and Ilango, V., *A Comparative Analysis of Traditional Software Engineering and Agile Software Development*, Perth: Curtin University, 2013