

5010 CEM enterprise project report



March 3, 2022

**Link to GitHub Repository for our application as well as instructions to run app -** [**https://github.coventry.ac.uk/akinpelud/5010CEMgroup6**](https://github.coventry.ac.uk/akinpelud/5010CEMgroup6)

**Video Link to Group Recording –** [**https://drive.google.com/file/d/1wgJzBaHRzhxKqNklEFakR\_NDaSKjtW-Z/view?usp=sharing**](https://drive.google.com/file/d/1wgJzBaHRzhxKqNklEFakR_NDaSKjtW-Z/view?usp=sharing)

**Full Completed Application Demonstration video link -** [**https://drive.google.com/file/d/1jzl8latoqEIiIc5GXwzPTjFkcf3wdhll/view?usp=sharing**](https://drive.google.com/file/d/1jzl8latoqEIiIc5GXwzPTjFkcf3wdhll/view?usp=sharing)

**PayPal Account details to use when logging in to pay -**

**Email:** sb-9fely14331984@personal.example.com

**Password:** d)7=LH/}

**Introduction:**

This project involves the development of a software solution for a car wash which will allow for the customers to undertake a range of actions through their mobile device using an App. The App will allow customers to view the cleaning packages available, book a time, view and receive offers, communicate with staff and pay. The process will involve the adoption of an agile approach, gathering evidence of what a car wash would require from the App, building the App and then testing its functionality.

**Critical evaluation of agile techniques applied to manage the group project**

Irwin, L (2020) states that an agile project involves adopting an iterative approach throughout the project. This benefits the project because the positive effects of it are realised at each stage of the process rather than all at the end. Equally, the agile project learns at each of these iterations what is working and what is not and this allows for adjustments in approach which benefit business and customer. The agile working process involves empowering people at the outset and throughout the project. Stare, A (2014) argues that the approach delivers maximum value for the business within a given budget and time restraints. The agile approach breaks the work down into manageable parts and then allocates priorities to each which ensures they are completed in the correct order. By adopting this process, the business ensures collaborative working between team members, teams and customer (Koponen, A. 2021). Subih, M et al. (2018) discusses how the agile approach can assist software development using both *scrums* and *sprints*.

A *scrum* involves regular collaborative meetings among a range of disciplines which, in the case of the car wash project, involves a team of 5 people with skills in software development and business but no App developers. The team, in line with the agile approach, broke the work down into smaller manageable parts and each member was allocated one of these iterations. Subih, M et al (2018) refer to these iterations as *sprints*. The idea is that these tasks should have a short time allocation which will allow for the team members to get together in a weekly *scrum* and then discuss progress and make the necessary changes or improvements. Ceschi, M. et al (2005) argues that the scrum phase is not always practised with only 60% of companies being aware of it. An issue, Ceschi, M. et al (2005) suggests is that, agile management is people rather than process orientated which results in a heavy dependence on individual skills. This highlights a drawback for the car wash group as there are no App developers and to address this Ceschi, M et al (2005) argue there needs to be a process role of skills development.

**Critical review of scoping and design of the software product as a group to meet business requirements**

The design of a software product such as ours must be well thought on the concept, design, and build to meet business requirements. For us to have a software that achieves all of this we must be organized individually and collectively so that the product keeps evolving on the best ways possible, the group must also communicate in a level that we all have to agree on what the group chooses to do with the project.

First, the group must come up with a prototype for the project’s design, figuring out what the design needs to have for the app to work, then, after the project has its first design it is time to develop the code that is required for the app to function properly. When the group reaches to a point where this project is full of design and code, it is time to run some tests to check if the app is well structured and review all the bugs and flaws the app probably has in the beginning and sort out those problems early in the development. After those tests it is time to polish everything we can and make sure the app looks as professional as it can in terms of design and in terms of code organization.

After all those updates and polishings it is time to the final tests to make sure the app is working properly. If there is some problem with the final tests everyone must work on them to make sure all problems are solved as clean as possible before it takes too much of the group’s time. Since the project is looking professional and it is working properly now, the group can decide to add some extra features if they still have time for it, if not then the project is good to be released.

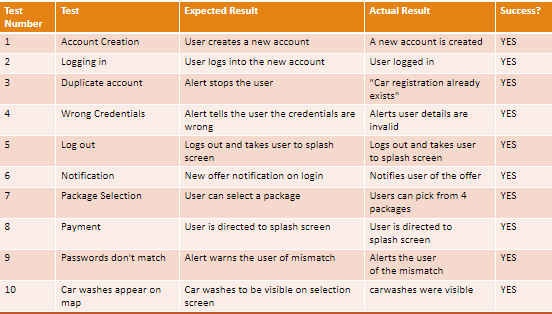
**Critical review of development and testing of the software product as a group to meet business requirements**

During the development of “Wash and Roll” app it was vital that the students were constantly checking against the business requirements to ensure that the features developed were built correctly and fit for business. To do this, the group must constantly communicate to ensure that everyone understands what to do and is up to date with the requirements.

Due to the group’s choice of technology, it meant that all the members were required to learn new frameworks (Kivy, flask, paypalsdk). Despite having to learn Kivy from scratch, the group’s prior knowledge of Python and the plethora of online resources meant that the students were able to learn them quickly. The first 2-3 weeks of the project was spent learning the framework and every week after was dedicated to the actual development of the “Wash and Roll” app. Initially, development was slow as the students struggled with the new framework, as it was noted that multiple students had issues when trying to install the required packages for Kivy and Python. Once the issues with installation were sorted, development became vastly more efficient as every member was assigned with a feature to develop. This pipelined work model meant that multiple features could be created simultaneously rather than sequentially. The problem with pipeline approach is that there is no team support as everyone is busy with their own task. This could prove problematic especially in teams where the skills of some students are less developed compared to the others.

The use of tools such as ERDs, UMLs and User requirements were shown to be important during development as they were required to ensure the students were correctly developing their assigned features according to the business requirements that were outlined at the beginning of the sprint. Without the use of an ERD and class UML diagram, the development of the app’s database would have been much more unorganised.

After a student completes their module of the app, they were required to test out their application to ensure that it works correctly and fulfils the business requirements. For the testing phase of the project, the students used a testing table to log the results of each test. The results of the table shows that the students were successfully able to complete their parts of the application without any unsuccessful tests, which shows that development went smoothly, and the group was successful in fulfilling the business requirements



**evaluation of current technologies applied to the software development**

There are many types of technologies that have been applied to the software development of the application (Wash & Roll). The first important aspect is that python was used as the main programming language, because the students in the group have familiarised themselves with it since they started university. Moreover, python itself is easy to understand as well as code with due to its popularity as it is the most used programming language to date; which also factors in the ease of use due to it being supported by a lot of users. That meant it was the ideal language to use when creating the application.

Secondly, another technology the group used was GitHub due to this project being solely group work based, it was a great idea to use as students could be listed as collaborators so they could each code at their own pace and commit and push their code too, this also eliminated the reason for just using one account for each group member to use.

Thirdly, a range of source code editors were used in the application, visual studio and ATOM, which allowed students to be comfortable as they were using an application that has the same programming language as python which they are familiar coding with.

Furthermore, another technology used was integrating a form of payment system within the development of the application; PayPal was chosen and flask. A group member obtained the source code from an external site and implemented it in the application; which was a smooth process. They also used flask that allowed them to run PayPal to ensure that it was active.

In addition, another technology used in the development of Wash & Roll was Kivy, which is a python framework that was used alongside coding the application, this allowed students to develop applications with a natural interface and also used it for its practicality due it being cross platform; so any operating systems could be used and it is effective for coding mobile apps which is the primary focus. The difference between Kivy and other technologies used such as visual studio and ATOM was that it was difficult to install as the dependency files weren't working correctly.

To conclude, many libraries were installed to ensure the application was working these are mentioned in the GitHub repository located in the instructions text file.

**Evaluation of the software development against professional standards (e.g. BCS codes of conduct for computing)**

The BCS code of conduct states that it should be in the Public Interest (BCS Code of Conduct for IT Professionals, 2022), so during this software development cycle where they were creating, designing & deploying, they had to make sure that the public privacy and security were a priority. This is where creating a login and logout system for the user to use the app and know that people can’t access their data. Under that outlines that the Code of conduct also mentions discrimination, conduct your professional activities without discrimination. To avoid discrimination on the platform they didn’t require the user to give detail on how they look only their car reg number. The user would only need to use that to log in and along with a secure password to use the application.

Staying within the lines of the public interest the team would follow the laws and regulations that have been set to their relevant use like following data protection laws for the users based on where they are in the world.

Promoting equal access to the application is another way of making sure that everyone is open to using the application, for example allowing not only cars but other types of vehicles like vans, and motorbikes. As the group made sure it was available for anyone to use the app.

Competence and integrity in the BCS, they should never claim any level of competence that possess (BCS Code of Conduct for IT Professionals, 2022), in the development process they made sure they set out plans that they could complete and offer to the users on the platform they were creating, as well as updating and finding new ways to finish the whole development cycle with the different type of technologies the used as resources to create the app. During the development cycle, they would receive weekly feedback, especially towards the start of the project, enabling them to take and accept honest criticism of the work that they planned to do.

The group had a responsibility to carry out their work in accordance with the requirements they set themselves and the criteria of the project, which included them accepting professional responsibility for their work and the team’s work.

Uphold the reputation and good standards of the BCS. They would have an ethical duty to not do anything that would go against the BCS code of conduct. Which would include encouraging them and supporting the development in all aspects of the project.

To conclude, the team made sure it was for everyone and showed what knowledge they had, while doing this the team respected each other’s work, all while keeping it professional. (BCS Code of Conduct for IT Professionals, 2022)

**People who have contributed in this report 5010CEM Group 6:**

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**References:**

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(IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 10, No. 5, 2019 531 | P a g e www.ijacsa.thesai.org Comparison of Agile Method and Scrum Method with Software Quality Affecting Factors Muhammad Asaad Subih1 , Babar Hayat Malik2 , Imran Mazhar3 , Amina Yousaf4 , Muhammad Usman Sabir5 Tamoor Wakeel6 , Izaz-ul-Hassan7 , Wajid Ali8 , Bilal-bin-Ijaz9 , Muhammad Suleman10, Hadiqa Nawaz11 University of Lahore, Gujrat Campus, Gujrat, Pakistan

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