**City, University of London**

**BSc (Hons) Computer Science**

**IN3007 Individual Project**

academic year: 2020-2021

**Project Definition Document**

‘Tractivity’ An Android Application to keep track of the time spent on activities, projects, or tasks.

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**Problem to be solved**

Time management is very crucial part of our lifestyle in order to balance work life and personal life. Sometimes we overload ourselves with so many activities that we lose track of the time and loose focus on the tasks that are more important, or sometimes we get lost on procrastinating on unnecessary things. So, I have decided to create an application to that can help to keep track of the time spent on different activities. The user can track his/her daily activities and keep track of the certain projects or works he/she is working on. The amount of time spent on different activities will be stored and then at the end of the day or week or month the user can visualize the time spent on activities as a pie chart, bar chart or progress bar. User can use this information justify if he/she is spending his/her time wisely, also make adjustment to his/her routine. If the user has ongoing projects, then he can see if he/she is spending enough time on it.

There are many timer and time management apps available in the android application market (Play Store), but they do not provide easy solution. Some apps don not have tracking functionality and some are too overloaded with confusing irrelevant functionality which can give user hard time to figure it out. My aim is to keep the application simple where user can achieve the functionalities with less interaction as possible.

To develop my android application, I will use android studio which is the Official integrated development environment for Google’s android operating System. Even though Java can be used for android development I chose to code my program in Kotlin programming language as it is currently the official language for android, and I want to take the chance to learn a new language. I also plan to several application programming interfaces (APIs) and built-in libraries to build my Application.

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| **API/Libraries** | **How it will be used** |
| java.util.Timer | To apply the timer functionalities |
| Google Firebase | For the backend database and login functionality. |
| Charts.kt | Charting API to create the understandable and meaningful charts. |

**Project Objectives**

**Main objective**

The project shall provide user functionality to track amount of time spent on certain activities throughout the day and also, increase productivity by recording time spent on certain works or projects.

**Sub-objectives**

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| Objectives | Testable |
| Build An android Application that can perform the intended functionalities. | User can easily install the application on their device and run it. |
| User friendly user interface | User must not be bombarded with lost text; it shall be easy to use and not confusing. |
| A timer that user can start, pause, and stop; | when on an activity user can start the timer and once stopped the application will ask where the time was spent and store it. |
| User data needs to be stored on the cloud so he/she can access the data from any device. | User shall be able to login to his/her account from any device and access the data. Also be able to record activities from any device. |
| Create account/Login. | User can create accounts or login to his existing account. |
| Add projects or tasks | User can insert any project/tasks they are working on or needs to work on. Time spent on those tasks will be recorded and user can visualize the progress. |
| View charts | User can visualize the activity records in a meaningful chart format. User can analyse it and focus on productivity. |
| Control the timer from notification panel | User should be able to control the timer from the notification panel easily, this will allow the user to stay focus on their tasks and not get distracted by smartphone. |
| Notify user to track their time | Notification will be sent to inactive user to track their time and motivate them to focus on important tasks and help them to increase productivity. |

**Project Beneficiaries**

Beneficiaries that can benefit from this project and how it will benefit them:

* **Any individual looking to increase productivity:** Anyone who have any tasks work they want to focus on can use this app to increase productivity or simply can record every task the user does and reflet and adjust their habit.
* **Students:** Students will be highly benefited, and they can keep track of the time they spend on studies. For example, students have many Modules/subjects that they need to focus on so he/she can simply list all the modules in the application and every time he/she spends time on those modules it will be recorder.
* **Employers and Employees:** Employers can ask employees to use the app when they are working on any project tasks so they can monitor their productivity.

**Work Plan**

As I am very new to android development and Kotlin programming language with a tight schedule, I have carefully planned my work plan by breaking my project into smaller iterations. First, I will implement a very basic functionality and gradually increase features. I will be using Agile software development methodology where I will plan and test each iteration as I go. I will follow and learn from online resources and courses while I build my application.

**Phase 1- Preparation:** I have assigned 2 weeks to learn the basics of android development before I dive into my project by enrolling to some online courses that will teach me about android SDK and Kotlin programming language.

**Phase 2- 1st iteration:** here i will plan and implement the foundation of the application, a timer with its functionalities (start, pause and save) and the data will be saved on the app. I will build the notification panel and user can use it to control the application too. I will end this iteration by testing whether the buttons respond correctly, if the data are stored properly and the notification panel is responsive.

**Phase 3 - 2nd iteration:** in this iteration I will implement the ‘Add project functionality’ where user will be able to add the projects they are working on or will be working, here the user will be able to see how much time they are spending on them and visualize the progress. I will also implement the chart functionality where user can see all the saved records in various charts format. I will end this phase by testing if the features work accurately.

**Phase 4- 3rd iteration:** Here I will take my application online; the data will be stored in the cloud and the users will have logins. This iteration involves backend development which can be tricky sometimes as I will be using firebase, I have devoted some time to learn about it before I start.

**Phase 5: finalization:** By this time, I should be done with the main features of my application. So here I will further improve it by making the GUI more interactive and will also add more helpful features. Also, as I mentioned in project risk, I might miss some deadlines so I will use this time to catch up. I will carry my final tests and finalize my reports before I submit it on 4th may. This phase is during the revision weeks I need to be careful not to clash with other modules.



**Project Risk**

Any project can contain risk of failure during the development, the best approach is to identify the risks before it happens and have a plan to mitigate them. Below I have listed all the risks that my project can encounter and mitigation/prevention technique to prevent damages. I will score each risk from 1 to 5, 1 very low and 5 very high.

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| Risks | Risk score | Mitigation/prevention |
| No experience in android development. | 4 | There are many online resources to learn android development that can be accessed easily. I have experience in building other software system, those experience can be useful. Also, I have dedicated some time to learn about android development before starting the project. |
| No experience in Kotlin Programming language | 3 | Kotlin can be learnt easily as I am experienced with Java programming language which is very similar to Kotlin and uses same libraries. |
| As I am a part time worker in Tesco, it poses a risk of not meeting the work plan deadlines. | 5 | it is very likely to happens as I must focus on other university module as well. To mitigate this, I have extended test durations which can be used to complete some missed tasks. |
| Never used firebase before | 2 | Have dedicated some extra time to learn about android Firebase. |
| Not familiar with Charts.kt API to create charts | 1 | Documentation is easily available online. Many other charting libraries and APIs are available online |
| Login security | 1 | Security fundamental module from last term will be useful to mitigate this. |
| Submission of another module project. | 4 | Since the deadline of the project submission is 4th may and I will have another module project to submit on 3rd may I will have to be very careful with my time management. To prevent this clash I will strictly follow my work plan Gantt chart. |

**Ethical Checklist**

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| **A.1 If you answer YES to any of the questions in this block, you must apply to an appropriate external ethics committee for approval and log this approval as an External Application through Research Ethics Online - https://ethics.city.ac.uk/** | | *Delete as appropriate* |
| 1.1 | Does your research require approval from the National Research Ethics Service (NRES)?  *e.g. because you are recruiting current NHS patients or staff?*  *If you are unsure try - https://www.hra.nhs.uk/approvals-amendments/what-approvals-do-i-need/* | **NO** |
| 1.2 | Will you recruit participants who fall under the auspices of the Mental Capacity Act?  *Such research needs to be approved by an external ethics committee such as NRES or the Social Care Research Ethics Committee - http://www.scie.org.uk/research/ethics-committee/* | **NO** |
| 1.3 | Will you recruit any participants who are currently under the auspices of the Criminal Justice System, for example, but not limited to, people on remand, prisoners and those on probation?  *Such research needs to be authorised by the ethics approval system of the National Offender Management Service.* | **NO** |
| **A.2 If you answer YES to any of the questions in this block, then unless you are applying to an external ethics committee, you must apply for approval from the Senate Research Ethics Committee (SREC) through Research Ethics Online -**  **https://ethics.city.ac.uk/** | | *Delete as appropriate* |
| 2.1 | Does your research involve participants who are unable to give informed consent?  *For example, but not limited to, people who may have a degree of learning disability or mental health problem, that means they are unable to make an informed decision on their own behalf.* | **NO** |
| 2.2 | Is there a risk that your research might lead to disclosures from participants concerning their involvement in illegal activities? | **NO** |
| 2.3 | Is there a risk that obscene and or illegal material may need to be accessed for your research study (including online content and other material)? | **NO** |
| 2.4 | Does your project involve participants disclosing information about special category or sensitive subjects?  *For example, but not limited to: racial or ethnic origin; political opinions; religious beliefs; trade union membership; physical or mental health; sexual life; criminal offences and proceedings* | **NO** |
| 2.5 | Does your research involve you travelling to another country outside of the UK, where the Foreign & Commonwealth Office has issued a travel warning that affects the area in which you will study?  *Please check the latest guidance from the FCO -* [*http://www.fco.gov.uk/en/*](http://www.fco.gov.uk/en/) | **NO** |
| 2.6 | Does your research involve invasive or intrusive procedures?  *These may include, but are not limited to, electrical stimulation, heat, cold or bruising.* | **NO** |
| 2.7 | Does your research involve animals? | **NO** |
| 2.8 | Does your research involve the administration of drugs, placebos or other substances to study participants? | **NO** |
| **A.3 If you answer YES to any of the questions in this block, then unless you are applying to an external ethics committee or the SREC, you must apply for approval from the Computer Science Research Ethics Committee (CSREC) through Research Ethics Online - https://ethics.city.ac.uk/**  **Depending on the level of risk associated with your application, it may be referred to the Senate Research Ethics Committee.** | | *Delete as appropriate* |
| 3.1 | Does your research involve participants who are under the age of 18? | **NO** |
| 3.2 | Does your research involve adults who are vulnerable because of their social, psychological or medical circumstances (vulnerable adults)?  *This includes adults with cognitive and / or learning disabilities, adults with physical disabilities and older people.* | **NO** |
| 3.3 | Are participants recruited because they are staff or students of City, University of London?  *For example, students studying on a particular course or module.*  *If yes, then approval is also required from the Head of Department or Programme Director.* | **NO** |
| 3.4 | Does your research involve intentional deception of participants? | **NO** |
| 3.5 | Does your research involve participants taking part without their informed consent? | **NO** |
| 3.5 | Is the risk posed to participants greater than that in normal working life? | **NO** |
| 3.7 | Is the risk posed to you, the researcher(s), greater than that in normal working life? | **NO** |
| **A.4 If you answer YES to the following question and your answers to all other questions in sections A1, A2 and A3 are NO, then your project is deemed to be of MINIMAL RISK.**  **If this is the case, then you can apply for approval through your supervisor under PROPORTIONATE REVIEW. You do so by completing PART B of this form.**  **If you have answered NO to all questions on this form, then your project does not require ethical approval. You should submit and retain this form as evidence of this.** | | *Delete as appropriate* |
| 4 | Does your project involve human participants or their identifiable personal data?  *For example, as interviewees, respondents to a survey or participants in testing.* | **NO** |