

Move It!

Project: Transportation Portal

1.1 a) Objective/Vision of this project is:

To Provide an application which allows residents and visitors of a city to find out more about transportation-related aspects about the city.

Users will be able to view the details of their transportation options and update them with their own experiences.

b) Criteria for Measure of effectiveness:

- Platform needs to be stable and work fast.
- Security/Safety requirements must be met.
- High user traffic must be managed.
- The provided data must be consistent.
- Quickly understandable and adaptable UI / UX needs must be met.

1.2 Project authority:

The project will be maintained and supervised in weekly meetings under the control of manager.

1.3 Stakeholders

- Project Manager
- Development Team
- Testing Team
- Marketing Team
- Users
- Government

1.4 Modify objectives in the light of stakeholder analysis.

In this project, we will proceed in the light of the project manager in coordination with more than one department.

- **Project manager** will oversee the planning, scheduling, budgeting, execution, and delivery of our product.
- **Development team** will help us to make our product visible and tangible with sequential tasks. Before the deployment of our project, **testing team** will identify the deficiencies and communicate with the developer team for debugging.
- In this project we will work with different reliable data sources but one of the biggest sources will be the **government**. We will handle the data of our project with the provided API.
- We will use the **marketing team** to increase the awareness of our project, to attract users to our application and to gain possible sponsorships.
- After the project is published, we will update both our data and the sustainability of our application with the feedback provided by the **users**.

1.5 Methods of communication with parties:

The project will be handled by the **Verbal Communication** technique in weekly meetings, team members will brainstorm with their free and innovative thoughts. They will find solutions and ideas on problems, innovations and project progress with face to face and online meetings

2) Identify project infrastructure

2.1) Establish relationship between project and strategic plan

Public transportation vehicles have been the most used means of transportation for many years. Since public transportation vehicles are shared, they emit less carbon. It is still environmentally friendly. It is very economical compared to individual vehicles. However, hundreds of expeditions are organized daily at some stops or stations, especially in big cities. As a matter of fact, everyone may be confused as to whether they got on the right transportation vehicle, or there may be trips that take shorter time or are closer to the station/station, contrary to what users know. Having real-time information about the location and schedule of public transport allows users to plan their trips more efficiently and reduce waiting times at bus stops or train stations. Also, knowing the estimated arrival time of a bus or train can help users make more accurate plans and reduce the possibility of missing a scheduled departure time. Access to up-to-date transportation information of public transportation can reduce uncertainty and stress for users, especially during rush hour or rush hour. Knowing when to know which vehicle allows you to save unnecessary journeys and transfers. Also, knowing when the next means of transport will arrive can help users avoid the need to take a taxi or shared car, which can be more expensive. People or tourists who are not fully accustomed to the city can spend a more carefree day by acquiring the knowledge of public transportation vehicles and know where and how to go.

2.2) Identify installation standards and procedures

a) Hardware Structure

Server: A powerful server that can handle a large amount of data and traffic, and it should be able to run the application and database.

Database: A database is used to store and manage all the data related to transportation schedules, routes, and user information. This could be implemented on a separate server or on the same server as the application.

Network infrastructure: A robust network infrastructure that connects all the devices, including the transportation vehicles, the servers, and the user's devices, and allows real-time data transmission.

GPS device: GPS devices can be installed on public transportation vehicles to provide real-time location data, which can be used to update the application with the most current information.

Firewall: A firewall is a hardware component that is placed between the internal network and the internet to protect the system from unauthorized access and cyber-attacks,

b) Software structure

User interface (UI): The user interface of the application allows users to input their desired destination, view transportation options, and receive real-time updates on the status of their chosen mode of transportation.

Application programming interface (API): An API allows the application to communicate with the transportation management system and retrieve real-time data on the schedule and location of public transportation vehicles.

Database management system (DBMS): A DBMS is used to manage the data stored in the database, including information on transportation schedules, routes, and user information.

Push notifications: The application can use push notifications to alert users of any disruptions or delays to their chosen mode of transportation.

Data visualization: The application can use data visualization techniques to display the real-time location of public transportation vehicles on a map and provide users with an easy-to-understand visual representation of their transportation options.

Web API: The web API acts as a link between the application's user interface (UI) and the transportation management system, allowing the application to retrieve real-time data on the schedule and location of public transportation vehicles.

Login page: The login page allows users to sign in to the application, and there are different roles for companies and clients.

Sign up page: The sign up page allows new users to create an account and register for the application.

Profile menu: The profile menu appears when users access the application, allowing them to view their personal information and settings.

Search and filter: The application allows users to search and filter products based on various criteria such as price, location, and transportation options.

Real-time updates: The application provides real-time updates on the schedule and location of public transportation vehicles, allowing users to plan their trips more efficiently.

Analytics: The application can use analytics to track usage data and user behavior, and to improve transportation planning and decision-making.

2.3) Team Organization

PROJECT TASKS	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
Identify project scope and objectives	Light Blue, Purple, Orange, Green, Pink, Red	Light Blue, Orange, Green, Pink, Red									
Identify project infrastructure			Light Blue, Orange, Green, Yellow								
Analyze project characteristic				Green, Orange, Yellow, Orange, Green							
Identify project products and activities					Light Blue, Purple, Yellow, Green						
Estimate effort for each activities						Purple, Yellow, Purple, Pink, Red					
Identify activity risks									Purple, Yellow		
Allocate resources										Yellow, Pink, Red	
Review/publicize plan										Light Blue, Orange, Green, Pink, Red, Purple, Yellow, Red	

Light Blue: Onur

Purple: Furkan

Orange: Alp

Green: Harun

Yellow: Efekan

Pink: Sude

Red: Fulya

As a group, we have progressed through the different stages of the project. Although we divided the tasks among ourselves, with each person taking on a specific focus, this does not mean that only one person worked on each task. In fact, nearly everyone played an active role in every aspect of the project. Onur and Efekan, as specialists, were particularly involved in many parts of the project. Onur, Harun, and Alp also played key roles in shaping the project by coming up with new ideas. Efekan and Furkan acted as monitor evaluators, while Efekan, Sude, and Furkan were responsible for implementing these ideas. Additionally, Fulya and Onur were responsible for examining the studies. Lastly, the presentation pptx part was prepared by re-examining our project as a group during our last meeting.

3.1) Distinguish the project as either objective or product driven.

The project at hand can be classified as a goal-based project. The project's primary purpose is to enable them to learn more about the transportation-related aspects of the city where the application is used. The project aims to see the transportation options of the users in detail and to keep the application up-to-date as a result of their experiences. With the vehicle and route selections used by the users with the application, the system will continue to develop and learn by constantly renewing itself.

3.2) Analyze other project characteristics.

We do not use a process control system in this project we are developing. We use the only information system. In case of a system failure in the project, there is no direct situation that will prevent human or animal health. Only indirectly with the time delay can the problem occur. Therefore, it is not a security critical system. Servers and databases are critical as there is online and instant data sharing. Both the data received from the government and the data created during the user's experience of the application will be kept safely and benefit the development.

3.3) Identify high level project risks.

Risk is not a problem, it is the factor that causes the problem. When the project risks are realized; An uncertain event or situation that adversely affects at least one project objective, such as time, cost, scope, or quality.

Risk

-The most significant risk in our project will be the loss of access to transportation routes and the inability to keep the system up-to-date. Another problem will be that this user traffic cannot be managed when the system is extremely busy.

Solutions

-In case the information coming to the system is interrupted as a result of any problem, we can manually assign the information temporarily by contacting the unit (state or private company) that provides the route. The user density

problem will be solved as follows. As soon as the requests coming to the system exceed a certain level, extra servers will be activated to reduce and distribute the density and the system will work without interruption. As soon as the number of requests is normalized, the servers that are opened extra will be closed automatically and the normal system will be returned.

3.4) Consider user requirements concerning implementation.

Of course, the developed project should be presented most functionally, but the functionality alone will not be enough. We should be able to add ease of use and eye appeal to this functionality. The user should be able to use the application comfortably and easily find what he wants to do. UI / UX needs within the application should be able to be met on an understandable scale. For example, when the user determines a route, instead of just sharing a way, we should add visual indicators at the optimum level, indicate the location and indicate the direction of movement in order to provide more active guidance. We must realize all these indicators in the most interesting way. In addition, the user is allowed to send feedback at the end of the journey. The comments made to the feedback are also to other users; It will provide information on the itinerary, application, trip status, etc.

3.5) Select general lifecycle approach.

Responsiveness, as user comfort is one of the main focuses. user interface aesthetics It should create an enjoyable and easy experience for you. Therefore, urgent changes may need to be implemented in the following situations: test user cannot access set expertise. So, the waterfall development model will not be efficient for the case, Agile The development model will be more appropriate because it is more flexible and open. for project changes compared to that of Waterfall, which is rather concrete and does not give room for changes and project tweaks.

3.6) Review overall resource estimates.

To summarize the requirements of our project, our project is a transportation support project. The most necessary title is to reach this information from the providers of the route and time information of public transportation vehicles. A cloud-based system will be established where user data will be securely stored. Database and server systems are required to keep the instant route and time data. While ensuring that these systems work flawlessly in the background, a user interface should be designed in order to provide an impressive and entertaining pleasure to the user. Chatbots are needed to assist developers, designers, and users with their problems. We will use hybrid cloud technology to provide a more flexible structure and easier data distribution. The servers to be rented will be integrated into the cloud and extra servers will be opened in case the number of requests increases.

4.1) Identify and describe project products (including quality criteria)

The development of our transportation application is in different phases of the project, including the advancement of a project commencement document to ascertain the configuration required to perform for the quantity of intermediaries and database size. To set up a secure network and connect to printers and servers, software intervention is required. A test plan, test script, and test system are used to do testing. Purpose of providing material in a

coherent manner and solve any internal and external factors, a training session is held. In the end, buyers receive the software along with an installation disk and post-installation test script. A transportation application goes through multiple stages of development, each with its own unique set of responsibilities and performance objectives. The stages include:

Project initiation: In this stage, a project initiation document is created to define the scope of the project, including the necessary configuration for the number of transactions and database size. This document also outlines the project objectives, stakeholders, timelines, and budget.

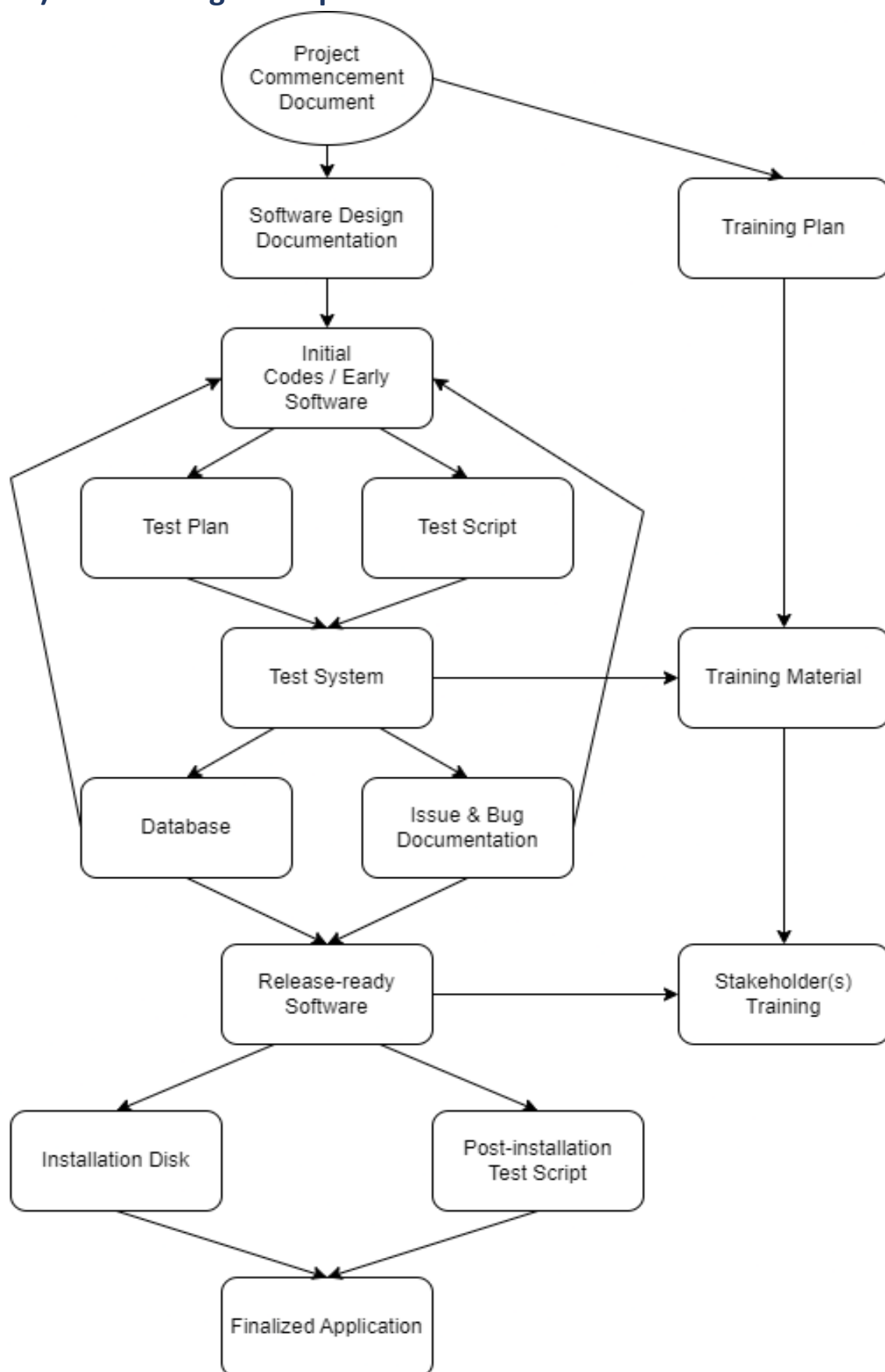
Software installation: In this stage, the necessary software is installed to set up a secure network and connect to printers and servers. This includes installing and configuring the operating system, database management system, and any other necessary software components. Security measures such as firewalls and encryption are also implemented to ensure the safety and integrity of the data.

Testing: In this stage, a comprehensive test plan, test script, and test system are developed and used to test the software for functionality, performance, and compatibility. This includes unit testing, integration testing, system testing, and acceptance testing. Any issues or bugs discovered during testing are documented and resolved.

Training: In this stage, a training session is held to present the information in a logical order and address any potential difficulties. This may include training for end-users, system administrators, and support staff. The training materials are designed to ensure that the software is used efficiently and effectively.

Delivery: In this final stage, the software is delivered to customers, along with an installation disk and post-installation test script. The installation process is thoroughly tested and any issues are resolved before delivery. The customer is also provided with detailed documentation and support to ensure a smooth transition to the new software.

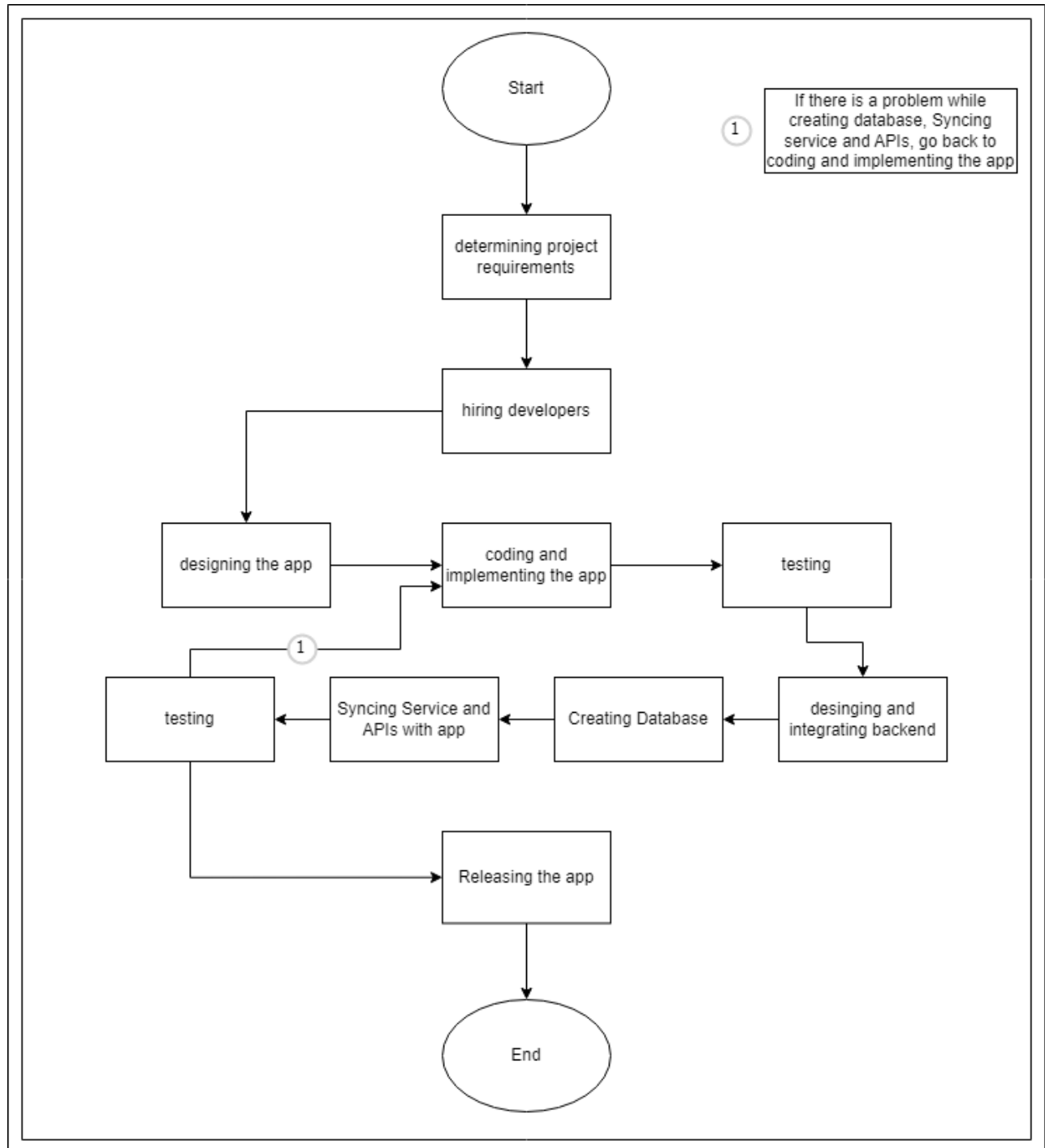
4.2) Document generic product flows



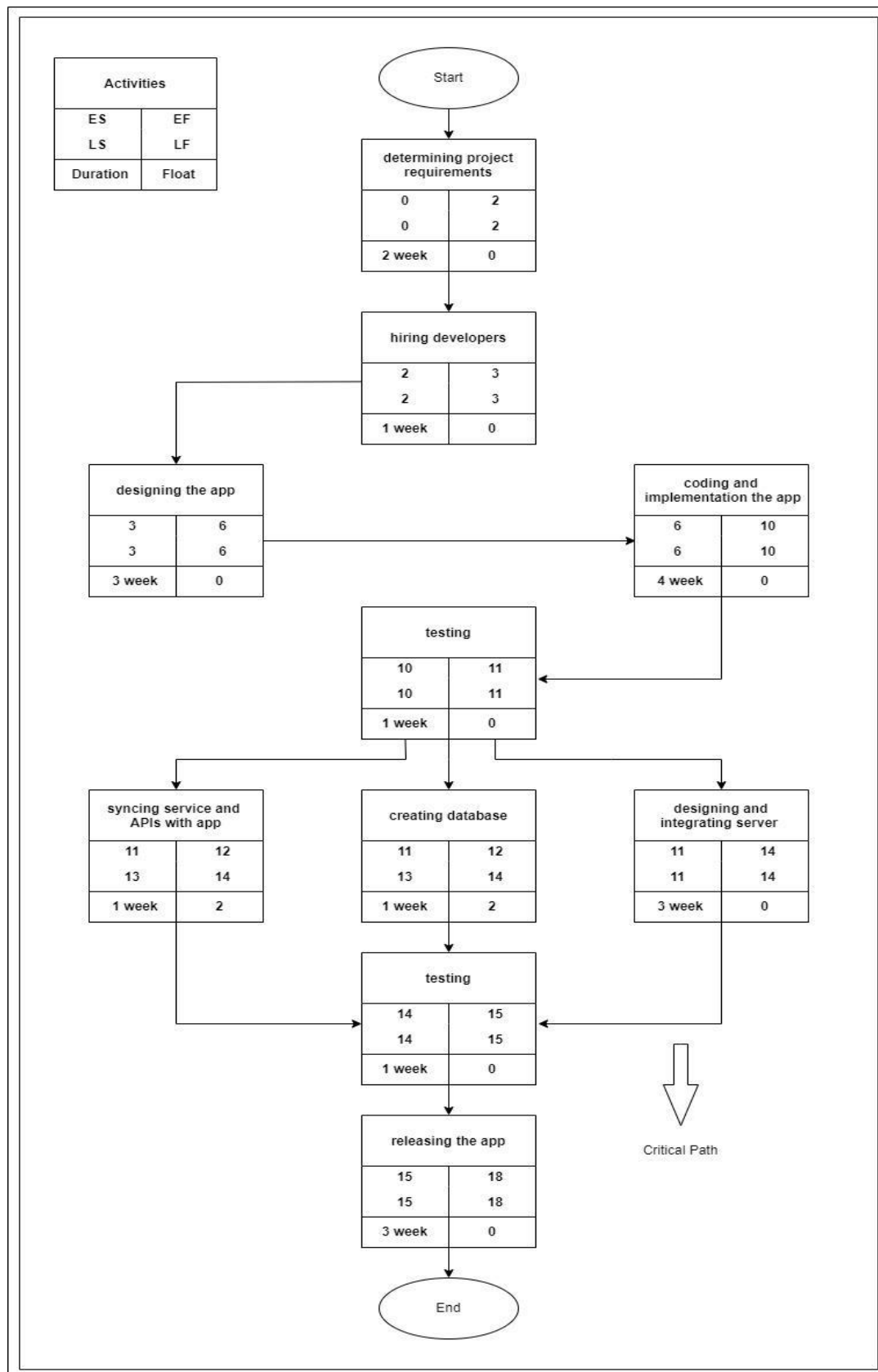
4.3) Recognize product instances

Our project is objective based so we do not have any product instances.

4.4) Produce ideal activity network



4.5) Modify ideal to take into account need for stages and checkpoints



5) Estimate effort for each activity

5.1 - bottom-up estimates

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ACTIVITIES	COST	DURATION
DETERMINE PROJECT REQUIREMENTS	12000\$	2 WEEK
HIRING DEVELOPERS	30000\$	1 WEEK
DESIGNING THE APP	14000\$	3 WEEK
CODING AND IMPLEMENTING THE APP	25000\$	4 WEEK
TESTING	10000\$	1 WEEK
SYNCING SERVICE AND APIS WITH APP	15000\$	1 WEEK
CREATING DATABASE	1000\$	1 WEEK
RELEASING THE APP	1000\$	3 WEEK

5.2 - Revise Plan to Create Controllable Activities

-In the Determining Project requirements section, a feasibility study will be conducted to determine the usability, maintainability, productivity and integration ability of the project. This study will determine the implementation of the software product, the contribution of the project to the organization, the cost constraints, and the values and goals of the organization.

The Services and APIs that should be used in the project will also be determined.
Analysts and engineers will communicate with the end-user and gather the requirement to understand what features should be included in the project.

-New developers will be recruited in line with the feasibility study.

-GUI designs of the APP will be made and the APP will be developed accordingly.

-The developed application will be tested by testers.

-Services and APIs will be synchronized to the APP and a database will be created.

-Retests will be made and if there is a problem at this stage, the coding and implementing part will be returned.

-If there is no problem, APP development will be finished and the Releasing phase will be started.

6) Identify activity risks

6.1) Identify and quantify activity-based risks

Risks may be occurred from both the end-user and the company. If we need to categorize the risks that may occur,

a) Risks which can be occurred by end-user:

- Disadvantageous application usage that may occur since users' devices are not synchronized with current technology.

b) Risks which can be occurred from back-end:

- User's verified information transfer does not reach the server side, so the data is not updated.

c) Risks which can be occurred from both end-user and back-end:

- Data access sending incorrect, incomplete or no data due to data provider or internet interruption

d) Risks which can be occurred from inter-institutional relationship:

- Restriction or seizure of data sharing due to problems arising from inter-institutional relations

6.2) Plan risk reduction and contingency measures where appropriate

To reduce unexpected risk:

- a) After the application is installed and before the user is logged in, the necessary device information is taken with the permission of the user and compared with the compatibility criteria, and it is decided whether to use the application. As contingency measures, if the criteria are changed with a pirated software and the application is started to be used, the phone user's device will be checked again in the updates to be

made in the coming days and studies will be carried out to continue the detection process.

- b) On the server side, the health of the requests will be checked, and measures will be taken to prevent possible communication problems. As contingency measures, if bad request receives by checking the requests with bad internet traffic, the usefulness of the information will be checked by the system, and it will be added to the data pool and updated.
- c) Instead of transferring information from a single database, it will continue to be used and controlled by multiple servers and backup systems. The control of missing, incorrect, or incomplete information will be done by matching the backup and up-to-date data. As contingency measure, user will be notified about the unexpected situation and backup system will convey the data to user
- d) Instead of being dependent on a single data provider, as the application develops, supports, and makes a profit, it will be agreed with more than one data provider and the data pool will be strengthened. As contingency measure, the company will develop its own data collection systems and add a new and reliable data set to the data it receives from its own users.

6.3. Adjust plans and estimates to take account of risks.

Additional to the last two parts, the project's developer team is decided to open closed-beta test environments for eligible people who are related to pilot areas. With this method, the team will collect some major information in live test environment. User behavior is the most important thing in an application.

7) Resource Allocation

For leading and steering the project efforts, we are firstly in need of a 'Project Manager', who would be the main responsible for determining project requirements and releasing the application. Then, 'Human Resources' personell would be informed of project details and appropriate set(s) of criterium for suitable project personell, to arrange the hiring process of those. 'Software Designers' would be required for the designing process of project software, determining software architecture, technical requirements, and targeted user interface. 'Software Developers' would then undertake the actualization of the software development process and coding procedures emerging from previous findings of project designers, including the generation of source code, synchronization of external services and API's, database creation and server structuring. 'Software Testers' would be the technically knowledable observers there to apply various test procedures to the emerging software at each stage, potentially discovering bugs and errors, and suggesting both developer and user-friendly solutions to those cases. To be able to meet resource demands of various coding and testing procedures, it is important to acknowledge the need and arranging a system for a flexible re-distribution of software engineering personell between the roles of software development and software testing whenever and however needed at any timestamp of the process. This is the part where this project would be needing the implementation of 'Resource Smoothing'.

[illegible]

8) Review/publicize plan

8.1) Review quality aspects of project plan

Having a project planner in charge of the idea when it comes to selecting software that recognizes the riskiness of the project is an essential approach to start a project in order to improve it. We want an educated main investigator with the necessary experience to organize a data collection. QA specialists define installation testing as a procedure that ensures end users can install all of the software's components. The data transformation analyst alters the data in the software. The project document must be launched, and employees must be enrolled by a project manager. A training expert oversees delivering user training. A test analyst is required to set up and test the program. In summary, a real-time public transportation information system would consist of a powerful server to handle data and traffic, a database to store and manage transportation information, a robust network infrastructure to connect all devices, GPS devices installed on transportation vehicles to provide real-time location data, a firewall to protect the system from unauthorized access, a user-friendly interface for users to plan their trips and receive updates, an API to communicate with the transportation management system, push notifications for disruptions or delays, data visualization to display transportation options on a map, a web API to link the user interface to the transportation management system, a login page for users to access the application, a sign up page for new users to register and a profile menu for users to view their personal information.

8.3) Document plans and obtain agreement

The plans were reviewed, changed, approved, and documented by the entire team in accordance with shared ideas and perspectives. We held a meeting to develop a project plan and obtained agreement on the plan's commitments.

9/10) Execute plan/lower levels of planning.

- 1- The main purpose of the project was determined as providing people to easily access to instant location-time information of public transportation vehicles used by people. In this way, in addition to increasing the journey quality of people who currently use public transportation, it is aimed to direct people who prefer individual vehicles instead of public transportation to public transportation, and thus to reduce environmental pollution.
- 2- It was determined that the project was target-oriented, not product-oriented. Possible risk estimates that may adversely affect the project objectives such as time, cost, quality and scope were made and appropriate solution ideas were produced. User requirements for the application were determined and ideas were developed accordingly. The general life cycle that should be used for the project was determined as the agile model. In addition, it was decided to use a cloud-based system to keep instant route and time information in the project.
- 3- Project products such as project initiation, software installation, testing, training and delivery were determined and detailly discussed. In addition, the ideal activity diagram was created, the approximate duration-cost estimates were determined and the pert table was created.
- 4- Activity risks were divided into 4 main items; risks that may arise from the end-user, risks which can be occurred by end-user, risks which can be occurred from back-end, risks which can be occurred from both end-user and back-end, risks which can be occurred from inter-institutional relationship. After examining these risks in detail, risk avoidance methods were considered in order to reduce these risks.

- 5- Project manager, software developers, software testers and other necessary resources were identified and each was allocated in detail.
- 6- Finally, the quality aspects of the project plan were reviewed, the plans documented, and agreement reached. Thus, our project ended successfully.