SOFTWARE PROJECT MANAGEMENT

(SEN3003)

GROUP NAME : PARLAYAN YILDIZLAR TAKIMI

PROJECT NAME : OTOPRIME / PARKING

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1.1. Identify objectives and measures of effectiveness in meeting them

- Objective / Vision : Parking is one of the most significant issues in our everyday lives, particularly in large cities like Istanbul. We will fix this problem with a system that will allow us to locate all of the parking lots in the region we are heading to, weigh the occupancy rates, and even make reservations in advance, before we leave.

Functional Requirements:

- The user can create a reservation using the application and there are "make reservation" and "cancel" functions during reservation.
- If the user wishes, he/she can register by entering the necessary information.
- The user can see the parking lots in the area where the application is actively working
- The user can see the vehicle type fees determined by the parking lot they want to go through the application.
- The user can see the previous reservations or the history of the parks and their payments.
- The user can give feedback after the Parking service transaction they have purchased is completed.
- The user can get directions to the location of the parking lot.
- The user can be informed about the status of the car parks in the area by selecting their favorite areas.
- If the user invites others with his/her own reference, he/she gets additional discounts and coupons.

Non-Functional Requirements:

- The satisfaction rates of the car parks can be seen determined by the users in advance through the application.
- The application requests a password change in certain periods.
- If vacant spaces are opened in nearby parking lots, it primarily sends notifications to users who use the application.
- The application provides information in 3 different colors (green: empty, orange) according to the occupancy rate.
- Application directs to the nearest parking places to the user.

Measures of effectiveness:

- To address Istanbul's parking issue, we've developed our application. Within the first four years of its release, our app has received 2 million downloads. The time it took to finish our application was accurate, and the actual budget was 10% higher. On stores like the App Store and Google Play Store, our app earned positive

reviews from customers and received four stars overall. On the money they invested in our application, our sponsors have earned a 25% profit.

1.2. Establish a project authority

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Project Manager: Begüm Kaya – E-mail: begum.kaya@bahcesehir.edu.tr

1.3 Identify stakeholders

- Project Manager : Begüm Kaya (Responsible for the maintenance part)
  Is in charge of overseeing the entire project. The typical project manager does not participate in the actual manufacture of the final product, but rather directs, supervises, and coordinates the various production-related tasks.
  Project Team: Parlayan Yıldızlar Takımı :
  Carries out the project's real work, such as development and testing, under the supervision of the project manager.
- Analysts: They simplify the process of figuring out what users will expect from a new or revised product. Understanding the user requirements.
- Designers: They prepare the product's technical specifications. These features may include screen designs, databases, sketches, system interfaces, and prototypes, depending on the project. These features are used by customers to decide on final product design.
- Developers: Developers make the parts responsible for the front and back sides of the application etc. They typically consider code and features, focusing on how to fulfill client requests and solve their problems.
- Testers: It is the team that tests the prepared application or prototype and there is no developer in this team since bugs are usually created by developers.
- Company: Organization that has accepted the project and whose staff is actively participating in its development.
- Sponsors: Contributes money and materials to the project's successful completion.
- End user: End users are people who actually use the application and provide feedback in the project.
- Customer: Defines the project's requirements and aids in the elicitation process throughout the requirement gathering phase. The client is the party for whom the project is being created.
- Supplier: Parking Lot Owners
  Provides the project with the necessary tools and services.

1.4. Modify objectives in the light of stakeholder analysis

- Regardless of whether a user comes up or not, a reservation cost will be charged when a reservation is made. Consequently, the sponsors will keep turning a profit.
- The application highlights parking owners in their local areas when they offer a monthly discount coupon to their loyal customers.

1.5. Establish methods of communication with parties

- Notifications sent from the application and emails sent to registered e-mail addresses will be used to communicate with users.
- Stakeholders will be updated through email or at regular company meetings.
- Users will receive notifications when the application is updated in the future.

2. Identify project infrastructure

2.1)Weakness:

-Personal mistakes, incorrect reporting of the availability rate to the system

- The parking attendant should do time management correctly

- Users who want to use the parking application may not find a place due to the early booking system

Strength:

- No personal data is requested, the data is safe because users will enter the sistem by mail or user name

- Saving time, which consists of reducing the problem of finding a parking space in large cities, and reducing the problem of traffic jams

- Meeting the expectations of people looking for a parking space in a crowded city like Istanbul

Opportunities:

- Demand growth

- State / municipal support + provision of funds

- User friendly userface

Threats:

- Workplaces in the sector do not adapt and approach cooperation

- Hesitant social adoption of this technology

2.2. Identify installation standards and procedures

1) Reliability : Users' personal data is not shared with third parties and is not stored in the database.

2) Quality (The Four Main Components of a Quality Management System (docxellent.com))

- Quality planning : Planning is the initial stage in a quality management process. Determine your objectives and what you want your starting point to be. You should decide what your quality standards are, what is required to fulfill those standards, and how you will verify that these requirements are being met.

- Quality assurance : Quality assurance includes assessing the service delivery process or the quality management manufacturing of objects, whereas quality control involves inspecting the actual goods or services in the field. You can find errors before they reach the customer by checking your products or services at the manufacturing or distribution stage.

- Quality control : Quality control is used when you have a plan in place. To ensure that everything you outlined during the planning step is feasible, you must go through this procedure of physically evaluating and testing it. Verify that all the requirements you set are being followed, and note any mistakes or errors that need to be fixed.

- Quality improvement : In order to enhance your procedures moving ahead, you must carefully evaluate your findings when the quality control process is finished.

3) Requirements : Application should meet user/ customer and other stakeholder’s expectation and other necessary written features

4) Flexibility : The application can work in other environments.

5) Reusability : It is important that the code we write is reusable and can be used as an auxiliary source for other projects in documentation. It will be important for both next developers and others who will look at it and sample it.

6) Maintainability : Maintainability affects the software's lifetime and the time and resources needed to maintain it, it is a key factor to take into account during the development process.

The **IEEE Standard Glossary of Software Engineering Terminology** defines maintainability as:

"The ease with which a software system or component can be modified to correct faults, improve performance or other attributes, or adapt to a changed environment."

2.3. Identify project team organization

A project team is an organized collection of individuals that work together to carry out their specific and common project tasks as well as their goals to complete the project. The project manager, who is responsible for the sub-managers, or who will be responsible for their team members, will be directly beneath the project sponsors, who are in charge of the creation of the group. Due to their expertise and comprehension of the project, some of the staff members will also be software engineers.

3. Analise project characteristics

3.1. Distinguish the project as either objective or product driven

Otoprime parking system is an objective based project.

3.2. Analise other project characteristics

1) Simplicity → The middle button in the application shows the closest parking lot depending on the location (ease of use)

2) Reliability → Users' personal information (plate name, identity information, etc.) is not stored in the database.

3) Flexibility → It is suitable for instant use all over the city and has easy access

4) User friendly → It is an application with an interface that appeals to all ages (appropriate use for all ages)

3.3. Identify high-level project risks.

Risk ID	Risk Description	Likelihood	Impact	Risk Exposure
R1	Schedule: The project deadline was extended because the project manager could not manage the project team and the project process well.	5	8	40
R2	Budget Changes: Budget changes resulting from spending that exceeds the project's estimated budget (agreements with parking lots) and the budget for engineers' training.	7	9	63

R3	Time: Timeout due to training given to hired engineers	6	5	30
R4	Complexity: The project could require more time to complete and errors might happen more frequently, which would make it more complex.	4	7	28

3.4. Take into account user requirements concerning implementation

As a user: I want to reach the current information of the car park near me and choose the car park accordingly.

As a parking lot owner: I would want this application to increase the popularity of my parking lot.

As a user: I want to be able to make reservations in advance for special events. (out of town travel, wedding, etc.).

As a user: I would like to receive special offers for me, such as discount coupons and special additional discounts for the parking lots I visit frequently.

As a developer: I'd want to employ the deposit method to avoid losing money on reservations that customers canceled or didn't use.

3.5. Select general life-cycle approach

Scrum, an Agile paradigm for software development, has been selected as the overall life-cycle strategy for the Mobile Parking Finder application project. Scrum is an appropriate project management method because it places a strong emphasis on regular interaction and collaboration between the development team, stakeholders, and users. This will help to effectively manage the project and ensure that the application satisfies the needs of its target audience. The Scrum method involves numerous crucial processes, including creating a product backlog, scheduling sprints, holding daily meetings, assessing user feedback, and holding retrospective sessions at the conclusion of each sprint.Scrum aims to create functional

software in brief iterations while still being able to adjust to shifting needs and continually enhance the product's quality.

The system development team holds a daily Scrum meeting for each sprint that lasts around 15 minutes. To assist the team complete the required activities and meet the project's objectives, team members must collaborate and schedule their work with the project manager.

3.6 Review overall resource estimates

1. Stakeholders: This includes the project team, management, and any other parties that are involved in or affected by the project. For the parking app, stakeholders would include the project manager, developers, designers, testers, and any external parties that may be providing funding or resources.

2. Necessary tools: This includes all software, hardware, and other equipment needed to develop and maintain the parking app. Examples of necessary tools for this project would be a development platform such as Xcode or Android Studio, a version control system such as Git, and any hardware required for testing such as smartphones or tablets.

3. Fixed budget: This includes all expenses associated with the project, including labor costs, materials, and any other miscellaneous expenses. For the parking app, the fixed budget would include the cost of hiring developers and designers, any software or hardware purchases, and any other expenses such as hosting or data storage costs.

4. Marketing and Promotion: This includes all the expenses and effort put into promoting and advertising the parking app to the target audience. This can include paid advertising on various platforms, social media campaigns, PR activities and events.

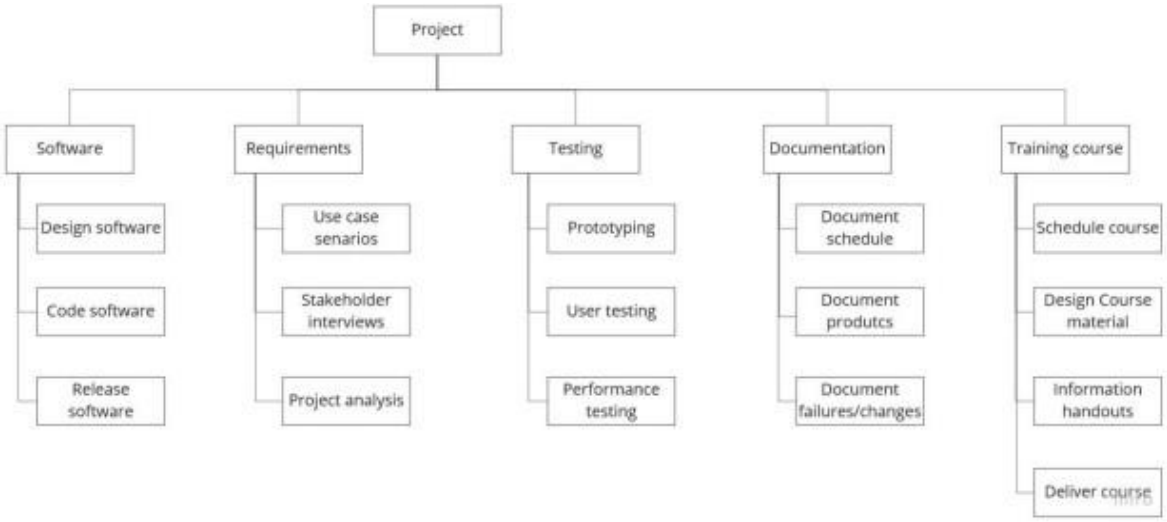
5. Maintenance and Support: This includes all the expenses and effort put into maintaining and providing support for the parking app after its launch. This can include server maintenance, bug fixing, and customer support.

6. Legal and Compliance: This includes all the expenses and effort put into ensuring that the parking app is compliant with all relevant laws and regulations. This can include obtaining necessary licenses and permits, and ensuring that the app is accessible to people with disabilities.

All these items are important for the project, and should be considered when developing the project plan and budget. By taking into account all of the necessary resources, we can ensure that the project is completed on time and within budget.

4. Identify project products and activities

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



Software: is the collection of tasks that the project will carry out in accordance with data from the requirements collecting stage. The stakeholders' satisfaction serves as the primary criterion for quality.

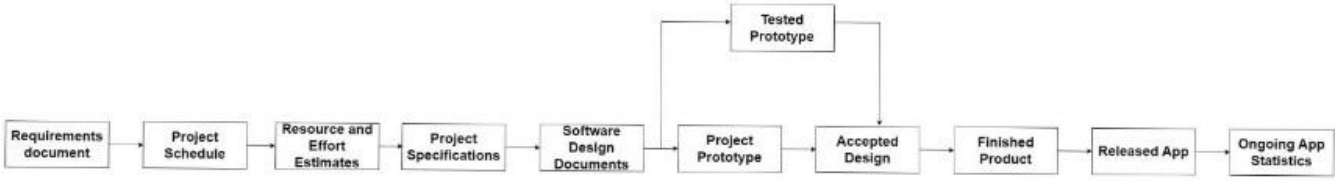
Requirements: are the outcome of the study carried out to ascertain the overarching framework and goal of the project. Its creators' knowledge of the products they will create is its main criterion for quality.

Testing: is the collection of tasks performed to confirm that the app's functionalities work completely and have all the components they need. The lack of errors and faults, the implementation of all necessary features, and user pleasure are its quality requirements.

Documentation: is the process of keeping a record of all project activities to maintain efficient workflow, to evaluate the project's specifics, and to preserve the project's details for use in future projects. The thorough documentation of the entire project serves as its quality criterion.

A training course is a program created to show new app users how to use the features that best suit their requirements. The users' ability to remember the instructions provided in the course with ease and in full is one of its quality requirements.

4.2. Document generic product flows



4.3. Recognize product instances

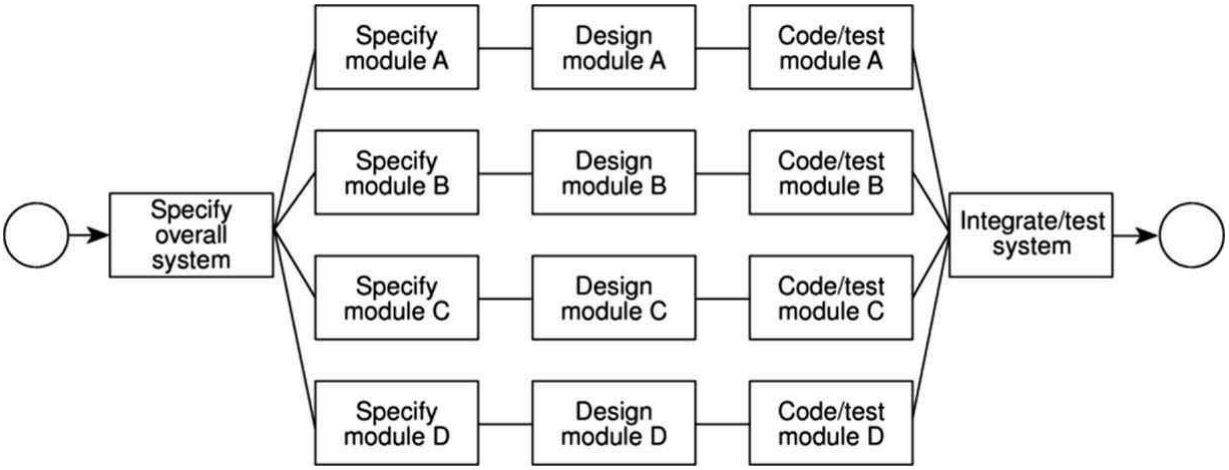
Instance 1 : Reserving a parking place and then canceling the reservation.

Instance 2 : The application's color representation of empty or occupied parking spaces. (Green: vacant; Orange: held; Red: filled)

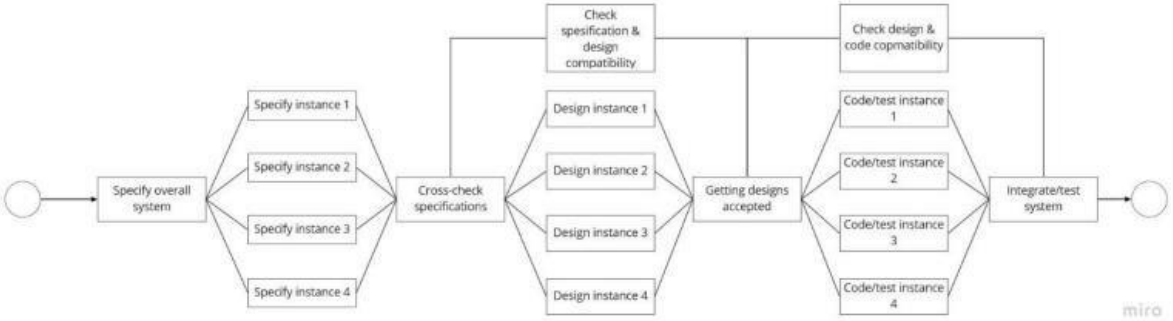
Instance 3 : Nearest to user's location display of empty parking spaces in the parking lot.

Instance 4 : Additional discounts and discount coupons that can be given to the user.

4.4. Produce ideal activity network

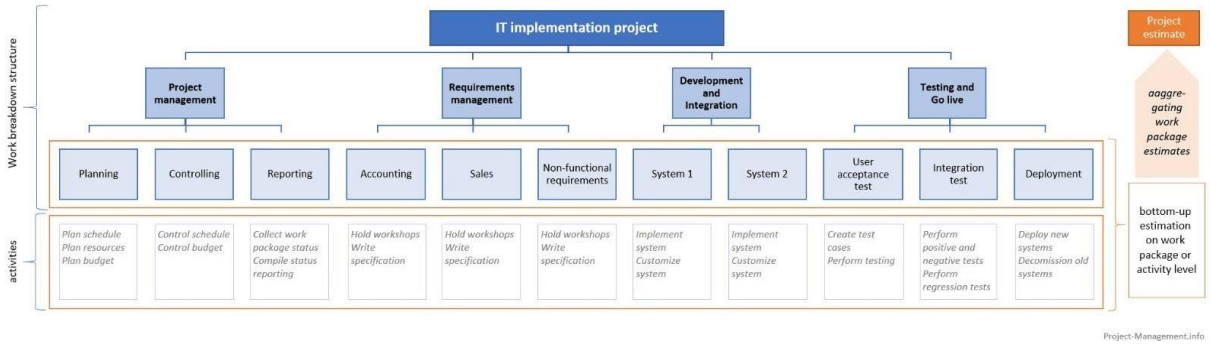


4.5. Modify ideal to take into account need for stages and checkpoints

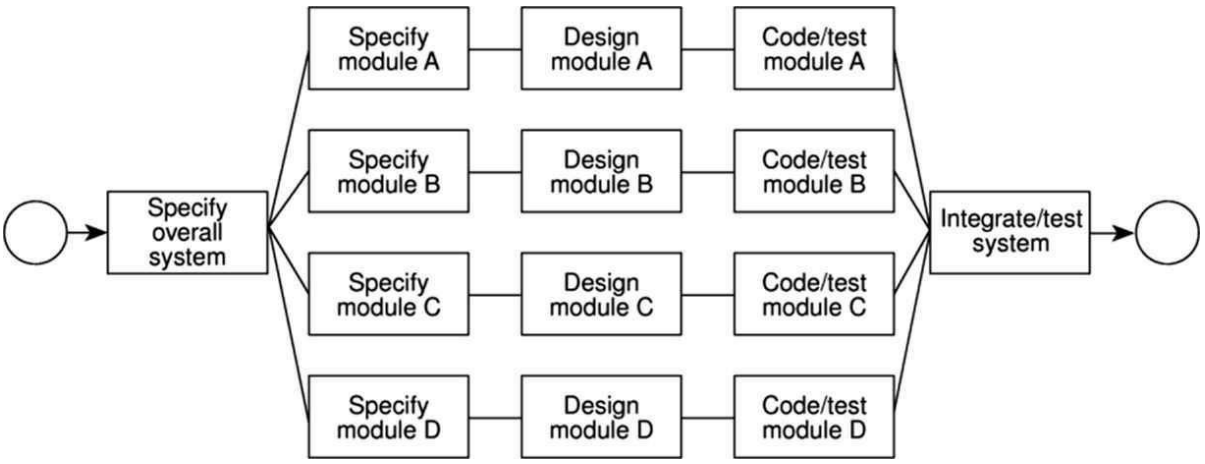


5. Estimate effort for each activity

5.1. Carry out bottom-up estimates



5.2. Revise plan to create controllable activities

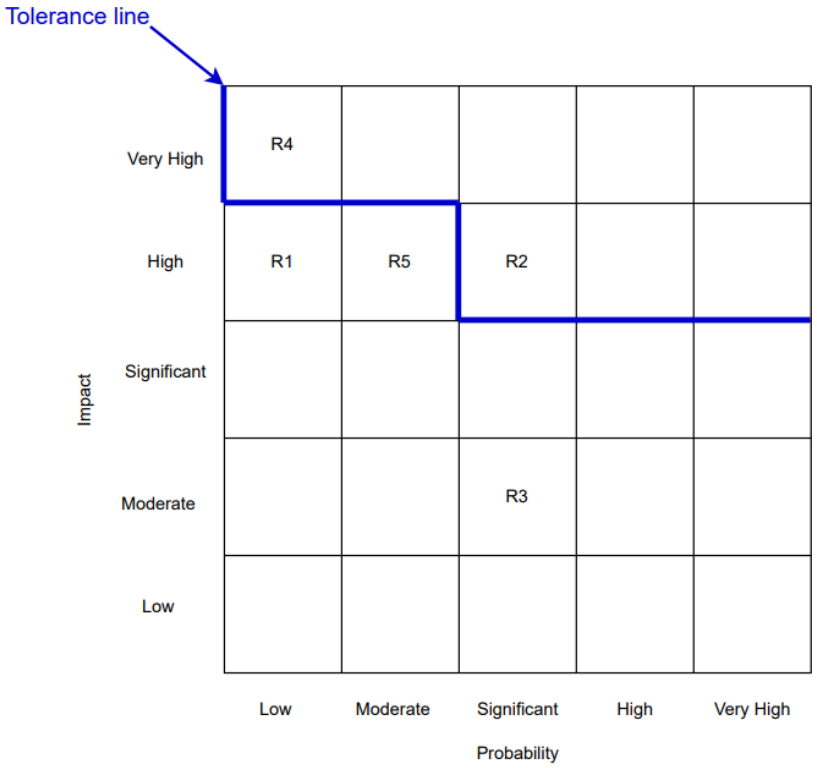


6. Identify activity risks

6.1. Identify and quantify activity-based risks

Risk ID	Risk Description	Likelihood	Impact	Risk Exposure
R1	UI is not fixed enough to easy to use	3 (Low)	9 (High)	27
R2	If the system cannot upload the data instantly, users cannot access the updated data.	7 (significant)	9 (High)	63
R3	When there is an instant increase in the number of users using the application, there are delays in the payment system.	6 (Significant)	5 (Moderate)	30
R4	Cyber attacks / reliability issues	2 (Low)	10 (Very High)	20
R5	When the server does not respond to requests, general delays are experienced within the system.	5 (Moderate)	8 (High)	40

6.2. Plan risk reduction and contingency measures where appropriate



6.3. Adjust plans and estimates to take account of risks

Risk ID	Risk Title	Risk Description	Impact Description	Recommended Risk Mitigation	Contingency Measures	Likelihood
R1	User Interface	UI is not fixed enough to easy to use.	Due to his unmet requirement, the user will not be satisfied, which will result in the app failing.	All user functions should be gathered on the GUI's home page.	To make it user-friendly, the user interface will be changed as needed.	3 (Low)
R2	Delayed Data Access	If the system cannot upload the data instantly, users cannot access the updated data.	Data loss prevents us from performing a reload or data restoration.	Weekly checks and data backups should be performed on the system.	All data will be stored in a pack up database to ensure not losing data.	7 (Significant)

R3	Payment System Delays	When there is an instant increase in the number of users using the application, there are delays in the payment system.	The payment screen can appear later than expected due to the application's complexity.	One idea could be to implement a load balancing system to distribute the incoming traffic to multiple servers. Monitoring systems that can detect a sudden increase in traffic and automatically scale the payment system's resources could also be helpful.	To guarantee that data is not destroyed, all data is kept in a package database that is updated often.	6 (Significant)
R4	Cyber Attack	Cyber attacks / reliability issues.	The application's reliability is decreased as a result of cyberattacks.	When constructing the architecture, developers should make use of the necessary technology.	Using external contractors, a thorough vulnerability test.	2 (Low)
R5	Server Delays	When the server does not respond to requests, general delays are experienced within the system.	Since the servers are busy, users can experience access issues with the application.	The plan may be to construct a load balancing system to split up the incoming traffic across several servers and avoid having any one server get overloaded.	Server efficiency should be tested and well done.	5 (Moderate)

7. Allocate resources

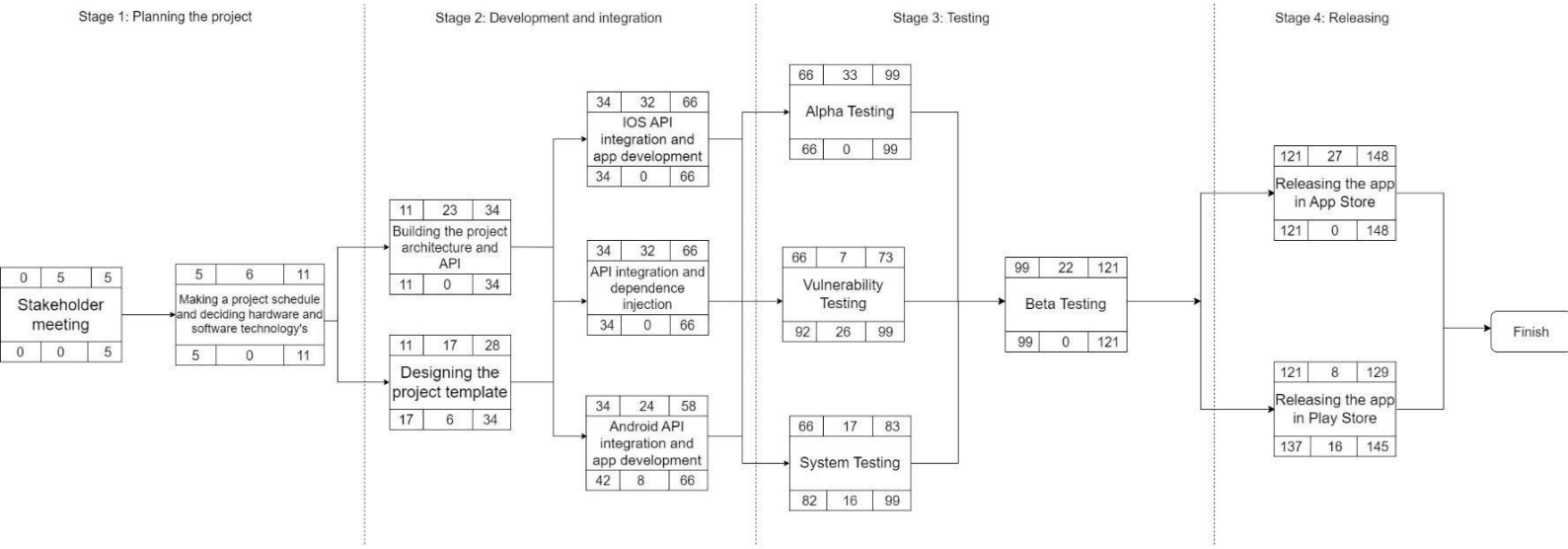
7.1. Identify and allocate resources

Stage	Activity	Resource	Days	Quantity	Notes
ALL	ALL	Project Manager	160		
1-Planning	ALL	-Working team	-	40	Back-end programmers should be notified!
	Stakeholder meeting	-Senior Analysts - Experts	5		
	Making a project schedule and deciding hardware and software technology's	- Senior Analysts - Whiteboard	6		
2- Develop-ment and integration	ALL	-Software and Technologies	-	35	
	Building the project architecture and API	-Analysts - Back-end Programmers	23		
	Designing the project template	-Designers - Front-end Programmers -	17		
	API integration and	-Analysts - Designers	32		App store deployment process

	dependence injection	- Developers			should be started here!
	Android API integration and app development	-Analysts - Designers - Android Programmers	32		Developers.
	Android API integration and app development	-Analysts - Designers -Full stack programmers	24		
3 – Testing	ALL	- Workstations Utilities - Software and Technologies	-	35	User guide should be created at this phase.
	Alpha Testing	-Analysts - Back-end Programmers	33		
	Vulnerability Testing	-Designers - Front-end Programmers -	7		
	System Testing	-Analysts - Designers - Developers	17		App store deployment process should be started here!
	Beta Testing	Full Development team, testing group	22		Testing group should be independent from the project .
4-Deployment	ALL	-Working team,		18	

		Utilities, - Software and Technologies			
	Releasing the app in AppStore	-Analysts, Designers, -Developers	27		App Store.
	Releasing the app in Play Store	-Analysts, Designers, -Developers	8		Play Store. App Gallery.

7.2. Revise plans and estimates to take into account of resource constraints



8. Review/publicize plan

8.1. Review quality aspects of project plan

INTERNAL QUALITIES

Safety: The project prioritizes user data safety by implementing measures such as not storing credit card information, using complex hashing algorithms for passwords, and restricting access to the database to only specific team members. Additionally, an SMS code verification system will be implemented to ensure device security.

Effectiveness: The project is designed to achieve its goal of helping users find empty parking areas in Istanbul, by providing functionalities such as parking reservations and occupancy rate check.

Productivity: The project aims to increase productivity by providing users with an easy-to-use platform that allows them to quickly find parking spots and make reservations.

EXTERNAL QUALITIES

Functionality: The project offers several functionalities such as parking reservations, occupancy rate check, and linking users and park information to the system. Maintainability: The system is designed for easy maintenance, as all user and park information will be linked and stored in the system, making it easy for the system to recognize and process information with each use.

Maintainability: The system is designed for easy maintenance, as all user and park information will be linked and stored in the system, making it easy for the system to recognize and process information with each use.

Portability: User information will be linked to their accounts, allowing for seamless transition when switching devices.

Usability: The project features a simple and user-friendly template that guides users through all the functionalities offered.

Efficiency: The system is highly efficient, as it uses location information to automatically complete the necessary steps for users.

Reliability: The project is designed to handle an increasing number of users, as it will expand to cover the entire country. The architecture is structured in a way that allows for easy scalability and fast adjustments to handle increased traffic.

8.2

Team members will gather for brief daily Scrum sessions. Staying on the same page will be made easier by this. Additionally, throughout the testing process, designers would generate functional diagrams. Work will be given by senior staff via emails. During the daily scrum sessions and via emails to their superiors, all developments and modifications made during the development and integration phase will be addressed. The project manager will sign all contracts.

9-10

Identifying the specific actions that need to be taken to find empty parking places in Istanbul.

Determining the resources, such as personnel and equipment, that will be needed to carry out these actions.

Developing a detailed schedule for the execution of the plan.

Coordinating with relevant stakeholders, such as city officials and local businesses, to ensure that the plan can be implemented smoothly.

Monitoring the progress of the plan and making adjustments as needed.

Reiterating the planning process at a lower level if necessary, for example, if new information becomes available or if the initial plan is not working as expected.

Continuously evaluating the plan, taking into account the feedback of the stakeholders, and making necessary adjustments or improvements in order to optimize the results.

It is essential to have regular communication with the stakeholders and to be flexible to adapt to the changing