1. **Which one will be your project model waterfall, incremental or reuse-oriented development . Explain in details and why? :**

Our project uses reuse-oriented development. As a description of the model; The development by using software (or software components) previously prepared or outsourced by the organization is a growing approach in recent years. As the maturity of the organizations increases, the infrastructure is established to make such applications.

**2**.**Write full story of your project features (for each feature) :**

What helps us in the process of the project is that users experience problems while parking their cars. The parking sensor allows users to park their cars and make it easier. It may be difficult to control the rear of the vehicle while parking the car, and it may be difficult to use the mirrors at the same time. In this way, it gives an audible warning and shows the distance to the object. Thanks to these features, the user will be able to park his / her car more comfortably and safely.

**3**.**Write detailed test case of your project features (for each feature):**

**Login:**

1. Accurately measuring distance during parking.

2. It can emit an appropriate warning during the parking.

**Tests:**

1. To test the usability of the sensor for users

2. To test the sensor's warning system for users

3.To test the sensor and distance measurement for users

**Output:**

The sensor measures the distance accurately and gives an audible warning when approaching.

**4.There are several questions to determine the requirements of this project.These ;**

🡪Functional distribution and propagation: Where will the system be used?

Our project can be used on vehicles in general.

🡪 Profile mission or scenario: How will the system complete the mission?

Our mission in the project is to allow users to park the car more easily and prevent accidents during parking.

🡪Performance and related parameters: What are the critical system parameters to complete the mission?

We have various elements used in the system. They are sensor, led and stimulating buzzer.

🡪Efficiency of requirements: How will the system be effective and effective when implementing the mission?

While carrying out our mission, our project is available and will always be in an efficient and effective condition.

🡪 Functional life cycle: How will the system be used by the user?

The user is always able to use it because the project is always active.

🡪Environment: Which environments are expected by the system to work effectively?

The project needs to be a suitable system to operate. There must be an environment where vehicles can park and objects approaching the sensor when parked.

**5. Write full nonfunctional requirements of your project:**

Non-functional requirements specify criteria that can be used to assess the operation of a system rather than specific behavior.

**Performance requirement:**

The system must be properly positioned to the car or vehicles to be operational. If the sensor is multiplied or broken, the sensor may not be able to measure correctly or even work.

**Availability:**

For the system to be available, performance requirements must be performed correctly. The system becomes available when parking in vehicles.

**Portability Need:**

It can be used on the vehicle to which the system is connected. Compliance with the vehicle is taken in different vehicles may not work properly.☺

**Eligibility:**

The suitability of the vehicle to the system is checked. In accordance with the reports that are suitable for the system, appropriate sensors are installed and the vehicle is checked. When measuring the distance, the sensor is activated and is suitable when it approaches the object..

**6. Fill your project nonfunctional requirements metrics table :**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | **Property** | **Measurement** | | Speed | Gives measurement at 2 sec intervals as the object approaches. | | Size | The size of vehicles added to the rear panel varies depending on the vehicles. An electronic plate of 10 cm and 2 cm in diameter is attached to the sensors. | | Ease of Use | The parking sensor starts to operate as soon as it is switched to parking and provides ease of use only. It measures the distance for the user and emits an audible warning. | | Reliability | Reliability to the system is 90%. 10% error margin (as in any system) | | Sturdiness | It is robust to our system unless it is externally intervened, distorted or broken. | | Portability | Each system is placed in accordance with their own vehicle.If moved to a different vehicle, the sensor may deviate from its measurements. | |

**7. Write full requirements of each part of your project :**

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-System should provide accurate measurements during each parking (fast motion measurement may also deviate.)

- The status of these deviations from the system test sequence must be shared with the user

(users should be warned for situations that may occur.)

**8. Write full structured requirements of each part of your project :**

|  |  |
| --- | --- |
| Function | Parking sensors to help with |
| Explanation | Ease of users when parking thanks to sensors |
| Input | The user will be in the park state and start the park |
| Output | Show distance to user when parking |
| Target | To provide users more comfortable parking |
| Actions | The parking sensor is not activated when the vehicle is parkedi |
| Requirement | Correct operation of the environment and system |
| Side effects | NO |

**9. Write tabular computation of your each function/model of your software :**

|  |  |  |
| --- | --- | --- |
| SYSTEM 🡪 | OBJECT>20 cm | GREEN LED LIGHT AND NO SOUND |
| SYSTEM 🡪 | 20> OBJECT>10 cm | YELLOW LED LIGHT AND INTERMITTENT AUDIBLE WARNING |
| SYSTEM 🡪 | OBJECT<10 cm | RED LED LIGHT AND INTERMITTENT AUDIBLE WARNING |

**10.Write detailed scenarios for your project :**

**First Assumption:**

Opening the parking system of the vehicle while parking. If it is not parked, it will not open. If there is no object near by, it does not give warning with voice and distance.

**Normal:**

Opening the parking system of the vehicle while parking. Measurement of distances as they approach the object. Illumination of the LEDs according to the distance and giving an audible warning.

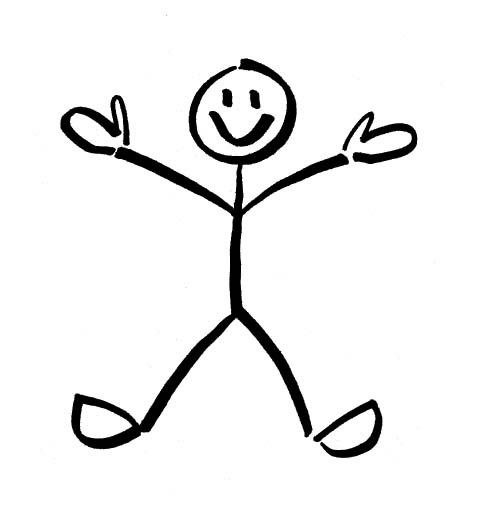
If 20 <object (cm), the LED will light green and the sensor will not be activated.

20 <object <10 (cm) is led, yellow turns on and gives an intermittent audible warning. If the object > 10 (cm), the led light will be lit and give a warning with uninterrupted sound.

**What Can Be Wrong:**

If the sensor is opened and can be measured more quickly during the operation, it may be incorrect measurement and false audible warning.

**11.Draw use cases diagram for all use cases of your project like :**

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Operating the parking sensor

**USER**

Parking the vehicle relative to the sensor

To send the measured distance to the led and give a warning

Measure distance to objects for vehicle

**PARKING SENSOR**

**12. Draw full details context UML diagram of your project like :**

**Parking Sensor System**

**User System**

**Parking Sensor**

**Led Distance Display System**

**Buzzer Voice System**

**13.Draw fully detailed process model UML diagram of your project like:**

**USER**

**BUZZER**

**VOICE AND LED WARNING**

**LCD LED**

**OBJECT**

**CAR PARKING SENSOR**

**14. Draw every use cases UML diagram of your project like :**

**USER**

**CAR PARKING SENSOR**