

Use Cases

GPS Avoidance

BASIC COURSE: The user can choose options: Highways Selected, Tolls Selected, U-Turns Selected. When selected, the GPS should not route the user on routes that include the selected option(s). Instead, it will calculate a route around the selected option(s) so that the user will not receive directions that include the selected option(s).

ALTERNATE COURSES:

Highways Selected, Tolls Not Selected, U-Turns Not Selected: If the fastest route from point A to point B includes a highway, it will reroute to the fastest route that does not include that road.

Highways Not Selected, Tolls Selected, U-Turns Not Selected: If the fastest route from point A to point B includes a toll, it will reroute to the fastest route that does not include that road.

Highways Not Selected, Tolls Not Selected, U-Turns Selected: If the fastest route from point A to point B includes a U-turn, it will reroute to the fastest route that does not include that road.

Highways Selected, Tolls Selected, U-Turns Not Selected: If the fastest route from point A to point B includes a highway and a toll, it will reroute to the fastest route that does not include those roads.

Highways Not Selected, Tolls Selected, U-Turns Selected: If the fastest route from point A to point B includes a toll and a U-turn, it will reroute to the fastest route that does not include those roads.

Highways Selected, Tolls Not Selected, U-Turns Selected: If the fastest route from point A to point B includes a highway and a U-turn, it will reroute to the fastest route that does not include those roads.

Highways Selected, Tolls Selected, U-Turns Selected: If the fastest route from point A to point B includes a highway, toll, and a U-turn, it will reroute to the fastest route that does not include those roads.

Parking Collision Detection (PCD)

BASIC COURSE: The System will alert the user with an audible sound when the vehicle encroaches on an object during a parking maneuver.

ALTERNATE COURSE:

System Malfunction: The system is unresponsive to objects during a parking maneuver. The system will provide a distinct audible sound at a predetermined interval that differs from the sound normally made during a parking maneuver to alert the user to the malfunction. After a period of time, the system will attempt to correct the malfunction by power cycling the hardware.

Complete System Failure: The system is no longer capable of functioning due to complete hardware failure. The user will report the issue so a qualified technician can replace defective hardware parts.

Line Departure Detection (LDD)

BASIC COURSE: The System detects if the user is departing from the lane and signals the user with an audible tone which informs the user to recenter themselves in the lane.

ALTERNATIVE COURSES:

No Lanes Detected: In the event the road being driven on does not have lane markings, the system will not signal the user that they have departed the lane.

User Changes Lanes: The system will detect that the user is changing lanes via the turn signal relay. When the system detects the lane has been departed from while the turn signal is on it will not signal the user.

GPS Turn by Turn Directions

BASIC COURSE: The system will have a GPS button. The user will select the GPS button and the system will display an Enter Address screen. The user will enter the house/business number, street name, street type, zip code, city, and state. The user will then select the Go button. The system will verify the address and calculate the route to the requested destination. The system will then display the first step of the Turn by Turn directions for the user.

ALTERNATIVE COURSES:

Invalid Address Given: The system rejects the address and returns the user to the Enter Address screen. The system will display an error message explaining why the address has been rejected.

Address Not Found: The system rejects the address and returns the user to the Enter Address screen. The system will display an error message explaining why the address has been rejected.

Music Player

BASIC COURSE:

On the Music Player Interface screen, the user will be able to select an album from local storage from the Select Album button. With an album selected, the screen will display the album's image cover in the center of the screen. The user will be able to switch between songs in the album with the Next Song and Previous Song buttons, play and pause the song with the Play/Pause button, as well as change the volume of the song and the point in the song that it is currently playing with slider bars. Frequency soundbars will be present to visualize the song's frequencies. At any point, the user can select another album with the Select Album button.

ALTERNATIVE COURSES:

User does not select an album: With no album selected, the Music Player disables all buttons, except Select Album, until the user selects an album.

Album has only 1 song: If the album contains just one song, then the Music Player will disable the Next/Previous Song button, and all other functionality of the Music Player will continue as normal.

No Tag Data: If tag data is not found for a specific category, the Music Player will list the tag data as 'Unknown'.

No Album Cover Image: If the album has no cover image, then the Music Player will show a stock image.

OBD

On the OBD interface screen, the user will be able to see all live engine data such as RPM, temperatures, speed, pressures, emissions data, and fuel levels. The user can also click on a button to view Diagnostic Trouble Codes as well as an explanation about what the codes mean. The user is also allowed to click on a button in the DTC menu to clear any engine codes in the car.

Alternative Courses:

System cannot connect to Car's OBD: The head unit displays an error saying unable to connect to car

Car has no engine codes when the user requests them: The head unit displays a message saying no engine codes are found

System is unable to clear engine codes: The head unit displays an error saying unable to clear engine codes