**Homework 02**

**Features relevant to automatic lane change**

* The ability to maintain or change speed as needed.
* Staying on the course of the road during turns and changes in shape and elevation.
* Collision detection and prevention

**Use Case One**

* Name: Maintain or change speed as needed during lane switch
* Brief Description: The car will need to manage its speed properly to avoid collisions or problems on the road.
* Actors: Other Drivers
* Basic Flow: The car will determine the speed and locations of the other drivers on the road and maintain a speed that will allow for a safe transition between lanes.
* Alternate Flow: The Car slows down too much and disrupts traffic or causes an accident.
* The Car speeds up too much and causes the road to be an unsafe environment for the other drivers.

**Use Case Two**

* Name: Stay on course during changes in road shape and elevation
* Brief Description: The car will need to make sure it can handle a change in road shape or elevation while switching lanes
* Actors: Other Drivers
* Basic Flow: The car will adjust its turning in align with the elevation and shape of the road.
* Alternate Flow: The car fails to adjust properly and doesn’t successfully change lanes causing a traffic hazard for other drivers.
* Alternate Flow: The car fails to adjust to the elevation and doesn’t account for the speed change and causes a traffic hazard for other drivers.

**Use Case Three**

* Name: Collision Detection and Prevention
* Brief Description: The Car will need to be able to detect other cars and hazards on the road and prevent a collision.
* Actors: Other Drivers
* Basic Flow: The Car will use hardware scanners to detect the location of other drivers and potential hazards on the road and actively avoid them when changing lanes
* Alternate Flow: The Car fails to keep track of the other driver’s location and a collision occurs.
* Alternate Flow: The car fails to locate road hazards and a collision occurs.

**User Story One**

* Title: As a Driver I want the moving speed for Car must change as needed
* Acceptance Test: Car Adapts to Other Drivers
* Priority: 2
* Story Points: 200
* Description: The Car must adapt its speed to the other drivers on the road to avoid accidents.

**User Story Two**

* Title: As a Driver I want the direction of the Car must stay on course during changes in the environment
* Acceptance Test: Car Adapts to the environment
* Priority: 3
* Story Points: 200
* Description: The Car must adjust its turning to match the shape of the road during the lane switch and control its speed during changes in elevation.

**User Story Three**

* Title: As a driver I want active awareness and avoidance of other road objects
* Acceptance Test: Car can safely navigate around road objects
* Priority: 1
* Story Points: 365
* Description: The Car must be able to determine the location of other drivers on the road as well as road hazards.

**User Stories vs Use Cases**

The Advantages of a user story over a use case in this situation is in a user story, the development team will get a better idea of what the consumer wants in the product in a very simple and easy to understand matter. They also contain a basic flow of how the operation should work. The disadvantage of the user story is the lack of detail it may contain as compared to a user case. This is the main advantage to use cases as they are generally much more detailed. They contain elements and full detail on a problem and don’t leave the team wondering about possible futures. The disadvantage is that use cases are more to the point and don’t incite conversation like a user story may in a scrum meeting. They allow for less frequent feedback on development.