INSTRUCTIONS:
Fill out the hazard analysis and risk assessment below.
HA-001 should be for the lane departure warning function as discussed in the lecture.
HA-002 should be for the lane keeping assistance function as discussed in the lecture.
Then come up with your own situations and hazards for the lane assistance system. Fill i
When finished, export your spreadsheet as a pdf file so that a reviewer can easily see you

Hazard ID	Situational Ana			
	Operational Mode	**Operational Scenario**	**Environmental Details**	**Situation Details**
HA-001	Normal Driving	City Road	Normal Conditions	Low Speed
HA-002	Normal Driving	Highway	Normal Conditions	High Speed
HA-003	Reverse Driving	Country Road	Fog Conditions	Low Speed
HA-004	Degraded Driving	City Road	N/A	Limp home mode

n the HA-003 and HA-004 rows.
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Other Details (optional)	Item Usage (function)	Situation Description	Function
Night time	Correctly Used	Normal Driving on a City Road in Normal Conditions at Low Speed at Night	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback
Day Time	Correctly Used	Normal Driving on a Highway in during Rain, slippery road, at High Speed at Daytime.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
Day Time	Correctly Used	Reverse Driving on a Country Road in Fog Conditions at low speed in Day Time.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback
Night time	Incorrectly Used	Degraded Driving due to loss of alternator on a city road at night. Since all vital systems are shut down during Limp Home mode to allow the car to make it home LKA will not be functional.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane

Hazard Identification			
Deviation	**Deviation Details**	**Hazardous Event (resulting effect)**	**Event Details**
Function always activated	Driver is steering the car in opposite torque in addition to the LDW function. This causes the steering to to continuously vibrate	Front collision with ahead traffic	EV-05 Front collision with ahead traffic
Function always activated	Driver is steering the car in opposite torque in addition to the LDW function. This causes the steering to to continuously vibrate	Front collision with ahead traffic	EV-05 Front collision with ahead traffic
Function never activates	Power steering torque sensor stops operating	Rear collision with trailing traffic	EV-03 Rear collision with trailing traffic
Function never activates	Power steering torque sensor stops operating	Front collision with ahead traffic	EV-05 Front collision with ahead traffic

			Hazard
Hazardous Event Description	**Exposure (of situation)**	**Rationale (for exposure)**	**Severity (of potential harm)**
Continuous vibration of the wheel causes the car to go out of the lane possibly hitting another car. Worse case is hitting a car in the opposite direction	E3	Medium probability 1 % to 10 % of average operating time Occurs once a month or more often for an average driver	S3
Continuous vibration of the wheel causes the car to go out of the lane possibly hitting another car. Worse case is hitting a car in the opposite direction	E3	Medium probability 1 % to 10 % of average operating time Occurs once a month or more often for an average driver	S3
Total loss of LDW function	E2	Low probability <1 % of average operating time Occurs a few times a year for the great majority of driver	S2
Total loss of LKA function	E1	Very low probability Occurs less often than once a year for the great majority of drivers	S2

lous Event Classification

Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)
Life-threatening injuries (survival uncertain), fatal injuries More than 10 % probability of AIS 5-6	C3	Difficult to control or uncontrollable Less than 90 % of all drivers or other traffic participants are usually able, or barely able, to avoid harm
Life-threatening injuries (survival uncertain), fatal injuries More than 10 % probability of AIS 5-6	C3	Difficult to control or uncontrollable Less than 90 % of all drivers or other traffic participants are usually able, or barely able, to avoid harm
Severe and life-threatening injuries (survival probable) More than 10 % probability of AIS 3-6 (and not S3)	C2	Normally Controllable 90 % or more of all drivers or other traffic participants are usually able to avoid harm
Severe and life-threatening injuries (survival probable) More than 10 % probability of AIS 3-6 (and not S3)	C2	Normally Controllable 90 % or more of all drivers or other traffic participants are usually able to avoid harm

Determination of ASIL and Safety Goals	
ASIL Determination	**Safety Goal**
C	Limit the torque applied to the steering wheel
C	The Lane Keep Assist function is time limited and the additional torque ends after a time.
QM	Alert the driver with audio and dashboard lights that the function is not working.
QM	Alert the driver with audio and dashboard lights that the function is not working.