INSTRUCTIONS:
Fill out the hazard analysis and risk assessment below.
HA-001 should be for the lane departure warning function as d
HA-002 should be for the lane keeping assistance function as c
Then come up with your own situations and hazards for the lar
When finished, export your spreadsheet as a pdf file so that a r

Hazard ID	Situational Analysis		
	Operational Mode	Operational Scenario	Environmental Details
HA-001	Highway	Wet road	Normal condition
HA-002	Normal driving	Country road	Normal condition
HA-003	Normal driving	City road	Normal condition
HA-004	Normal driving	City road	Snow storm

ction as discussed in the lecture.
nction as discussed in the lecture.
for the lane assistance system. Fill in the HA-003 and HA-004 rows.
so that a reviewer can easily see your work.

Situation Details	Other Details (optional)	Item Usage (function)
High-speed		Correctly used
High-speed		Incorrectly used
Low-speed		Correctly used
Low-speed		Correctly used

	Hazard Identification	
Situation Description	**Function**	**Deviation**
The driver is unable to control the steering wheel because the oscillating feedback is too strong.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback.	The effect of the actor is too much.
The driver was misusing the function by taking both hands off the wheel and incorrectly treating the car as a fully autonomous vehicle.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	The driver treats the car as a self-driving car.
The lane marking is missing or severely damaged.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	The car can't tell where the lane is.
The lane marking is covered by the snow.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	The car can't tell where the lane is.

Deviation Details	Hazardous Event (resulting effect)	Event Details
The LDW function applies an oscillating torque with very high torque (above limit.)	Collision with other vehicle.	High haptic feedback can affect driver's ability to steer as intended. The driver could lose control of the vehicle and collide with another vehicle or with road infrastructure.
The driver treats the car as a self-driving car and the stops driving the car.	Collision with other vehicle.	The driver stops paying attention and the car wonders off and hitting other vehicle or other road infrastrutures.
The lane marking was damaged such that the car cannot tell where the left and right boundries of the lane are.	Collision with other vehicles.	Because the lane marking can't be properly recongized, the car mis-calculates the center of the lane and drives to the wrong section of the traffic.
The snow covers the road as well as the lane marking.	Collision with other vehicles.	Without lane marking info, the car does not know where the center of the lane is.

	Hazardous Event Classification	
Hazardous Event Description	**Exposure (of situation)**	**Rationale (for exposure)**
The LDW function applies too high an oscillating torque to the steering wheel (above limit).	E-3	For wet roads
The LDK function works for a while but unable to react to other situation in the traffic	E-2	The combination of driving on a country road and misusing the system probably does not happen often.
The LDK function mistakenly take the car into the wrong section of the road.	E-1	This does not ocurr very often to well-maintained city roads.
The LDK function mistakenly take the car into the wrong section of the road.	E-1	This should occurs less often than once a year for the great majority of drivers.

Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)
S-3	For high speed	C-3
S-3	For high speed	C-3
S-2	For low speed	C-3
S-2	For low speed	C-0

	Determination
Rationale (for controllability)	**ASIL Determination**
The driver is unable to control the vibrating steering wheel.	ASIL-C
The lane keeping assistance was always on and had no time limit, so drivers could take both hands off the wheel. Because hands aren't on the wheel at high speeds, a vehicle accident would not be controllable.	ASIL-B
Missing lane marking often occurred sporatically and when this happens the drivers have to react to it right away.	ASIL-A
Snow storm takes some time to build up, this is not something the drivers have to react to immediately.	QM

of ASIL and Safety Goals

Safety Goal
The oscillating steering torque from the lane departure warning function shall be limited.
The lane keeping assistance function shall be time limited, and the additional steering torque shall end after a given time interval so that the driver cannot misuse the system for autonomous driving
The lane keeping assistance function shall be disabled whenever the road markings are difficult to detect.
The lane keeping assistance function shall be disabled during snow storm.