STRUCTIONS:			
l out the hazard analysis and risk assessment below.			
4-001 should be for the lane departure warning function as discussed in the lecture.			
A-002 should be for the lane keeping assistance function as discussed in the lecture.			
en come up with your own situations and hazards for the lane assistance system. Fill in the HA-00	8 and HA-004 rows.		
hen finished, export your spreadsheet as a pdf file so that a reviewer can easily see your work.			

Hazard ID	ard ID Situational Analysis			Hazard Identification					Hazardous Event Classification							Determination of ASIL and Safety Goals					
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)	Item Usage (function)	Situation Description	Function	Deviation	Deviation Details	Hazardous Event (resulting effect)	Event Details	Hazardous Event Description	Exposure (of situation)	Rationale (for exposure)	Severity (of potential harm)	Rationale (for severity)	Controllability (of hazardous event)	Rationale (for controllability)	ASIL Deter minati on	Safety Goal
HA-001	OM03 - Normal Driving	OS04 - Highway	EN06 - Rain (slippery road)	SD02 - High speed		IU01 - Correctly used	Normal driving on a highway during rain (slippery road) with high speed and correctly used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback		The LDW function applies an oscillating torque with very high torque (above limit).	EV00 - 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 LDW function applies too high an oscillating torque to the steering wheel (above limit).	E3 - Medium probability	Highway driving on wet road.	S3 - Life-threatening or fatal injuries	High speed driving	C3 - Difficult to control or uncontrollable	Most drivers find it difficult to control an excessively vibrating steering wheel.	С	The oscillating steering torque from the Lane Departure Warning function shall be limited.
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed		IU02 - Incorrectly used	Normal driving on country roads during normal conditions with high speed and incorrectly used system.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV03 - Function always activated	LKA function is always activated	EV00 - Collision with other vehicle	The always on LKA function can mislead the driver to treat the car as a fully autonomous vehicle. The driver could lose control of the vehicle and collide with another vehicle or with road infrastructure.	The LKA function is always activated (the driver stops controlling the car).	E2 - Low probability	The driver is on a country road and misusing the system - this combination doesn't happen often.	S3 - Life-threatening or fatal injuries	High speed driving	C3 - Difficult to control or uncontrollable	The driver could take both hands off the wheel at high speed, a vehicle would not be controllable.	В	The Lane Keeping Assistance function shall be time limited, and additional steering torque shall and after a given time interval so the driver cannot misuse the system for autonomous driving.
HA-003	OM03 - Normal Driving	OS02 - City Road	EN07 - Snow (slippery road)	SD01 - Low speed		IU01 - Correctly used	Normal driving on city road during snow (slippery road) with low speed and correctly used system.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	effect is too much.	LKA function detects the car is out of lane and applies steering torque and the car starts to skid	EV00 - Collision with other vehicle	The car could skid after the LKA function applied extra torque to the wheel. The driver could lose control of the vehicle and collide with another vehicle or with road infrastructure.	The LKA fucntion applies steering torque (above limit) making the car to skid.	E3 - Medium probability	City road driving on slippery road with low speed.	"S3 - Life-threatening or fatal injuries"	There might be many cars and pedestrians in the city.	C3 - Difficult to control or uncontrollable	Most drivers find it difficult to control a skidding car.	С	The Lane Keeping Assistance function shall be deactivated when the camera sensor detects snow because it implies the road is slippery.
HA-004	OM03 - Normal Driving	OS05 - Mountain Pass	EN03 - Fog (degraded view)	SD01 - Low speed		IU01 - Correctly used	Normal driving on mountain pass during fog (degraded view) with low speed and corretty used system.	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback	DV19 - Sensor detection is wrong	Camera sensor unable to detect the correct lane position.	EV04 - Car comes off the road	The LDW function could vibrate the control wheel at the wrong time and misguide the driver to control the car into wrong direction.	The LDW function detects the edge of the road as the lane.	E2 - Low probability	Mountain pass driving during fog doesn't happen often.	S3 - Life-threatening or fatal injuries	Coming off road could make the car to fall off from a cliff.	C2 - Normally controllable	The driver could rely on his own eyes to make his own judgement on the correctness of the LDW function.		The LDW function shall be deactivated when the camera sensor cannot correctly detect the lanes, and it shall notify the driver when it's off.