INSTRUCTIONS:
Fill out the hazard analysis and risk assessment below.
HA-001 should be for the lane desarture warnins function as discussed in the lecture.
HA-002 should be for the lane keeoino assistance function as discussed in the lecture.
Then come up with your own situations and hazards for the lane assistance system. Fill in the HA-003 and HA-004 rows.
When finished, export your spreadsheet as a pdf file so that a reviewer can easily see your work.

Hazard ID	Situational Analysis							Hazard Identification						Hazardous Event Classification						Determination of ASIL and Safety Goals	
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details	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 Determination	Safety Goal
HA-001	OM03 - Normal driving	OS04 - Highway	EN06 - Rain (slippery road)	SD02 - High speed		IU01 - Correctly used	Normal driving on 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	DV04 - Actor effect is too much	The Lane Departure Warning 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 Lane Departure Warning function applies an oscillating torque with very high torque (above limit.)	E3 - Medium probability	Driving on highway in rain situation depends upon the nature of locality and this is not happen every time.	S3 - Life-threatening or fatal injuries	Collision at high speed could cause life-threatening injuries	C3 - Difficult to control or uncontrollable	Controlling vehicle running on high speed in slippery road is very difficult.	C	The vibrating torque of steering wheel should be reduced to acceptable range.
HA-002	OM03 - Normal driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed		IU02 - Incorrectly used	Normal driving on a country road 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	Lane Keeping function is always activated	EV00 - Collision with other vehicle	The driver is misusing the lane keeping assistance function as an fully autonomous driving. So, he loose driving attention and therfore driver not able to react on critical situation.	Since LKA is always activated, Driver takes hand from the steering wheel.	E2 - Low probability	Driving on country road with high speed and misuse of system should not happen often.	S3 - Life-threatening or fatal injuries	Collision at high speed could cause life-threatening injuries	C3 - Difficult to control or uncontrollable	Since driver looses attention, driver will not be able to react in critical situation.	B	The functional time of the LKS should be reduced.
HA-003	OM03 - Normal driving	OS06 - Off Road	EN06 - Rain (slippery road)	SD02 - High speed		IU01 - Correctly used	Normal driving on off road 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	DV12 - Sensor sensitivity is too high	As the Lane Departure Warning function always activated, thus the possibility of finding the lane is bit difficult	EV00 - Collision with other vehicle	As LDW function will be activated all the time, which will send the signals to oscilate the steering wheel thus making it difficult for the driver to steer as intended, resulting in collition with other vehicle on the road.	When vechile moves in a very high speed and along with it if we have oscillating torque value on the steering value, this would lead to accident.	E2 - Low probability	Driving on off road happens only ~1 % of average operating time of the vehicle	S3 - Life-threatening or fatal injuries	Collision at high speed on off road could cause life-threatening injuries	C3 - Difficult to control or uncontrollable	When LDW function failed to identify lane on off road (for case when the camera is not able to detect the lane position correctly due to shadow or not clear visibility of the lane line etc.), a random amplitude values are applied to the steering wheel which is very difficult to control.	B	The Lane Departure Warning system should be turn off while driving on off road condition.
HA-004	OM03 - Normal driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed		IU01 - Correctly used	Normal driving on country road during country road with high speed and correctly used system.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV02 - Function unexpectedly activated	LKA got activated and the camera sensor suddenly stopped working.	EV00 - Collision with other vehicle	When the LKA is activates in a random manner then the signals send by the LKA would be all of a random value, and this random values are applied to the vechile thus making the driver to loose the control and again resulting in collision with other vechiles that are moving on the road or even with the other road objects.	When the camera sensors are damaged then the lane keeping assistance starts sending signals in random manner even when not needed.	E2 - Low probability	Driving on city road with high speed will be only ~1 % of average operating time of the vehicle	S3 - Life-threatening or fatal injuries	Collision at high speed could cause life-threatening injuries	C3 - Difficult to control or uncontrollable	Driver losses the control of the vechile when a random torque values are applied on the vehicle.	B	The Lane Keeping Assistance function shall be temporarily deactivated when the camera sensor stopped working and driver should be warned about the deactivation by flashing the message on the car dashboard screen.