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 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				
	Operational Mode	Operational Scenario	Environmental Details	Situation Details	Other Details (optional)
HA-001	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed	
HA-002	OM03 - Normal Driving	OS03 - Country Road	EN01 - Normal conditions	SD02 - High speed	
HA-003	OM03 - Normal Driving	OS02 - City Road	EN06 - Rain (slippery road)	SD01 - Low speed	
HA-004	OM03 - Normal Driving	OS04 - Highway	EN07 - Snow (slippery road)	SD02 - High speed	

Item Usage (function)	Situation Description	Function
IU01 - Correctly used	Normal driving on country roads during normal conditions with high speed	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback
IU02 - Incorrectly used	Normal driving on country roads during normal conditions with high speed (the driver is misusing the lane keeping assistance function as a fully autonomous function)	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane
IU01 - Correctly used	Normal driving on city roads during raining with low speed	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback
IU01 - Correctly used	Normal driving on highway during snowing with high speed	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**	**Hazardous Event Description**
DV04 - Actor effect is too much	The LDW function applies an oscillating torque with very high torque (above limit)	EV00 - Collision with other vehicle	Vehicle crashes into the oncoming vehicle or road infrastructure	The LDW function's oscillating torque is very high
DV03 - Function always activated	The lane keeping system is always on	EV00 - Collision with other vehicle	Vehicle crashes into the oncoming vehicle or road infrastructure	The lane keeping assistance was always on and had no time limit
DV11 - Actor effect is wrong	The LDW function applies an oscillating torque in wrong situation	EV00 - Collision with other vehicle	Vehicle crashes into the oncoming vehicle or road infrastructure	The LDW function's oscillating torque activates wrong situation.
DV07 - Actor action too late	The lane keeping system activates too late	EV00 - Collision with other vehicle	Vehicle crashes into the oncoming vehicle or road infrastructure	The lane keeping assistance is delayed to activate.

Hazardous Event Classification				
Exposure (of situation)	**Rationale (for exposure)**	**Severity (of potential harm)**	**Rationale (for severity)**	**Controllability (of hazardous event)**
E3 - Medium probability	country driving is part of regular driving	S3 - Life-threatening or fatal injuries	On country roads speed of vehicle is expected to be high	C3 - Difficult to control or uncontrollable
E2 - Low probability	On a country road and misusing the system probably does not happen often	S3 - Life-threatening or fatal injuries	On country roads speed of vehicle is expected to be high	C3 - Difficult to control or uncontrollable
E2 - Low probability	Driving on a city road while raining is not often	S1 - Light and moderate injuries	On city roads speed of vehicle is expected to be low	C2 - Normally controllable
E1 - Very low probability	Driving on a highway while snowing is rare	S3 - Life-threatening or fatal injuries	On country roads speed of vehicle is expected to be high	C3 - Difficult to control or uncontrollable

	Determination of ASIL and Safety Goals	
Rationale (for controllability)	**ASIL Determination**	**Safety Goal**
the steering wheel jerking back and forth violently would be difficult to control	C	The oscillating steering torque from the lane departure warning function shall be limited
hands aren't on the wheel at high speeds, a vehicle accident would not be controllable	B	Function shall be time limited and the additional steering torque shall and after a given time interval
the steering wheel jerking back and forth is not to much so usually driver can controll the car	QM	The oscillating steering torque from the lane departure warning function shall be checked right situation
Wrong time additional steering torque at high speeds, a vehicle accident would not be controllable	A	Function shall be activited in fixed time