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							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 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 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 loose control of the vehicle and collide with another vehicle or with road infrastructure	The LDW function applies too high an oscillating torque to steering wheel (above limit)	E3 - Medium probability	Driving on a highway during rain can happen once a month or more depending on driver's location	S3 - Life-threatening or fatal injuries	Driver is travelling at high speed	C3 - Difficult to control or uncontrollable	Overreaction of wheel's viberation is very distracting and even surprising, so the most drivers won't be able to avoid harm	C	The oscillating steering torque from the LDW 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.	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	Driver treats the function as if it were meant for fully autonomous driving and therefore can't react on critical situations	The LKA function is always activated and the driver stops focusing on driving the car	E2 - Low probability	The driver is on country road and misusing the system	S3 - Life-threatening or fatal injuries	Driver is travelling at high speed	C3 - Difficult to control or uncontrollable	Lane keeping assistance is always on so driver could take hands off the wheel and loose control of the vehicle at high speed	B	The lane keeping assistance system shall be time limited and the additional steering torque shall end after certain time interval so the driver cannot misuse the system for autonomous driving
HA-003	OM03 - Normal Driving	OS03 - Country Road	EN04 - Snowfall (degraded view)	SD03 - Normal acceleration		IU02 - Incorrectly used	Normal driving on country roads during snowfall (degraded view) with normal acceleration.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV19 - Sensor detection is wrong	Camera sensor is not able to find correct lane position because of snow	EV04 - Car comes off the road	Driver does not react fast enough to prevent car from leaving the road because of incorrect lane detection	LKA mixes up lane line with edge of the road / pavement due to fallen snow	E2 - Low probability	Driving on a country road during snowfall only occurs a few times a year	S3 - Life-threatening or fatal injuries	Driver is travelling at high speed	C2 - Normally controllable	Driving at normal speed, driver can react when vehicle gets too close to edge of the road	A	If the camera is not able to correctly detect the lanes then the Lane Keeping Assistance system shall be deactivated
HA-004	OM03 - Normal Driving	OS04 - Highway	EN01 - Normal conditions	SD02 - High speed	Car is entering construction site area on highway, lanes merge together and change lane line color to yellow.	IU01 - Correctly used	Normal driving on highway road during normal conditions with high speed.	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane	DV19 - Sensor detection is wrong	Camera sensor does not detect lane merging situation at construction site and therefore keeps on following merged lane without precaution.	EV-02 - Side collision with other traffic	Driver doesnt not see existant car on lane, ego lane gets merged into.	LKA steers seemlessly into merged lane provoking collision with vehicles within adjacent lane	E4 - High probability	Driving on highway and encountering construction sites occurs in almost every drive on average	S3 - Life-threatening or fatal injuries	Driver is travelling at high speed	C3 - Difficult to control or uncontrollable	Driving at high speed and encountering new situation (construction site, adjacent cars, merging lanes) requirs fast and appropriate evaluation and reaction	D	LKA shall reliably detect merging lanes and react in advance