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.

FUNTIONS	
	Lane Departure Warning (LDW) function shall apply an oscillating steering torque to provide the driver with haptic feedback
	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane

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 a highway during rain (slippery road) with high speed and correctly used system	Lane Departure Warning (LDW) function	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 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)	E4 - High probability	Highway driving is a regular activity	S3 - Life-threatening or fatal injuries	Life-threatening (survival uncertain), fatal injuries	C3 - Difficult to control or uncontrollable	90% or more of all drivers or other traffic participants are usually able to avoid harm	ASIL D	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 a country road during normal conditions with high speed and driver misusing the system	Lane Keeping Assistance (LKA) function	DV03 - Function always activated	The LKA function is always on and had no time limit, so drivers can take both hands off the wheel	EV00 - Collision with other vehicle	Misuse of the system can make the driver lose control of the vehicle and collide with another vehicle or with road infrastructure.	The LKA function is always on and had no time limit, so drivers can take both hands off the wheel	E4 - High probability	Country road driving is a regular activity	S3 - Life-threatening or fatal injuries	Life-threatening (survival uncertain), fatal injuries	C3 - Difficult to control or uncontrollable	90% or more of all drivers or other traffic participants are usually able to avoid harm	ASIL D	The LKA 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
HA-003	OM03 - Normal Driving	OS02 - City road	EN01 - Normal conditions	SD01 - Low speed		IU01 - Correctly used	Normal driving on a city road during normal conditions with low speed and correctly used system	Lane Departure Warning (LDW) function	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 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)	E4 - High probability	City road driving is a fequent activity	S1 - Light and moderate injuries	More than 10% of AIS 1-6	C1 - Simply controllable	99% or more of all drivers or other traffic participants are usually able to avoid harm	QM	The oscillating steering torque from the LDW function shall be limited
HA-004	OM03 - Normal Driving	OS02 - City road	EN06 - Rain (slippery road)	SD01 - Low speed		IU02 - Incorrectly used	Normal driving on a city road during rain (slippery road) with low speed and driver misusing the system	Lane Keeping Assistance (LKA) function	DV03 - Function always activated	The LKA function is always on and had no time limit, so drivers can take both hands off the wheel	EV00 - Collision with other vehicle	Misuse of the system can make the driver lose control of the vehicle and collide with another vehicle or with road infrastructure.	The LKA function is always on and had no time limit, so drivers can take both hands off the wheel	E4 - High probability	City road driving is a fequent activity	S1 - Light and moderate injuries	More than 10% of AIS 1-6	C1 - Simply controllable	99% or more of all drivers or other traffic participants are usually able to avoid harm	QM	The LKA 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