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 at high speed with 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 high	The LDW function applies an oscillating torque with very high torque which is 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 other vehicle or may be road infrastructure.	The LDW functions applies too high an oscillating torque to the steering wheel which is above limit.	E3 - Medium Probability	Driving in rain on a highway can happen more often and it can also depend on the driver's location.	S3 - Life-threatening or fatal injuries	Vehicle going at high speed can cause injuries.	C3 - Difficult to control or uncontrollable	It is difficult for the drivers to control the vehicle which is going at high speed.	ASIL C	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 Highway at high speed with incorrectly used system	Lane Keeping Assistance (LKA) function shall apply the steering torque when active in order to stay in ego lane.	DV03 - Function is always activated	Lane Keeping Function always actively scans the road and tries to keep car in ego lane.	EV00 - Collision with other vehicle	LKA always stays active but the driver tries to misuse it as an autonomous driving function. Thus car gets into a collision.	The Driver didn't use the LKA function as intended	E2 - Low Probability	Probability of a driver misusing LKA on a country road is very low under normal driving conditions.	S3 - Life-threatening or fatal injuries	Collision at high speeds can result in life threatening injuries	C3 -Difficult to control or uncontrollable	Lane Keeping Assistance is always on here, the driver may assume that the car is driving and take both his hands away from steering wheel thus limiting his ability to promptly react and recover from situation. This can lead to fatal accident.	ASIL B	The Lane Keeping Assistance system shall be time limited, thus after a lane keeping manoeuvre, the control is given back to the driver
HA-003	OM04 - Backward driving	OS03 - Country Road	EN06 - Rain (slippery road)	SD01 - Low speed		IU02 - Incorrectly used	Driving backwards on a country road under rainy weather/slippery road with low speed	Lane Keeping Assistance (LKA) function shall apply the steering torque when active	DV03 - Function always activated	LKA function always actively scan the track and keeps the car in lane.	EV03 - Rear collision with trailing traffic	Driver couldn't react in this situation, before controlling the vehicle, the vehicle collided	The LKA function is always activated so driver does not focus on driving the car.	E2 - Low probability	Backward driving in country road while rainy weather happens often.	S1 - Light and moderate injuries	The impact of crash is light as the speed is low on the country road.	C1 - Simply controllable	As the speed is low, driver can stop the vehicle instantly and control it	QM	Acceleration should be start reducing and ultimately the vehicle should stop.
HA-004	OM03 - Normal Driving	OS04 - Highway	EN05 - Cross-wind(Lateral Force)	SD02 - High Speed		IU01 - Correctly used	Normal Driving on a highway during strong winds with high speed and correctly used system	Lane Keeping Assistant	DV05 - Actor effect is too less	If the direction of strong wind is opposite to the direction of torque applied to keep the vehicle in lane, the amount of torque applied maybe	EV00 - Collision with other vehicle	If the amount of torque applied is not sufficient to keep the vehicle in lane, the vehicle might be in the lane boundary and could collide	Amount of torque applied is smaller than what is required to keep the vehicle in lane.	E3 - Medium Probability	Highway Driving on windy roads	S3 - Life-threatening or fatal injuries	Driver travelling at high speed	C2 - Normally Controllable	Driver can control the vehicle and steer it into the right lane	ASIL B	The lane keeping assistance function shall apply a higher torque when the prevailing winds is in the direction opposite to the direction of application of