# BLOCK : TASK MANAGER

The task manager functions as a finite state machine which switches between different tasks/states. It is used to send commands to specific blocks to perform a certain task based on the status sent in by that block. It communicates with the other blocks via the World model.

INITIALIZATION:

The path planner is given a command "Drive_to_door" while the drive controller and the preceptor are given a command "Execute" as a part of the initialization process.

EXECUTION:

The high-level tasks "Drive_to_door", "Drive_to_exit", "Execute", "Idle" and "Disable" were given to appropriate blocks as shown below:
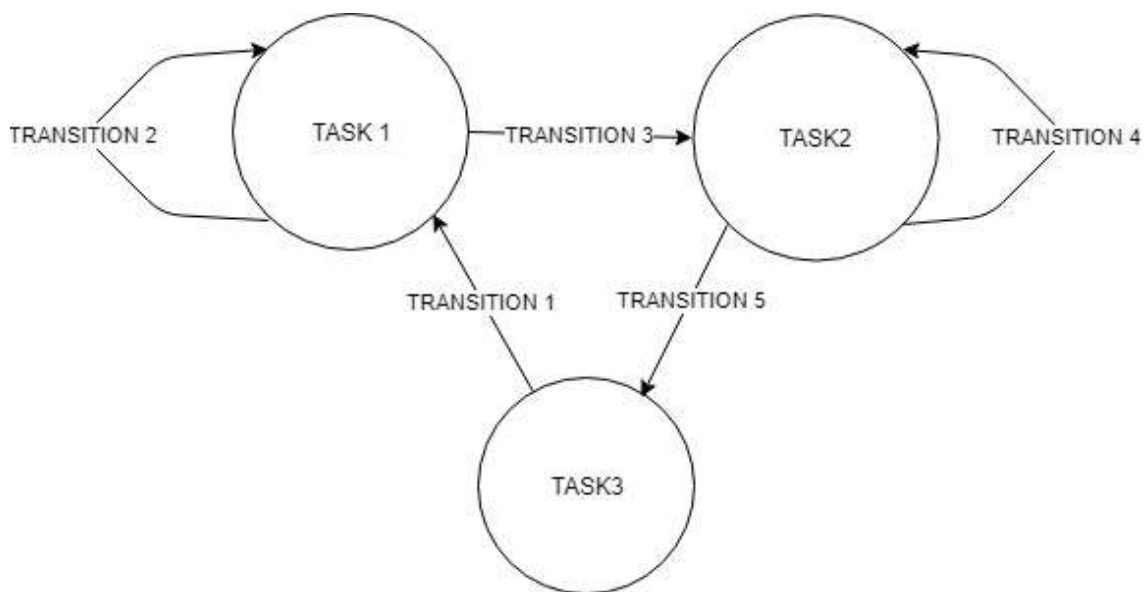
KEY :

TASKS/STATES	TASK DESCRIPTION/BLOCK MODES
TASK 1	Initialize : (PathPlanner_Drive_to_Door) and (DriveController_Execute) and (Perceptor_Execute)
TASK 2	(PathPlanner_Drive_to_Finish) and (DriveController_Execute) and (Perceptor_Execute)
TASK 3	(PathPlanner_Idle) and (DriveController_Disable) and (Perceptor_Disable)

TRANSITIONS	TRANSITION CONDITIONS BASED ON BLOCK STATES:
TRANSITION 1	Initial condition (While booting the PICO)
TRANSITION 2	If (PathPlanner_Drving_to_PossibleDoor) or (PathPlanner_Searching_for_door)
TRANSITION 3	If (PathPlanner_Driving_to_FoundDoor) and (Drivecontroller_Done)
TRANSITION 4	If ((PathPlanner_Driving_to_Finish) and (DriveController_Busy)) or (PathPlanner_Searching_finish)
TRANSITION 5	If (PathPlanner_Driving_to_Finish) and (DriveController_Done)

TASK MANAGER FUNCTIONALITY :

INPUTS	Drive Controller status, Perceptor status, Path Planner status.
OUTPUTS	Drive Controller modes, Perceptor modes, Path Planner modes.

FUNCTION	FUNCTION DESCRIPTION
Init()	To intitialize the DriveCOntroller to 'Execute', Path planner to 'Drive_to_door' and Perceptor to 'Execute'
Execute()	1) If (PathPlanner_Drving_to_PossibleDoor) or (PathPlanner_Searching_for_door) then, the blocks are set to (PathPlanner_Drive_to_Door) and (DriveController_Execute) and (Perceptor_Execute). 2) If (PathPlanner_Driving_to_FoundDoor) and (Drivecontroller_Done) then, the blocks are set to (PathPlanner_Drive_to_Finish) and (DriveController_Execute) and (Perceptor_Execute). 3) If ((PathPlanner_Driving_to_Finish) and (DriveController_Busy)) or (PathPlanner_Searching_finish) then the blocks are set to (PathPlanner_Drive_to_Finish) and (DriveController_Execute) and (Perceptor_Execute). 4) If (PathPlanner_Driving_to_Finish) and (DriveController_Done) then the blocks are set to (PathPlanner_Idle) and (DriveController_Disable) and (Perceptor_Disable).