PDDL Report
Group 14
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We have successfully created a domain and plan to allow for a spaceship to carry out numerous missions as set out by the coursework specification. In our domain we establish a variety of types such as ship, person, and light_equipment, in order to create objects with distinct qualities. Each object is assigned one of these types when defined in the problem plan. The objects are then initialised with values in line with the predicates outlined in the domain.

The domain then sets out what actions can be performed. These methods can only be used with objects matching the types declared in the parameters section. This typing prevents any unintended actions being performed that could have some very unpredictable effects e.g. attempting to repair a person and not the ship. In order for an action to be performed the preconditions must also be met. Common preconditions include the captain being located on the bridge, and the ship not being damaged. If the appropriate preconditions are not met then the action cannot be performed. In this case other actions must be performed first that will affect the values of the objects currently failing their goals. If the parameters passed are of the correct type and all the preconditions have been met the action will be successfully executed. The execution of an action will have various effects on certain objects such as the ship now being on another planet. The alteration of the values associated with the objects is what allows for the successful completion of a plan.

A potential plan would be for saturn to have been visited, there to be no plasma ore left on saturn, and for the captain to not be injured. As the ship starts on Earth, the first step is to move to Mars. Since Mars is located in an asteroid belt the ship will be damaged as it moves, so damage_move_ship is the first action called. The ship must then be repaired by the engineers so fix_ship_machine is called. The next step is to then move to saturn which is also located in an asteroid belt. Damage_move_ship is called again and the ship is now damaged. The ship is then repaired again. Saturn is not hostile so the guards are not needed for the first contact mission so f_c_friendly is performed. Saturn has now been visited. Now the plasma ore must be taken from Saturn. The action plasmaore_move is used for this purpose. Now there is not any plasma ore on Saturn but there is on the ship. The transporter has also been damaged but it is not required to be fixed for the plan to be a success so it will be ignored. The captain was

not injured at any point throughout the plan so that goal has been met. The plan has now been successfully completed as all goals have been met.