Homework 2

Introduction to Search

D. Josyula

* 1. Consider a vacuum world with 1 vacuum and 2 locations. If dirt can be present or absent in any location and vacuum has to be in one of the 2 locations, what is the total number of states possible (in other words, how many nodes will be there, if we were to draw a state space diagram)?

**Answer:**

The total number of states possible is 8

* 1. What if there are *n* possible locations and only 1 vacuum robot?

**Answer:**

If there n possible locations

* 1. What if there are 2 locations and 2 identical vacuums such that each location can have only 1 vacuum and
     1. states don’t distinguish between the 2 vacuums?
     2. states do distinguish between the 2 vacuums?
  2. What if there are *n* possible locations and *n* identical vacuum robots such that each location can have only 1 vacuum and
     1. states don’t distinguish between the n vacuums?
     2. states do distinguish between the n vacuums?

Please note that

(i) Vacuums do not disappear from the rooms and hence they have to exist in the rooms.

(ii) Each room can have a maximum of 1 vacuum