

1 Exercise 1

1.1 Computing task

Grid is 10×10 , that means we have 100 fields.

2 - for these many times we can choose status for the field (dirty or clean). We have 100 fields, so we have to apply this rule to 100 fields:

2^{100} - this is number of all combinations of board's settings.

100^5 - we have 5 robots. Each of them we can put on a board in 100 ways.

20^5 - each robot has 20 charge levels.

Number of all states is a multiplication of values mentioned above: $S = 2^{100} \cdot 100^5 \cdot 20^5$

$T = S \cdot 10^{-6}s = 2^{100} \cdot 100^5 \cdot 20^5 \cdot 10^{-6}s = 2^{100} \cdot 10^4 \cdot 20^5s$

1.2 Questions

1. In the start it says that Planning works when "Your problem is subject to frequent change", but heuristics by its nature enforce a rigidity in description of the problem. Is this an intended trade-off or if it is an open research problem?
2. As first, optimal planning has undergone a major boost in the last years, mainly thanks to heuristic called LM-cut, maybe it will be nice to talk about it?