Automated Planning Assignment – PDDL

Introduction

You may install the PDDL VSCode plugin, or use Online PPDL Editor to try out modelling a specific planning task and use an existing automated planner/ solver to generate an automated plan.

1. VSCode Plugin
   https://marketplace.visualstudio.com/items?itemName=jan-dolejsi.pddl
2. Online PDDL editor
   https://editor.planning.domains/

Part 0 – Starter Task: Move from Room A → Room B

Create domain_move.pddl and problem_move_ab.pddl to move the robot from Room A to Room B.

Challenge 1 – Move to Room D in Square Grid

Rooms are arranged in a grid:

roomA --- roomB
| |
roomC --- roomD

Update problem file, generate plan from Room A to Room D.

Create problem_move_d.pddl

Challenge 2 – Fetch & Retrieve

Extend domain with objects, pickup, and drop actions. Place a treat in Room D, and create a plan to fetch the treat and return to Room A.

Create domain_fetch.pddl and problem_fetch.pddl

Challenge 3 – Model the 4x4 Wumpus world with PDDL assuming the following.

1. Board is fully observable. Agent would have knowledge about the entire 4x4 area, whether there is a PIT, WUMPUS or a GOLD.
2. Agent always start the game from (1,1) location and task is to retrieve the gold and come back to (1,1) without falling into pits or getting eaten by a Wumpus.
3. Use a solver to generate an automated plan.

Submit the domain_wumpus_simple.pddl and problem_wumpus_simple.pddl with the following initial board.

- Wumpus is at (1,1)
- PITs are at (3,1) ,(3,2),(2,4)
- GOLD is at (4,2)

Challenge 4 – Can you model the partially observable Wumpus world for PPDL? Describe.

Submission Instructions

Submit a single zip folder with the following files:
- domain_move.pddl
- problem_move_ab.pddl
- problem_move_d.pddl
- domain_fetch.pddl
- problem_fetch.pddl
- domain_wumpus_simple.pddl
- problem_wumpus_simple.pddl

plan files as txt documents
move_plan.txt
move_d_plan.txt
fetch_plan.txt
wumpus_simple.txt

Grading

Part	Weight
Part 0	20%
Challenge 1	20%
Challenge 2	20%
Challenge 3	20%
Challenge 4	20%