CENG317 – ARTIFICIAL INTELLIGENCE

HOMEWORK I

Due Date: 03.11.2021 – 23:59

In this homework, you will be creating simple agent that cleans the environment similar to agent that we did in our first online coding session.

First, you need an environment which is a matrix in this case. In example below, you see a simple environment (4x4) * where 1 (one) means dirty and 0 (zero) means clean. Your locations of dirt must be generated randomly.

1	0	1	1
0	0	0	1
1	0	1	0
1	1	0	0

Your agent will begin random position in the environment. And if it sees 1 it will decrement it to zero (it means your agent has cleaned the place). You have the total number of 1s. You can program your loop according to this information. For moving, your agent has 4 different actions:

- Go Right
- Go Left
- Go Up
- Go Down

In each location that agent moves, it will randomly decide which action it will take. Also, you must control the border locations. If your next location will take you out of border, you must take another action.

Finally, you will show the total number of steps that has taken to clean the whole place and the place of agent at every legal move.

Notes:

- ***You can use Java or Python.***
- ***Your coding is to be neat and understandable.***
- ***Please do not ask for an extension.***
- ***Example output of 4x4 environment is given on the next page.***

- *Your environment can be maximum 8x8*

```
run:
0 1 1 1
0 1 0 X
1 0 0 1
1 1 1 1
Agent has the location 1-3
------------------------------------------------------------------
0 1 1 1
0 1 X 0
1 0 0 1
1 1 1 1
Agent has the location 1-2
------------------------------------------------------------------
0 1 1 1
0 1 0 0
1 0 X 1
1 1 1 1
Agent has the location 2-2
------------------------------------------------------------------
0 1 1 1
0 1 0 0
1 0 0 X
1 1 1 1
Agent has the location 2-3
------------------------------------------------------------------
```

Figure 1 - Example of Output

- *Your environment can be maximum 8x8*