CS4023D Artificial Intelligence

Assignment 1

Github Repo

Answer 1

After running 2 simulations for 1000 timesteps each, these are the results for all possible combinations.

```python
def main():
    # Iterates through all possible combinations
    for startPosition in range(2):
        for A in range(2):
            for B in range(2):
                Bot = bot(startPosition, [A, B], False)
                Bot.runSimulation()
                print()


if __name__ == '__main__':
    main()
```

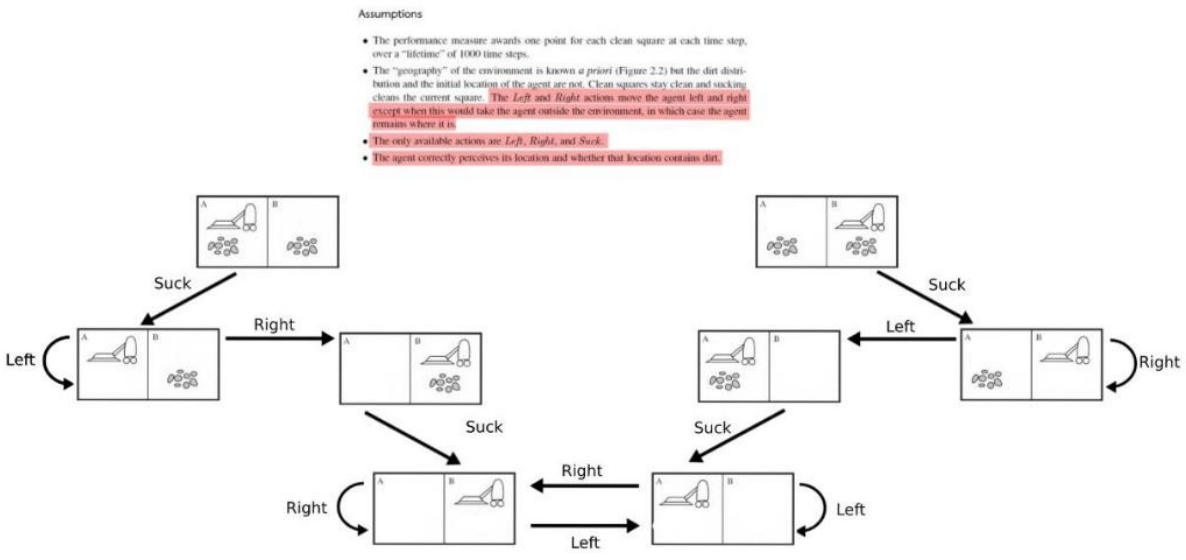
```
> Qn1 main* python VacuumBot.py
Environment [A:Clean, B:Clean]
Start Position:  0
Performance Score:  0

Environment [A:Clean, B:Dirty]
Start Position:  0
Performance Score:  1

Environment [A:Dirty, B:Clean]
Start Position:  0
Performance Score:  1

Environment [A:Dirty, B:Dirty]
Start Position:  0
Performance Score:  2

Environment [A:Clean, B:Clean]
Start Position:  1
Performance Score:  0

Environment [A:Clean, B:Dirty]
Start Position:  1
Performance Score:  1

Environment [A:Dirty, B:Clean]
Start Position:  1
Performance Score:  1

Environment [A:Dirty, B:Dirty]
Start Position:  1
Performance Score:  2
```

Simulation 1

```
> Qn1 main* python VacuumBot.py
Environment [A:Clean, B:Clean]
Start Position:  0
Performance Score:  0

Environment [A:Clean, B:Dirty]
Start Position:  0
Performance Score:  1

Environment [A:Dirty, B:Clean]
Start Position:  0
Performance Score:  1

Environment [A:Dirty, B:Dirty]
Start Position:  0
Performance Score:  2

Environment [A:Clean, B:Clean]
Start Position:  1
Performance Score:  0

Environment [A:Clean, B:Dirty]
Start Position:  1
Performance Score:  1

Environment [A:Dirty, B:Clean]
Start Position:  1
Performance Score:  1

Environment [A:Dirty, B:Dirty]
Start Position:  1
Performance Score:  2
```

Simulation 2

State Space Search Graph



Answer 2