Coding Work #1

HOWTOs

Q: How to run the python code?

A: You can use any PYTHON_ENV + IDE you preferred. My recommendation is Anaconda + VSCODE/PyCharm

Q: How to run this project?

A: See below.

You can always run your code with the following command or add it to the configuration in your IDE

```
python main.py -l MAP_NAME -p SearchAgent -a fn=YOUR_ALGOR
```

MAP_NAME is the testing map of pacman, you can choose:

```
tinyMaze
mediumMaze
```

You can find the definition of these maps in directory "layouts"

YOUR_ALGOR is the arg of search method, you can choose:

```
dfs
bfs
ucs
astar
```

For example, if you want to test your code with UCS, you can try:

```
python main.py -l tinyMaze -p SearchAgent -a fn=ucs
```

It should be noted that you can use the heuristic function for astar by adding "heuristic" as another argument. For example:

```
python main.py -l mediumMaze -p SearchAgent -a fn=astar,heuristic=manhattanHeuristic
```

where "manhattanHeuristic" is the function implemented in "heuristics.py". You can also design your own heuristics in this python file.

Your task is to implement the undefined the functions in search_func.py including:

```
def depthFirstSearch(problem):
    """Search the shallowest nodes in the search tree first."""
    "*** YOUR CODE HERE ***"
    raiseNotDefined()


def breadthFirstSearch(problem):
    """Search the shallowest nodes in the search tree first."""
    "*** YOUR CODE HERE ***"
    raiseNotDefined()


def uniformCostSearch(problem):
    """Search the node of least total cost first."""
    "*** YOUR CODE HERE ***"
    util.raiseNotDefined()


def aStarSearch(problem, heuristic=nullHeuristic):
    """Search the node that has the lowest combined cost and heuristic first."""
    "*** YOUR CODE HERE ***"
    raiseNotDefined()
```

To start with the code, please read the comments in "depthFirstSearch".

You can also refer to "util.py" for useful functions and classes. For other functions and classes you want to add, please always put them in "external_lib.py". DONT CHANGE OR WRITE YOUR CODES IN OTHER FILES.

The following files should be uploaded to CANVAS:

```
heuristics.py
search_func.py
external_lib.py
```

For any questions, feel free to contact with me and TAs. We would like to thank the great efforts from UCB-CS188 teaching group.

GOOD LUCK AND HAVE FUN!