BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS
Artificial Intelligence (BITS F444/ CS F407)
I Semester 2018-19
Programming Assignment-3
Coding Details
(October 20, 2018)

Instruction: Type the details precisely and neatly

1. ID _____2015B4A70602P_____
Name _____ABHINAV GUPTA_____

2. Mention the names of Submitted files :
    a. <AlphaBeta.PY>
    b. <main.py>
    c. <general_func.py>
    d. <Initial_state.py>
    e. <minimax.py>
    f. <successor.py>
    g. <Terminal_test.py>
    h. <coding_details.docs>

3. Total number of submitted files: __8_____
4. Name of the folder :_____project 3_____
5. Have you checked that all the files you are submitting have your name in the top?(yes/no) yes
6. Have you checked that all the files you are submitting are in the folder as specified in 4 (and no subfolder exists)?(yes/no)yes

7. Problem formulation
    a. State representation: list of list represented by "lis" AI color=1 and human color =2, 0 represents empty

    b. Pseudo code of your successor function
    I am first checking all type 2 moves from current state and all type 1 ones I have made 3 functions for this purpose
    1- calculate all type 2 moves from given POSITION
    2- calculate all moves (type 1 and type 2) from given POSITION
    3-calculate all moves from given STATE

    c. Terminal states generation process (manual/ automated) . Also describe if it is one time generation of terminal states or you are generating the terminal states every time you reach next state.
    Generation process is automated
    I am checking whether that state is terminal or not so at every state I am checking at every state

    d. Data structure to store terminal states (hash table or any other?)
    dictionary

e. Method to access terminal states and corresponding utility values
To access terminal state call Terminal_test(lis)
To get utility values call Utility(lis,color,opcol)

8. Minimax Technique details

a. Method to ensure the correctness of terminal test (describe in maximum 4 lines)
Terminal test only checks whether one player is completely empty or not because second condition given in the pdf file is unnecessary that situation is never going to happen

b. Are you limiting the depth using any heuristic to evaluate the approximate value of the state? At which depth are you deciding to return back?
I am not changing depth dynamically

c. Total number of nodes generated to play one game:
d. Write the statistics here as asked
*please see last print output in code

R1 = R2 = R3 =
R4 = R5=

e. Code status (implemented fully/ partially/ not done)
implemented fully except analysis part

9. Alpha Beta technique details:
a. Explain the logic used for pruning (in maximum four lines)
whenever alpha becomes greater than beta I am pruning hence reducing the time

b. Total number of nodes generated to play one game

c. Write the statistics here as asked
* please see last print output in code

R6 = R7 = R8 =

d. Code status (implemented fully/ partially/ not done)
implemented fully except analysis part

10. Comparative analysis

Fill in the following information based of 10 independent games

**I left the analysis part but we can check separately working of minimax and alpha beta pruning depending on which algo you want to run

	Minimax Algorithm	Alpha Beta Pruning
Average number of nodes created		
Average time taken		
Number of times machine wins (player M)		

11. GUI details
    a. Created the GUI (yes/ No):No
    b. Have created it according to the specifications?(yes/No)
    c. Which module of Python is used for creating graphics?
    d. Is this under the standard Python library or not?
    e. If not, why?
12. Graphics details:
    a. Is turtle graphics working fine for displaying the board and coins?

    b. How have you calibrated the board and accepted human input to play the game?

    c. How are you showing the board?

    d. How are you showing the move of the machine?

    e. How are you showing the move of the human player?

13. Compilation Details:
    a. Code Compiles (Yes/ No):_____Yes_____
    b. Mention the .py files that do not compile:_____None_____
    c. Any specific function that does not compile:_____None_____
    d. Ensured the compatibility of your code with the specified Python version(yes/no)___No (Mine is python 3.61)_____
    e. Instructions for compilation of your files mentioning the multi file compilation process used by you (We may use the replica of these for compiling your files while evaluating your code)
    j
    ust enter 1 or 2 or 3 for testcase , alpha beta and minimax respectively

14. Driver Details: Does it take care of the options specified earlier(yes/no):_____yes___
15. Execution status (describe in maximum 2 lines)
    it shows each step of game in nice format you have to specify move as described in main.py*** please read that***

16. Declaration: I, _____Abhinav Gupta_____ (name) declare that I have put my genuine efforts in creating the python code for the given programming assignment and have submitted only the code developed by me. I have not copied any piece of code from any source. If the code is found plagiarized in any form or degree, I understand that a disciplinary action as per the institute rules will be taken against me and I will accept the penalty as decided by the department of Computer Science and Information Systems, BITS, Pilani.

ID_____2015B4A70602P_____ Name:_____Abhinav Gupta_____

Date: _____20/10/2018_____

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Should not exceed four pages