**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI**

Batch No. :

**DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS**

**Artificial Intelligence (BITS F444/ CS F407)**

**I Semester 2018-19**

**Programming Assignment-4**

**Coding Details**

**(November 2, 2018)**

*Instruction: Type the details precisely and neatly*

1. ID \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2016A7PS0025P\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_SANTHATI KALI VARA PURUSHOTHAM\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Mention the names of Submitted files :
   1. <filename.ext> 2016A7PS0025P.PY
   2. <filename.ext>
   3. <filename.ext>
   4. <filename.ext>
   5. <filename.ext>
   6. <filename.ext>
   7. <filename.ext>
2. Total number of submitted files: \_1\_\_\_\_\_\_\_\_\_\_
3. Name of the folder :\_\_\_\_\_\_\_2016A7PS0025P\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Have you checked that all the files you are submitting have your name in the top?(yes/no) YES
5. 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
6. Problem formulation
   1. List of variables (Specify all variables):

S – state

Arr – array

N -length of square side

* 1. Value domains of variables (Also list the variables against each value domain correspondingly)

Arr in statefunction

N in statefunction

* 1. Mention the constraints

sumConstraint and allDiff

1. Data structure used
   1. Constraint graph node structure:
   2. Constraint graph edge structure:
   3. Constraint graph (Adjacency list/ adjacency matrix/ any other(specify)
   4. How are you maintaining value domains as you go with search process?
2. DFS + backtracking technique details
   1. Variable ordering used (List heuristics used):
   2. Node structure for DFS:

* 1. Method for assignment of a value to a variable and backtracking:
  2. How is edge node of your adjacency list (constraint graph) useful in deciding upon which constraint module( or modules) to use for testing the violation of the constraints while you assign a value to a variable?
  3. Total number of nodes generated for assignment of values to all variables:
  4. Write the statistics here as asked

R1 = 100 R2 = 64 R3 = 245

R4 = 100 R5= 100

* 1. Code status (implemented fully/ partially/ not done)

Implemented fully

1. DFS+ Backtracking using constraint propagation:
   1. Explain the method for constraint propagation. How are you updating the value domains? What do you do with the value domains of the variables when you backtrack while performing DFS?

It checks for 1heuristics if it fails then it backtracks and checks for others

* 1. Total number of nodes generated using the above technique
  2. Write the statistics here as asked

R6 = R7 = R8 =

1. Code status (implemented fully/ partially/ not done)

1. Comparative analysis

Fill in the following information

|  |  |  |
| --- | --- | --- |
|  | DFS+BT | DFS+BT+Constraint propagation |
| Average number of nodes created | 245 | 100 |
| Average time taken | 1098 | 610 |

1. Compilation Details:
   1. Code Compiles (Yes/ No):\_\_\_yes\_\_\_\_\_\_\_\_\_\_\_
   2. Mention the .py files that do not compile:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. Any specific function that does not compile:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. Ensured the compatibility of your code with the specified Python version(yes/no)\_\_\_\_yes\_\_\_\_\_\_\_\_
   5. 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)
2. Driver Details: Does it take care of the options specified earlier(yes/no):\_\_\_yes\_\_\_\_\_\_\_\_
3. Execution status (describe in maximum 2 lines)
4. Declaration: I, \_\_\_\_\_\_\_\_SANTHATI KALI VARA PURUSHOTHAM\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (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\_\_\_\_\_\_\_\_\_\_\_\_\_2016A7PS0025P\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name:\_\_\_\_\_\_\_\_\_SANTHATI KALI VARA PURUSHOTHAM\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_2-11-2018\_\_\_\_\_\_\_\_\_

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