**Artificial Intelligence**

**Report for Project 03: Golomb Ruler**

**Question 1: Plain Backtracking (BT) [45 points]**

**Analysis:**

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| **Backtracking** | | | | |
| **Test Cases** | | **Running Time (in sec)** | **Memory** | **Critical Analysis** |
| **L** | **M** |
|  |  |  |  | Backtracking has a runtime complexity that is exponential in nature, as it expands all nodes. Therefore, max value of L and M for which the code executes within a few seconds are: L=, M= |
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**Question 2: BT + Forward Checking (FC) [45 points]**

**Analysis:**

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| **Backtracking with Forward Checking** | | | | |
| **Test Cases** | | **Running Time (in sec)** | **Memory** | **Critical Analysis** |
| **L** | **M** |
|  |  |  |  | We do not proceed ahead with assignment of variables in case no more legal values are left on assigning a particular variable. This prunes some of the branches of the backtracking search tree and thus BT+FC reduces the runtime compared to BT. The max and L and M values for which the code executes within a few seconds are: **L=, M=** |
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