**Lab 03**

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| Student ID: | B08611027 |
| Total Score: |  |

**Note:**

Most of the explanations in this lab is optional. However, giving reasonable explanations to your answer or programs will earn you partial credits when your answer is incorrect.

1. **Multiple Choice (10 points, 5 points each question)**

|  |  |  |  |
| --- | --- | --- | --- |
| # | Answer | Explanation (Optional) | Score |
| 1 | D |  |  |
| 2 | B | A.shape = (1, 2) |  |

1. **A Piece of Cake (28 points, 4 points each question)**

|  |  |  |
| --- | --- | --- |
| # | Explanation (Optional) | Score |
| 1 |  |  |
| 2 |  |  |

1. **Programming Exercise (30 points, 6 points each question)**

|  |  |  |
| --- | --- | --- |
| # | Explanation (Optional) | Score |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

1. **Markov Chains (32 points, 6 / 6 / 4 / 2 / 4 / 6 / 4)**

|  |  |  |
| --- | --- | --- |
| # | Explanation (Optional for questions 1, 2, and 5) | Score |
| 1 |  |  |
| 2 |  |  |
| 3 | Which state has the highest probability in step 8?  State 0  What is the probability to reach the final state () in step 8?  0% |  |
| 4 | How many steps does it take for the probability of being in the final state (i=9) to be at least 1%?  11 steps. |  |
| 5 | Try initialing x0 with random numbers and keep , will the probability distribution be different? Give an explanation.  因為初始位置的不同，所以最終穩定狀態的比例也會有所不同。 |  |
| 6 |  |  |
| 7 | Which state has the highest probability in step 8?  1、2一樣多  What do you observe from the two figures? Does the result meet your expectation?  兩張圖的趨勢相近，並沒有太大的差異。跟預期的差不多。 |  |