



Princess Sumaya جامعة
University الأميرة سميرة
for Technology للتكنولوجيا

Princess Sumaya University for Technology
The King Hussein School for Computing Sciences
Data Science Department
Lab 3 – Hill-Climbing Search

Lab Objectives

- To acquire experience using Hill-Climbing search.
- To acquire experience formulating and representing problems.

Lab Instructions

- Create a new notebook and name it by your “ID-FirstName-LastName”.
- Write your name and ID in the first cell in your notebook.
- You must upload your solutions to e-learning as ".ipynb".
- Each lab assignment is of 10 marks.
- You are supposed to submit your solution by **Monday (6/12/2021) at 11:59 PM.**
- Be prepared to discuss your solution, if you fail to answer the questions about your solution then it will be reduced or canceled.
- All acts of cheating and/or plagiarism will be graded zero.



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Lab Exercise

Modify the given code to solve the 8-puzzle using Steepest-Ascent Hill-Climbing search algorithm. Consider the following in your solution:

- Initial state:

2	1	5
6	0	4
3	7	8

Where 0 is the empty tile.

- Goal state:

1	2	3
4	5	6
7	8	0

- Heuristic function is the sum of the distances of the tiles from their goal positions (Manhattan distance).
- The output of your solution should be as follows:

Solution: [1, 2, 3, 4, 5, 6, 7, 8, 0]

Cost: 0