

# CSC325 Artificial Intelligence – Coursework 1

**Deadline: 7 March 2022, 11am GMT**

This coursework constitutes 15% of the overall module mark

Submission via Canvas by 11am on 7 March 2022

This is an individual coursework. Any code taken that is not your own needs to be attributed. All sources need to be referenced.

## Statement about Academic Integrity

By submitting coursework for this module, electronically and/or hardcopy, you state that you fully understand and are complying with the university's policy on Academic Integrity and Academic Misconduct. The policy can be found at

[https://www.swansea.ac.uk/academic-services/academic-guide/  
assessment-issues/academic-integrity-academic-misconduct](https://www.swansea.ac.uk/academic-services/academic-guide/assessment-issues/academic-integrity-academic-misconduct)

## Task Description

Implement in Python a solution to the following modified  $n$ -queens problem using one of the search methods covered in the lectures/labs.

### Modified 8-queens problem

Let  $k$  be the last digit of your student ID, and let  $l$  be the second-last digit of your student ID. The modified 8-queens problem requires you to place a queen on  $((k \bmod 8) + 1, (l \bmod 8) + 1)$ . This queen has to remain in the location and only the other queens may be moved to find a solution. The program should display and highlight the position of the queen as determined by the student ID and keep this fixed, and then randomly place queens in the other columns. From this initial configuration, it should calculate a solution or all solutions.

## Submission and Marks

Submit a ZIP archive via the Canvas submission link including

- the Python code including comments explaining the implemented algorithm (**up to 6 marks** for finding a single solution, **up to an additional 4 marks** for finding all solutions);
- a text file showing a run of your program (**1 mark**); and
- a brief description (max. 250 words) of the algorithm used to solve the problem, including the type of algorithm and some complexity considerations. (**4 marks**)