

Assignment 2, Constraint Satisfaction For Decision Making (CE884-7-SP), 2012-13
Set by Edward Tsang, University of Essex

1. Introduction:

This assignment accounts for 10% of your total marks in this course. This assignment must be submitted electronically. The deadline of this assignment is *15:59:59, Friday 22 March 2013*. You must submit a report by the above deadline.

2. Objective:

The objective of this assignment is to test your ability to solve constraint satisfaction optimization problems.

3. Your task:

The attached Excel file contains a spreadsheet called Portfolio20, which contains 20 projects in a Project Selection Problem as defined in Assignment 1. Your task is to formulate the problem in this spreadsheet as a constrained optimization problem. You should solve this problem and report a subset of projects that would fit into your budget of 8,000,000 and maximize total revenue.

4. Programming language and programming platform:

You may use any programming language that we provide in our laboratories or any tools in Excel to solve the problem. This would allow me to run your program. If you use any programming language that we do not provide, you must seek permission from me in advance.

5. Submission requirements:

- a) You must submit a report of no more than 500 words explaining how you would solve the problem. State clearly any constraint satisfaction techniques that you might be using – there is no need to explain the techniques but it is important to explain how each technique is applied to this specific problem. Explain how your program should be run and how the output should be interpreted. Your program should produce output that helps others to understand how your algorithm works;
- b) You must state clearly what the best project portfolio that you have found, and the revenue that it brings;
- c) If you have written programs, you must submit your programs, in both source code and executive form if applicable.

6. Assessment criteria for this assignment:

Your work will be assessed by the following criteria:

- a) Clarity – clarity is essential. You must clearly address the requirements stated above. No work will score 70% or above unless it is clearly explained;
- b) Correctness – your program must do exactly what you intended it to do. Please be reminded that I shall only be able to assess the correctness of your work if it is clearly explained;
- c) Technical knowledge – Marks will be awarded to the use of appropriate technique or packages. As a last resort, you may attempt to find the optimal portfolio manually. If you do so, try to apply constraint techniques that you have learned in the module and explain your approach clearly;
- d) Quality of the portfolio generated.

7. Notes:

- You may be asked to defend your submission in an interview.
- Please refer to the Student's handbook on the School's Policy on Plagiarism and Late Submission.