**Lincoln School of Computer Science**

**Assessment Item Briefing Document**

| Title: CMP1032M Problem Solving Assessment Item One - Presentation | Indicative Weighting: 100% |
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**Learning Outcomes:**

**On successful completion of this assessment item a student will have demonstrated competence in the following areas:**

- [LO1] characterise a problem in the context of possible solution mechanisms;

- [LO2] model a problem solution using appropriate vocabulary;

- [LO3] deliver a presentation using appropriate professional standards;

- [LO4] work effectively as a member of a team.

**Introduction**

For this assessment you will not only have to try to solve problems, but more importantly to think about and to reflect upon *how* you were able to solve the problems. You will be reporting this reflection in this assessment.

You are advised to keep a learning log to record your thinking as you progress through the problems. Here you can begin the gradual (and sometimes painful) process of translating explanations of how you solved the problems into the **more precise vocabulary and methodology introduced to you through the lecture programme**. These musings in effect form the raw material for you to refine and present an account of the solution process that you submit as your answer.

As we know problems rarely present themselves in neat packages with immediate easy solutions. These problems will be no different. Much of the information given to aid the problem solving process will be in the form of clues that are purposely unclear or ambiguous and will require dialogue with your tutors for clarification or confirmation of any answers found. It may be almost impossible to solve the problem without such guidance but by all means prove me wrong.

Good listening skills and attention to detail are valuable attributes to cultivate, as it is unlikely that anything given to you, including off-hand comments in the lecture theatre will be superfluous. Almost everything said has a purpose – even during the introductory session where you worked on a selection of puzzles my comments were targeted towards giving you hints to complete this assessment (remember I did tell you to bring a pen and paper to take notes!).

**Your tasks**

You have a total of three tasks to do in order to successfully complete this assessment item.

**Task One** – find, interpret and use a hidden code using a series of clues as stepping stones to a final solution. To be able to do this you will have to perform three fundamental activities. These are:
1. Find the hidden code.
2. Find out how it is used.
3. Write a code snippet that demonstrates how the code is used.

This first task involves you using any means at your disposal, short of violence, to make sense of the clues and use them collectively to reveal the hidden code. There are two rules that MUST be adhered to in solving the puzzles that will give you the hidden code:

> RULE 1: The home phone number and mobile number of all staff working on this module are off limits – do not ring them.

> RULE 2: The family, sporting and social colleagues of all staff members working on this module are similarly off limits. If you have questions to ask about us, our habits, preferences and predilections you are welcome to ask us or our work colleagues but our social circle is out of bounds.

The last part of this task is for you to use the interpretation to show us in a code snippet, in any programming language that you chose (even pseudocode), that the hidden code CAN BE USED to achieve a particular aim. That is **prove** that your group understands how it operates in context.

**Task Two** – give a group presentation that uses the processes by which you solved the clues as a means to identify your understanding of the key terms and principles that have been used in the lecture programme for this module, **and** present your code snippet. You do not need to physically submit your code snippet – only present it during your presentation.

**Task Three** – EACH INDIVIDUAL must provide a single written sheet of paper to the module co-ordinator at your presentation session. On this sheet you will write a brief summary of your contribution to the group processes you have engaged with. This should include an indication of where you believe you had both strengths and weaknesses, and what you will do in the future to improve your personal performance in group work. Additionally, your GROUP should provide a single sheet of paper that indicates a SHARED view of how well each person in the group performed. This will be done by apportioning between all group members a total of 100 points (e.g. Member1: 20, Member2: 20, Member3: 15, Member4: 15, Member5: 30). The points should reflect the <agreed> amount of input into this assessment item by each member of your group. All group members must sign this sheet.

**The clock is ticking.** Since the second and third parts of Task Two rely on you having successfully identified the correct code, you will be given the solutions to task one at the end of Week 9 (Friday November 24th). This will ensure you have sufficient time to finish all the tasks.

**Your presentation should be in three sections (of potentially unequal length)**

FIRST SECTION
Whilst solving the problems and decoding the code you will be engaged in problem solving strategies. Your presentation should be an account of what these strategies were, **expressed in the language of problem solving as demonstrated to you in the lecture programme**.

Each time you solve one of the mini problems you are doing it somehow - tell me what that ***how*** is. You will get as much credit for articulating the methods you did not use as the ones you did!

Treat the solution process to the answers as opportunities to show your understanding of the problem solving concepts as presented in the lecture programme. If you believe the particular way you solved Clue 2 allows you to showcase your understanding of say, abstraction, you do not have to keep repeating to me through your other answers the notion of abstraction – use your other answers to demonstrate your collective understanding of another concept or key phrases.

Use your words economically to ensure you express as many concepts exposed to you in the module as possible, without repeating unnecessarily or presenting diary entries of the "this is what we did" variety. I know it may sound overwhelming but the secret is to have a go as soon as you can and devote a regular amount of time to tackling the problems and recording your thoughts in your log. Work that merely lists diary entries, of the type "we went to Google and did this, then did that," etc. will attract no marks. You should concentrate on the demonstration of your understanding of the key terms in the lecture programme and use the problems set here as means to exemplify your understanding.

SECOND SECTION

You should show me the hidden code and tell me what it represents.

THIRD SECTION

You should demonstrate your understanding of the representation by using the hidden code as part of a code snippet that performs the function identified above. This code snippet can be in any programming language you chose, or simply in a form of pseudocode, but to gain higher marks you should ensure that you have used the hidden code, and that your algorithmic structure is easily understandable.

**Happy problem solving.**

STAGE ONE

Here are six Clues to the hidden code.  Each answer is a 2 digit number.
The order of these six clues is important, but there is no pattern to the digits at this stage – hence you cannot find the answer to clues one and two and then derive the answer to clue three.
In all cases, where the words I or me appear, they specifically relate to Kevin Jacques.

**Clue 1**

If the man who wrote of the adventures of Captain O'Hagan got together with 3 actors: one who is most famous for his exploits drinking blood; one famous for eating a cockroach; and one most famous for providing food to a family of Nevada ranchers; and they met to discuss their musical preferences, they might all connect with a band that at the time of writing this clue were filling my headphones.

Take the ninth part of the second major collection of this musical connection and make the result the key to Vigenère with this:

# ANOKMYHYIGHFQOQEYSPVVLCIXABXWZSE

**Clue 2**

If Boole wrote the answers to these questions, what non-zero number might he SAY was their combination? Cube and subtract 21.

   a) For each integer *n* where $n > 2$; the equation $a^n + b^n = c^n$ has no non-zero integer solutions a, b and c.  True or False?

   b) How Keira Knightley, Maxine Peake and the *Bombyx Mori* would count my years of happiness minus (as 0356191605 is to 3, so 0575049804 is to ?)

   c) What is the difference between the current height of a locally significant *de Fecamp* legacy and 0.892473 times the height of something that opened when Chauncey Depew stopped talking to an audience that was largely (and offensively) devoid of women.

**Clue 3**

At what level did Saône-et-Loire's famous 'comic book character' fail to achieve a dream twice exactly ten years apart?  Add to this (the number of days I had been alive on the day most of you threw sweets at one of your cohort divided by 2866) plus my hat size minus 13.
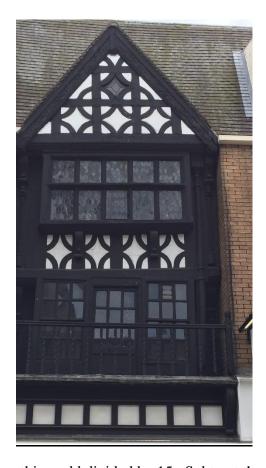
**Clue 4**

Sequence A =    Jeremy Larner
David Ward
Robert Towne
Frank Pierson
_____?.

$\left( \sum \right.$ (plain text substitution of the 5th value of Sequence A) $\left. \right)$ MOD 33

**Clue 5**



The year that this house did something odd divided by 15.  Subtract the second number that is palindromic in both base 6 and base 36.

**Clue 6**

If you followed this table correctly, where might you be LED?  Divide by the last number in the antipodean disaster sequence that started "**.4lbW24W.W.**".

| A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|
| 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |

STAGE TWO

If the function

$$f(a,b)$$

is defined by the following text: "from a series of values, take the value at position *a* and the value at position *b* and swap them leaving all other values unchanged" then perform the following:

$$f(4,6)$$
$$f(9,8)$$
$$f(7,9)$$

*in that order*, on the concatenation of clues 1 to 6.

The result is your hidden code.

Now interpret what it means and suggest what you can do with it. As a clue: Susan's next will be a Tuesday and she will probably write code.

STAGE THREE

Write a short code snippet in any programming language, or pseudocode, that shows this hidden code in action.

**Useful Information**

This assessment is a group assessment component. Your work must be presented according to the School of Computer Science guidelines for the presentation of assessed written work.

Please make sure you have a clear understanding of the grading principles for this component as detailed in the accompanying Criterion Reference Grid.

If you are unsure about any aspect of this assessment component, please seek the advice of a member of the delivery team.

**Submission Instructions**

The format for submission of this work will be discussed in the lecture programme for this module. The week that the presentations must be done in is included in the School Submission dates on Blackboard.

One member of your group should submit a copy of your Presentation Slides in electronic format through the CMP1032M Blackboard Site.

*DO NOT include this briefing document with your submission.*