



UNIVERSITY OF
LINCOLN

Department of Computing & Informatics

Assessment Package Briefing Document CMP1013 Introduction to Programming [Draft]

Title : Software Design

Indicative Weighting: 6 CATS Points

Learning Outcomes:

On successful completion of this learning package a student will be able to:

- [LO2] implement programs consisting of multiple procedures
- [LO3] use simple testing techniques to evaluate programs

Introduction

Searching for Treasure Game

Five to seven pieces of treasure have to be randomly 'buried' on an 'island'. The treasure available includes three rings [R] each worth two units of value, four diamond encrusted swords [D] worth five units of value, two gold statues [G] worth 10 units of value and one treasure chest [T] worth twenty units of value. Each piece of treasure is locatable by reference to its coordinates in an eight by seven grid representing the island. The treasure can only be buried either north to south or east to west given the constraints of the grid representation.

To play the game a single player is given ten attempts to find the treasure. The first five attempts are randomly chosen by the system. The last five attempts are made by the player entering a two co-ordinate reference (row, column).

A ring takes up a single space, a gold statute two spaces, a sword three spaces and the treasure chest four spaces when buried on the island.

After each successful attempt that part of the treasure exposed is shown on the display. Given the particular sizes of the treasure some attempts will only be a partial success.

At the end of the ten attempts the following information about the treasure needs to be displayed:

- number of treasure items unearthed (partial or whole)
- individual value of each piece unearthed (partial or whole)
- total value of any treasure discovered

If one part of a chest is uncovered for example this would equate to 1/4 of the chest value, i.e. 5 units.

The player should also be given the option of whether to play again or not.

See **Figure 1** below for a sample instance of game play

What you have to do

1. Implement a Java solution, using imperative constructs, to the problem outlined above. Please note it is Not a mandatory requirement to generate the grid **lines** as far as the user interface is concerned.
No Applets are permissible.
2. *Briefly* explain the principles of Black and White box testing.
3. For the following code fragment **generate data** to perform white box testing

```
int a, b, c ;
int largest ;

    if (a > b)
        if (a > c)
            largest = a;
        else
            largest = c;
    else
        if (b > c)
            largest = b;
        else
            largest = c;
```

What you have to submit

In *hard copy* format

- 1 a A well commented program listing for your game.

On CD

- 1 b A copy of your BlueJ project files. This must include a copy of your source file. Please note I must be able to run your solution using BlueJ. No command prompt versions will be accepted. Submitting such will lead to a failure of this component of the assessment.
- 2 Written responses to requirements 2 and 3 above

General

It is important that you read and are fully aware of the Departmental policy document on the presentation of assessed work.

I expect to see a contents page, page numbering and the **contents presented in the order** requested above.

Grading Guidelines

This unit is graded using the principles of criterion referencing. You are reminded that it is your responsibilities to clarify with the unit delivery team any aspects of the Criterion Reference Grid

you may find unclear.

Hand In

An appropriately completed hand in sheet must be included with your submission of this work.
DO NOT include this briefing document with your submission.

Figure 1

An example island showing the buried treasure in black (hidden from the player).

	A	B	C	D	E	F	G	H
1								
2			*	*	S	S	S	
3			R					
4	D	D						T
5					G			T
6		R			G			T
7								T

Note:

Treasure items shown red have been exposed during game play.
Squares shown with an asterisk represent unsuccessful attempts.
Four more attempts are still available.