BJSS Coding Tests

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Prepared for

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Original Author: Paul Lucas

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BJSS Limited
Coronet House
Queen Street
LEEDS
LS1 2TW

☎ +44 (0)113 297 9797

http://www.bjss.co.uk

Modification History

Version	Date	Author(s)	Comments
0.1	01-Mar-2010		First version pre-review.
0.2	17-Mar-2010		Added XML Transformation question.
1.1	01-Apr-2010		Issued
1.2	22-Jun-2011		Revised wording of questions

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1. Introduction

1.1 Pre-requisites

The candidate is expected to have access to a computer, email, a telephone (in order to speak to the Organiser should the need arise) and software that can create Java or C# programs.

It is also expected that the candidate will have a suitable professional environment in which to work.

The candidate will be supplied with a telephone number to contact the organiser

1.2 Instructions

The purpose of this assessment is to complete a simple programming assignment. Candidates should choose one of the following programming problems:

- Pricing a basket
- XML Transformation

The details of these assessments are elaborated in section 2.

You are required to:

a) Produce working, **object-oriented** source code to solve one of the problems

b) Walk through your code with the assessor, answering questions on the code and programming/design choices as requested by the assessor

These should be supplied to the organiser in electronic format, preferably as a complete project from your IDE of choice.

If you have any issues with the programming assignment, please ensure that you inform the organiser immediately.

You are expected to work on this task on your own, without help or advice from others. If you need clarification on any aspect of the assessment, please seek help from your organiser.

You are given 2 days to complete this task. Even if the solution is not complete, the workings to that point should be submitted.

2. Programming problems

2.1 Pricing a basket

Write a program and associated unit tests that can price a basket of goods taking into account some special offers.

The goods that can be purchased, together with their normal prices are:

- Soup – 65p per tin
- Bread – 80p per loaf
- Milk – £1.30 per bottle
- Apples – £1.00 per bag

Current special offers:

- Apples have a 10% discount off their normal price this week
- Buy 2 tins of soup and get a loaf of bread for half price

The program should accept a list of items in the basket and output the subtotal, the special offer discounts and the final price.

Input should be via the command line in the form `PriceBasket item1 item2 item3 …`

For example:

```
PriceBasket Apple Milk Bread
```

Output should be to the console, for example:

```
Subtotal: £3.10
Apples 10% off: -10p
Total: £3.00
```

If no special offers are applicable the code should output:

```
Subtotal: £1.30
(No offers available)
Total price: £1.30
```

The code and design should meet these requirements, but be sufficiently flexible to allow future changes to the product list and/or discounts applied.

The code should be well structured, commented, have error handling and be tested.

2.2 XML Transformation

Write a utility and associated unit tests to create a pluggable, multi-threaded application to transform input XML using XSLT.

The utility should start by transforming files and should accept an input directory, a path to an XSLT file and an output folder to write the transformed results.

(Note: To transform the XML itself, the platform's default XSLT processor can be used - there is no need to write your own)

The XML files should be processed in parallel using a suitably multi-threaded approach.

The code should be structured so it can easily support:

- Alternate input/output mechanisms
- Alternate transformation engines

The code should be well structured, commented, have error handling and be tested.