# Foundation Year in Computing Sciences

# Foundation Programming – G6065

# Autumn term 2014 – Programming Project 1

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| **Set:** | Monday 12 October 2015 |
| **Due:** | Term 1 Week 6 – Thursday 29 October 2015 by 4PM – Informatics Admin office |
| **Format:** | A printed, hardcopy, Word document. |
| **Learning Outcomes Assessed** | 1. Employ a range of basic programming constructs to develop a programming solution in a suitable high-level, imperative programming language 2. Transform a program specification into a design using a standard top-down design technique 3. Use a programming environment to edit, debug and compile a simple program 4. Design and use a test plan for verification of a program, and draw conclusions from the outcomes 5. Understand the reasons for, and show ability in documenting programs to a good standard |

# Specification and Tasks:

Design, write and test a program to be used by an interior decorator to estimate the cost of painting a room. The decorator needs to enter the height of the room (between 2 and 6 metres), then the length of two adjacent walls (minimum 1 metre; maximum 25 metres). The program should then calculate the total area of the room’s walls and ceiling.

The program should allow a choice of three paints types:

- Luxury quality which costs £1.95 per square metre

- Standard quality which cost £1.20 per square metre

- Economy quality which costs £0.65 per square metre

The decorator should also be able to choose to use undercoat paint if required, which costs an additional £0.50 per square metre.

An estimate of hours needed for the job should be entered at the keyboard by the decorator. Then the labour cost should be calculated using the estimated hours and an hourly rate of £15 per hour, with a minimum charge of £120.

The program should display an itemised estimate including customer name, materials, labour, VAT and a total.

# What to submit:

A printed, hardcopy, Word document containing your design, C programming code and proof of testing. Your design should include all screen layouts with a story board and a JSP structure chart. The program code should be appropriately commented and the layout should conform to the house style given during lectures. Include a few screen shoots as proof of testing. You are also required to write a short account (about 500 words) outlining the skills you used, highlighting those that you needed to research. Give sources of help found or received.

In addition please submit your code source file by email to me.

# Assessment Criteria

A PASS mark will require:

* A Word document containing:
  + The design
  + The C programming code
  + Proof of testing
  + A written evaluation
* The design must be appropriate
* The program must contain appropriate comments
* The program must have basic functionality.

A higher grade will require in addition:

* A good working user interface
* Good and efficient coding used
* The use of user defined functions
* Consistency between the specification, design and the tested program
* The written account to show a good understanding of the programming concepts used.