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| **Learner Name:** |  |
| **Class Group:** | Software Development (SD) |
| **Assessor:** | Ray O’Connor |
| **Component Title & Code:** | Programming & Design Principles |
| **Assessment Technique:** | Skills Demo | **Weighting:** | 20% |
| **Title:** | Painting Costs Application |
| **Issue Date:** | 21/11/2018 | **Submission Date:** | 12/12/2018 |
| **Learning Outcomes Assessed:** |  |
| **Guidelines/Instructions:**You are required to plan, develop and test a java application which will input the number of rooms in a house, ask the user for the dimensions of each room, calculate the room surface area and cost of painting the house. Details of painting costs are listed below. New customers receive a 10% discount on the cost of painting the house prior to VAT etc. Your solution must incorporate the following input, output, constraints, costs, etc:* Request the customer’s full name and mobile number.
* Ask if a new or returning customer (Boolean variable must be used named newCustomer),
* Prompt the user and input the number of rooms in the house.
* For each room the user must enter the following:
	+ Ask the user to enter the room type from the following: L (living room), K (kitchen) or B (bedroom) as the cost for each room is different.
	+ Prompt and input the length, width and height of each room in metres
	+ The user must then choose 1 or 2 coats of paint.
	+ Windows and doors are not painted so the wall surface area should be calculated as 85% of the total wall area.
	+ The area of the ceiling must then be added to give the total area to be painted.
	+ Calculate painting costs minus discount (if applicable) based on the following:
		- Cost of painting a kitchen is €1.65 per square metre.
		- Cost of painting a living room is €1.55 per square metre.
		- Cost of painting a bedroom is €1.50 per square metre.
* Calculate area and cost of painting each room, sub total cost for all rooms (note 2 coats is twice the cost)
* VAT at the rate 23% is charged on the sub total cost
* Calculate the total cost (sub total cost + VAT)
* Output the area of each room and cost for each based on price per square metre, discount if applied and number of coats of paint.
* Output if a new or returning customer and cost of discount (if discount applied)
* Output the Sub Total
* Output the VAT cost which is calculated based on a rate of 23%
* Output the Total cost of painting the entire house.
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| **Assessment Criteria/Marking Scheme:**A flowchart must be produced and used to develop an algorithm to solve the problem. You are required to use several data types and functions/procedures You should use separate functions/procedures to perform all tasks such including input, calculations and output. All source code must be indented and commented while all variable/method names comply with industry naming conventions.You do not want your solution to crash so try .. catch error trapping code should be incorporated to prevent this.Required * Printout of flow chart and corresponding algorithm
* Printout of Java source code (delete blank lines to reduce number of pages printed)
* Test data with correct calculations shown
* Screenshots of output for relevant test data.

**Marking Scheme**

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| **Algorithm** |  |
| Flowchart | 1 mark |
| Algorithm or detailing all tasks to be completed | 1 mark |
| Complete data dictionary compiled | 1 mark |
| **Accurate programming** |  |
| Program compiles. | 2 marks |
| Appropriate data types chosen for variables. | 2 marks |
| Correct use of input statements with suitable input prompts. | 2 marks |
| Correct use of output statements with output appropriately labelled. | 2 marks |
| Correct use of mathematical, relational and Boolean operators | 2 marks |
| Correct use of selection structures.  | 2 marks |
| **Appropriate testing** |  |
| Suitable test data compiled. | 0.5 mark |
| All computation on test data shown. | 0.5 mark |
| Correct results shown for each piece of test data. | 1 mark |
| Screen shots included that show results of compiled test data used on coded solution | 1 mark |
| **Accepted industry standards for coding** |  |
| Logical sequence to program. |  |
| Code suitably commented. | 0.5 mark |
| Indenting conforms to industry standard | 0.5 mark |
| Clear and consistent input prompts given to user. | 0.5 mark |
| Clear and consistent output from the program, suitably displayed. | 0.5 mark |

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| **Learner Name:** |  |
| **Learner Signature:** |  |
| **Date:** |
| **Note to Learners:*** Assessments will not be accepted without this coversheet
* Plagiarism is the presentation of someone else’s ideas, arguments, concepts or work as your own by failing to reference or acknowledge it properly. All such work must be acknowledged. Any learner, who presents another’s work as their own, will be investigated in line with Cork ETB Assessment Malpractice procedures and may be awarded a zero grade
* Learners should keep copies of all assessment submitted, where applicable
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