

6.3.2.a



Class Group:	061CC & 061CD	
Assessor:	Maura O'Halloran	
Component Title & Code:	Fundamentals of Object Oriented Programming, 5N0541	
Assessment Technique:	Skills Demo	
Weighting:	30%	
Title:	Skills Demo #3	
Issue Date:	28 th of March 2023	
Submission Date:	21 st April 2023	
Learning Outcomes Assessed:	6, 9, 10 and 11	
Guidelines: You are required to design, code and test a solution to the problem detailed on the next page. Submission details are given at the end of the narrative.		
Assessment Criteria	Available Marks	Marks Achieved
Clearly documented source code	3	
Program Functionality	3	
Accurate Programming	20	
Software Testing/Debugging	4	
Learner Name:		
I confirm that: <ol style="list-style-type: none">1. I have been provided with information about Cork ETB's assessment and appeals procedures and my responsibilities with regard to assessment.2. The assessment work produced by me is all my own original work.		
Learner Signature:		Date:
Note to Learners: <ul style="list-style-type: none">• Assessments must be uploaded to the online submission platform, Moodle. Submission details are on the second last page of this document.• 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.• The marking scheme for this skills demo is at the end of this document		

PROGRAM SPECIFICATION

Academic employees of a school consist of a principal and teachers (part time and full time). The following are the monthly pay details for each.

Teachers (Full time)

- A basic monthly salary of €3,343.58.
- Depending on their points on the common basic scale, a teacher will get an additional monthly payment on their wages as shown in the table underneath.

Points on scale	Additional payment
1	€426.67
2	€565.75
3	€666.58
4	€750.00

- A teacher will be required to correct exam scripts at a payment of €10.18 per script.
- If a teacher is absent, €62.68 will be deducted from their pay for each day that they are absent.

Teachers (Part time)

- A part time teacher does not have a basic monthly salary. However, they do enter the hours they worked in the month and are paid €34.03 per hour.
- A teacher will also be required to correct exam scripts at a payment of €10.18 per script.

Principal

A principal gets paid a basic monthly salary of €5, 000. However, depending on the number of teachers in the school, they are paid an additional monthly payment as shown in the table underneath.

Number of teachers	Additional payment
0 - 9	€775.83
10 – 99	€869.33
100 – 199	€1,019.83
200 +	€1,196.67

All employees are taxed at 22% on the first €40, 000 earned, and at 42% on any money earned over €40, 000.

All employees pay 4% PRSI.

Design, code and test a program that will read in the PPS number of an employee (the format of a PPS number is 7 digits followed by a letter). Once a PPS number is entered, the user will be asked if they are calculating the pay details for a principal or a teacher (full time or part time). The program

should then read in the required details and output the employee's PPS number, their gross pay, their tax, their PRSI and their take-home pay. It is up to you how you present their pay details, but the output should be professional.

The program should loop until the user does not want to calculate any further wages.

You are required to use inheritance as effectively as possible.

Submit

Include all of the following in 1 pdf document:

1. The **design/algorithm** of your program. This should include:
 - a. A class diagram showing the members and methods of each class that you intend to implement. You can draw the class diagram using the Papyrus plugin, diagrams.net or any class diagram software.
 - b. You should indicate the access level for each member and the data type of each member.
 - c. You should write an algorithm for each method in the class diagram and for the main program.
 - d. Include any non-members variables in a data dictionary.
2. Your **program code**. Ensure that the code for all your .java files is included with a title above each code. Ensure that all code is suitably commented with an overall comment indicating the author, the date and the purpose of the program and any other comments that you consider relevant. Ensure that each method has a short comment.
3. The **test data** that you developed.
 - a. You are required to develop at least four pieces of test data and you must submit a test for calculating a principal's pay, a full time teacher's pay and a part time teacher's pay. You must state what the test is testing and present the expected results and the actual results.
 - b. You must indicate whether your test data results match the actual results or not.
4. Identify and document at least one bug that you found in your code during implementation, testing, or in the final submitted code. In the case of an error found during implementation or testing, document how you resolved that bug. If a bug remains in your submitted code, document what you think the problem might be, and how you resolved it.
5. Upload that document to Moodle.

Upload your java code.

Do not upload the entire workspace. Locate the source code in the src folder, zip the .java files and upload that zipped file.

Medical Cert/Extenuating Circumstances Form

If you have been granted an extension because of medical circumstances or extenuating circumstances, then you must upload the relevant medical cert/extenuating circumstances form.