Computer Science Division
Department of Mathematics
Faculty of Science
Date: **November 21**, **2022**

Level 3 - Autumn Semester
Course Code: **COMP 301**
"Advanced Programming: Java"
Time allowed: **1 Hour**
Total: **15 Marks**

Midterm LAB Exam A

Name: _____   **Total:**

Design the following classes as part of a payroll system for employees. Specify the type of relationship between the classes and the appropriate modifiers for data members.

N.B. Setter and getter methods are not explicitly defined. You may need to define them for some data members.

1. A class named "Employee" that contains the following.   (**3 Marks**)
   Data Members: ID, name, salary, and bonus.
   Methods: constructors, `payBonus()` to calculate the amount of bonus, and override `toString()` to show the employee's information.

2. A class named "Contract" that contains the following.   (**3 Marks**)
   Data Members: years of service.
   Methods: constructors, override `toString()` to show the contract employee's information, and `payBonus()` to calculate the amount of bonus, which is **15**% of the salary. In addition, **100** EGP is added for each year of service, provided that all years exceed 30.

3. A class named "Permanent" that contains the following.   (**2 Marks**)
   Methods: constructors, override `toString()` to show the permanent employee's information, and `payBonus()` to calculate the amount of bonus, which is **10**% of the salary.

4. A class named "EmpApp" that contains the `main()` method for testing the previous classes.   (**7 Marks**)
   - Declare an array of employees, where the type of the employees will be determined as either "Permanent" or "Contact", depending on the choice entered by the user. For example, "C" is for contract employees and "P" is for permanent employees. The entire data entry process for different types of employees will be repeated as long as the user enters the letter "Y" to continue.
   - Compute the bonus amount for each type of employees.
   - Compute the total amount of final salary for all permanent employees.
   - Find the maximum and minimum amounts of bonus for contract employees and display the information of employees.