

# MIS 768: Java Programming Spring 2019

## Individual Assignment 4

Due Date: **5:29 PM, April 4 2019** (Submit via WebCampus).  
Weights: 5% of total grades.

### Purpose

- Implement classes that extend Exception classes and use them in a program.
- Create GUI applications using JavaFX.
- Use the object of a class in the GUI application to complete a task.

### NOTE:

1. Please submit the **.java** files for each question. Zip all the .java files and upload the zip file to WebCampus for submission.
2. Please provide proper comments to document your code, including the following:
  - a. Author's name;
  - b. Purpose of the program;
  - c. In-line comments for the statements, including the variable/constant declaration and initialization.

### QUESTION 1: Exception Handling (50 points)

The **Payroll** class can be used to calculate an employee's payroll. Please write exception classes handling the following error conditions:

1. An empty string is given for the employee's name.
2. A negative number or zero is given for the employee's ID number.
3. An invalid number is given for the number of hours worked. An employee is allowed to work for no more than 84 hours per week. The number should not be a negative number.
4. An invalid number is given for the hourly pay rate. The minimum wage is \$10.25 per hour.

Modify the **Payroll** class to that it throws the appropriate exception when any of these error occurs. Also write a program that demonstrates the **Payroll** and exception classes using try...catch statements.

### Grading criteria:

- (1) Correctness
  - (a) The code can be compiled without any syntax error.

- (b) The code can generate the requested results. Please make up some numbers to test the program and validate the results
- (c) The exceptions classes are implemented as required.
- (d) The program is properly documented using comments (`/**.....*/` and `//.` )
- (2) Technique used
  - (a) The `Payroll` class is properly modified to throw the appropriate exceptions.
  - (b) `Payroll` class is properly used in the demonstration program.
  - (c) The demonstration program should be able to catch multiple exceptions.
  - (d) All of the methods in `Payroll` class that throws exceptions should be used in the demonstration program.

## QUESTION 2: Joe's Automotive (50 points)

Please download and import **AutoJob.java** and **CustomerOrder.java** from WebCampus, and use them in your application.

Joe's Automotive performs the following routine maintenance services, as defined in **AutoJob**. Joe also performs other non-routine services and charges for parts and the number of labor hours. The cost of labor is \$20 per hour. For some customers, Joe can choose to give a 10% off or 20% off discount to the total.

Please create a GUI application that displays the total for a customer's visit to Joe's. Joe can specify the services offered and/or enter the charges of parts and the number of labor hours. Then he can see the total charges of the order in the GUI application.

In the GUI application, please use the object of `CustomerOrder` class to represent each customer order. Set the attribute values based on the service selected (the customer can select multiple service items), the charge for parts entered, the labor hour entered, and the discount option selected.

### **Grading criteria:**

- (3) Correctness
  - (a) The code can be compiled without any syntax error.
  - (b) The code can generate the requested results. Please make up some numbers to test the program and validate the results
  - (c) The program is properly documented using comments (`/**.....*/` and `//.` ).
- (4) Technique used:
  - (a) Controls of JavaFX are used, and named properly; i.e., the names of the objects should be descriptive.
  - (b) Named constants are used in the program.
  - (c) Object of `CustomerOrder` is instantiated. Methods of `CustomerOrder` are used.
  - (d) The event(s) of the JavaFX controls are implemented.