

# Assignment #01 (Arrays)

## CL217-Object Oriented Programing - Lab

**Due Date: 6<sup>th</sup> February 2020**

Total Marks: 10

**A note of warning:** Start work on assignments as soon as they are given. Do not underestimate the demanding nature of this course. Expect the system to crash the night before your program is due. Aim to have it done the day before.

Submit the assignment on [slate](#). Do not email me assignments after due date. It will not be accepted in any case. **Students are required to submit actual content written in MS word or Pdf. Hand written/ Scanned assignments will not be accepted.**

**Note:** Name of the file should start with your Roll number followed by your Name and at the end assignment number (**p190001NameAssign01**)

### Q # 1. (Airplane Seating Assignment) (5 Marks)

Write a program that can be used to assign seats for a commercial airplane. The airplane has 13 rows, with six seats in each row. Rows 1 and 2 are first class, rows 3 through 7 are business class, and rows 8 through 13 are economy class. Your program must prompt the user to enter the following information:

- a) Ticket type (first class, business class, or economy class)
- b) Desired seat

Output the seating plan in the following form:

	A	B	C	D	E	F
Row 1	*	*	X	*	X	X
Row 2	*	X	*	X	*	X
Row 3	*	*	X	X	*	X
Row 4	X	*	X	*	X	X
Row 5	*	X	*	X	*	*
Row 6	*	X	*	*	*	X
Row 7	X	*	*	*	X	X
Row 8	*	X	*	X	X	*
Row 9	X	*	X	X	*	X
Row 10	*	X	*	X	X	X
Row 11	*	*	X	*	X	*
Row 12	*	*	X	X	*	X
Row 13	*	*	*	*	X	*

Here, \* indicates that the seat is available; X indicates that the seat is occupied. Make this a menu-driven program; show the user's choices and allow the user to make the appropriate choices.

### (Payroll System) (5 Marks)

Write a program that allows the user to do a payroll listing on any number of employees, up to a maximum of 20, for a one week period. This program must be written using arrays and functions. The program is to be broken into various tasks; each task will be coded as a function. Each function will be passed arguments and will return a value or values back from the function. Several arrays will be used

in the program; no array will exceed 20 elements. One array will hold the employee numbers that are input. Other arrays will hold the Computed Gross Pay, Computed Federal Tax, Computed State Tax and Computed Net Pay values. When the user indicates he/she wishes to stop the input of employee data, the program will display a list of employee numbers, and the corresponding computed values, plus a total for each of the computed values

The following shows a sample run of the program with user inputs in boldface.

>**payroll**

BOJ Payroll v2.0

Enter Employee Number :**123-45-6789**

Enter Regular Hours Worked :**40**

Enter Overtime Hours Worked :**0**

Enter Hourly Pay Rate :**15.00**

Enter Marital Status( M or S ) :**M**

Enter number of Exemptions taken(0-4) :**2**

Computed Gross Pay : \$600.00

Computed Federal Tax :-\$126.90

Computed State Tax :-\$ 63.45

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Computed Net Pay : \$409.65

Do you wish to do another(Y/N)? **Y**

Enter Employee Number : **234-56-7890**

Enter Regular Hours Worked : **40**

Enter Overtime Hours Worked : **0**

Enter Hourly Pay Rate : **20.00**

Enter Marital Status( M or S ) : **S**

Enter number of Exemptions taken(0-4) : **0**

Computed Gross Pay : \$800.00

Computed Federal Tax :-\$217.50

Computed State Tax :-\$108.00

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Computed Net Pay : \$474.50

Do you wish to do another(Y/N)? **N**

#### Employee Payroll Roster

Employee Number	Gross Pay	Federal Tax	State Tax	Net Pay
-----	-----	-----	-----	-----
123-45-6789	\$ 600.00	\$ 126.90	\$ 63.45	\$ 409.65
234-56-7890	\$ 800.00	\$ 217.50	\$ 108.00	\$ 474.50
Totals	\$1400.00	\$ 471.30	\$ 171.45	\$ 933.65

Employee Number is declared as a variable and assigned a value by the user as each employee's data is processed as Character Data.

Regular Hours Worked is declared as a variable and is input by the user as each employee's data is processed as Integer Data.

Overtime Hours Worked is declared as a variable and is input by the user as each employee's data is processed as Integer Data.

Hourly Pay Rate is declared as a variable and is input by the user as each employee's data is processed as Float Data.

Marital Status is declared as a variable and is input by the user as each employee's data is processed. Only M or S may be input.

Exemptions is declared as a variable and is input by the user as each employee's data is processed. This is the number of tax exemptions the employee is taking. In this program, the only allowable values for exemptions are 0 thru 4 as Integer Data.

Weekly Gross Pay is a computed value derived from Regular Hours Worked multiplied by Hourly Pay Rate plus Overtime Hours Worked multiplied by the product of Hourly Pay Rate multiplied by 1.5.

Deductions are a computed value to indicate the amount of tax deductions, both federal and state, needed to be subtracted from the Adjusted Gross Pay. Adjusted Gross Pay is computed by taking the number of Exemptions an employee has and multiplying that by \$13.50. This amount is then subtracted from the Weekly Gross Pay amount to give Adjusted Gross Pay. Adjusted Gross Pay is then used to determine the amount of federal tax owed and the amount of state tax owed. The following indicates how to calculate the federal and state tax amounts based on the Adjusted Gross Pay.

For Married Employees:				
Adjusted Gross Pay		Federal	State	Of Amount Over
-----		-----	-----	-----
\$0.00 - \$100		10%	5%	\$50.00
\$101 - \$300		\$20.00 + 20%	\$10.00 + 10%	\$150.00
\$301 - \$600		\$60.00 + 30%	\$30.00 + 15%	\$350.00
\$601 - \$9999		\$180.00 + 50%	\$90.00 + 25%	\$650.00
For Single Employees:				
Adjusted Gross Pay		Federal	State	Of Amount Over
-----		-----	-----	-----
\$0.00 - \$100		10%	5%	\$50.00
\$101 - \$300		\$20.00 + 10%	\$10.00 + 5%	\$150.00
\$301 - \$600		\$60.00 + 15%	\$30.00 + 8%	\$350.00
\$601 - \$9999		\$180.00 + 25%	\$90.00 + 12%	\$650.00

Weekly Net Pay a computed amount showing the take home or net pay for the employee. Weekly Net Pay is computed by subtracting Deductions from Weekly Gross Pay.

When all employees' payroll data has been processed, display the totals for gross pay, deductions and net pay.

Each numeric value displayed on the screen should be formatted using output formatting code. After the user enters each value, rewrite it to the screen in proper format so that all entries will be aligned in columns.