**Students will learn**

* implement 2D arrays
* use static methods
* passing parameters to methods (arrays, etc)

**This assignment will help students practice**

* using loops.
* declaring and using constants
* if statements
* comment methods and classes
* generating random numbers
  + We are using random numbers so we do not have to manually enter and validate all the information.

The student will create one class Payroll.java with several static methods to perform a payroll calculation. For this assignment you must assume that each employee gets paid $14.50/hour. If  the employee works more than 40 hours in a given week, those extra hours should be paid as overtime at $21.75/hour. Example

employee 1 worked 37 hours so she gets paid (37 x $14.50) = $536.50 that week

employee 2 worked 45 hours so she gets paid (40 x $14.50) + (5 x $21.75) =  580 + 108.75 = 688.75

**Your program should**

* **Use only ONE** 2D array (max 20 points, if correctly implemented and used in a meaningful way). Document your rationale by commenting what you did. You may use a 1D array to keep track of hours and/or wages, but if you do so. you **MUST** document how this is used in your comments. (Aside from this, NO other arrays or  any arraylists are allowed). If you use any other structure besides the two listed above you will get at least 50% points deducted. If you have any questions please email the instructor right away.
* **implement** at least the calculatePayroll method. More details are listed below.

**Program Execution**

**The main method**

* When the program begins execution you will display what the program does and should instruct the user what to do (10 points)
* Print a message requesting the number of employees from the user. Number of employees must be from 5 to 20. You must validate. If invalid, you must write a user-friendly error message and end execution. Your program should NOT crash. (30 points)
* For each of the employees the program will generate 5 random numbers between 0 and 12 representing how many hours the employee worked each day from Monday to Friday. -no work during the weekend (30 points)
* For each employee, the program will print the hours worked per day. One header at the top will suffice. (20 points) Example:
* MON    TUE     WED     THU    FRI  
  Employee 1             4        10          5           5         12

**The calculatePayroll method.**

* You must pass the 2D array as a parameter. You may pass other variables as parameters but the 2D array MUST be one of them.(30 points)
* Will print the**total**hours worked**per employee during the week.**Must be properly labeled. (30 points)
* You will print the numbers of employees that worked overtime along with the number of overtime hours worked. (30 points)
* Based on the hourly rates as described above you will print each employee and the amount earned that week. The amount must be properly formatted with dollar sign and two decimal places.(30 points)
* This must be done as shown in the video. (30 points)

You must follow the java coding standards (20 points)

***If your code is incomplete or it does not compile you will get at least 60% deduction.***

**Hints:**

* The hardest thing for me was to align the output. For integer numbers I recommend using System.out.printf with the "%3d" format. It worked for me!
* Code this assignment in parts so that you can verify that each requirement works before moving on to the next one.
* [ [[Video explaining the assignment:](https://youtu.be/UUHpEIPUrDM)] ] https://youtu.be/UUHpEIPUrDM
* [ [[Video showing assignment execution:](https://youtu.be/eeDYbm4h9is)] ] https://youtu.be/eeDYbm4h9is

**NOTE:**You are not allowed to use any other data structures except for ONE 2D array to work with Employees, and a 1D array to keep track of hours and/or wages. However you MUST document how this is used in your comments. No  Java provided libraries are allowed except for the Arrays methods we learned in class.