CS 1083 Project 1: Trucking Co

The `Trucking` Class

(40 points)

Objectives

This is one of three major programming projects this semester. You may NOT collaborate on this project. While you may ask for assistance in debugging, this project should be ENTIRELY your own work.

Other objectives include:

- Use local variables.
- Use local and global constants.
- Use arithmetic expressions.
- Use Scanner to input values.
- Use loops.

Hand-in Requirements

All projects and laboratories will be submitted electronically through Canvas. Zip up your entire project directory to submit as the source. (Right-click on the project folder and follow **Send To > Compressed (zipped) Folder** or **7-Zip > Add to "project1ABC123.zip"**.) Note that you should change ABC123 to your Student ID in the zip file name. The project folder should include the following:

- `Trucking.java`
- `TruckingOutput.txt`

Tasks

Write a program that prints

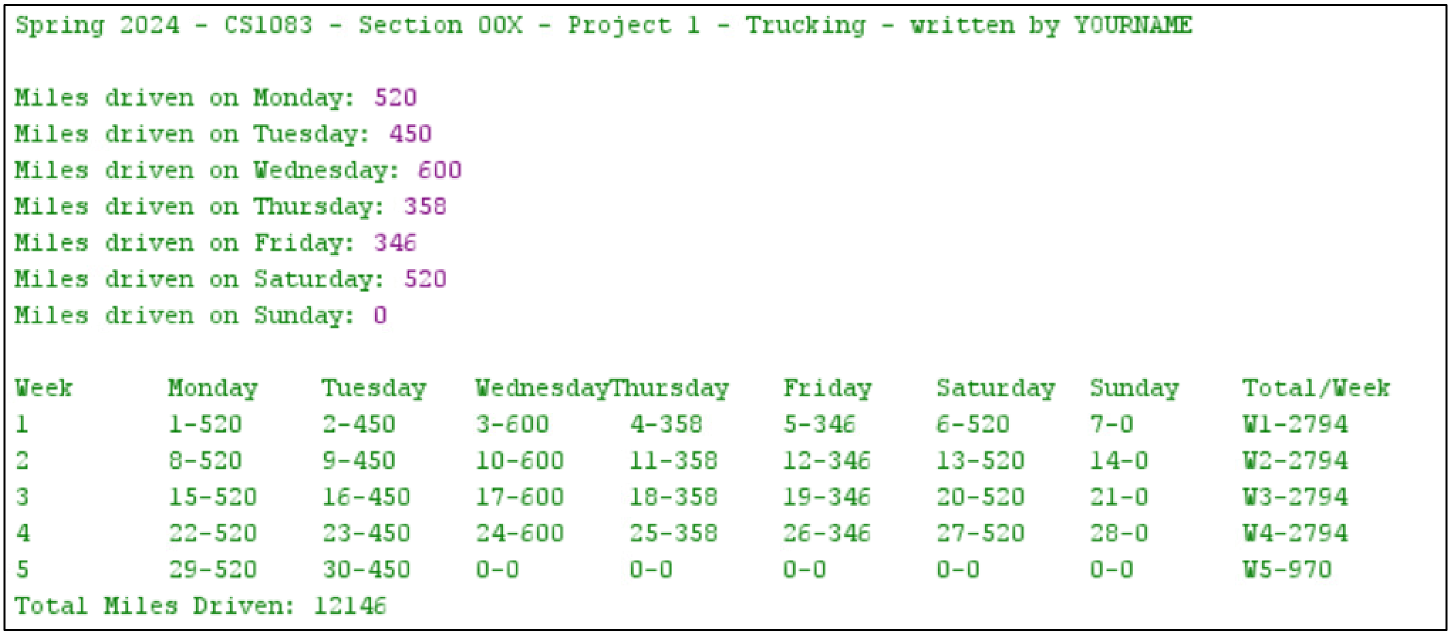
```
Spring 2024 - CS1083 - Section 00X - Project 1 – Trucking - written by YOURNAME
```

Replace X and YOURNAME with your specifics. Additionally, the program will:

1. Get the user's input for a daily approximated miles driven.
2. Print a table showing the week and month of miles driven based on the user's input values, as shown below.
3. Show the correct sums per week and month.

The values shown in the tables will vary depending on the user's input.

Normal Execution Example



```
Spring 2024 - CS1083 - Section 00X - Project 1 - Trucking - written by YOURNAME

Miles driven on Monday: 520
Miles driven on Tuesday: 450
Miles driven on Wednesday: 600
Miles driven on Thursday: 358
Miles driven on Friday: 346
Miles driven on Saturday: 520
Miles driven on Sunday: 0

Week      Monday    Tuesday   WednesdayThursday  Friday    Saturday  Sunday    Total/Week
1         1-520     2-450     3-600     4-358     5-346     6-520     7-0       W1-2794
2         8-520     9-450     10-600    11-358    12-346    13-520    14-0      W2-2794
3         15-520    16-450    17-600    18-358    19-346    20-520    21-0      W3-2794
4         22-520    23-450    24-600    25-358    26-346    27-520    28-0      W4-2794
5         29-520    30-450    0-0       0-0       0-0       0-0       0-0       W5-970
Total Miles Driven: 12146
```

Note that the values in purple color denote the input of the user.

Details

The program will first read the average miles driven by a truck driver for every day of the week. It will start asking the value of miles driven for Monday and will continue asking the values until getting the value corresponding to Sunday.

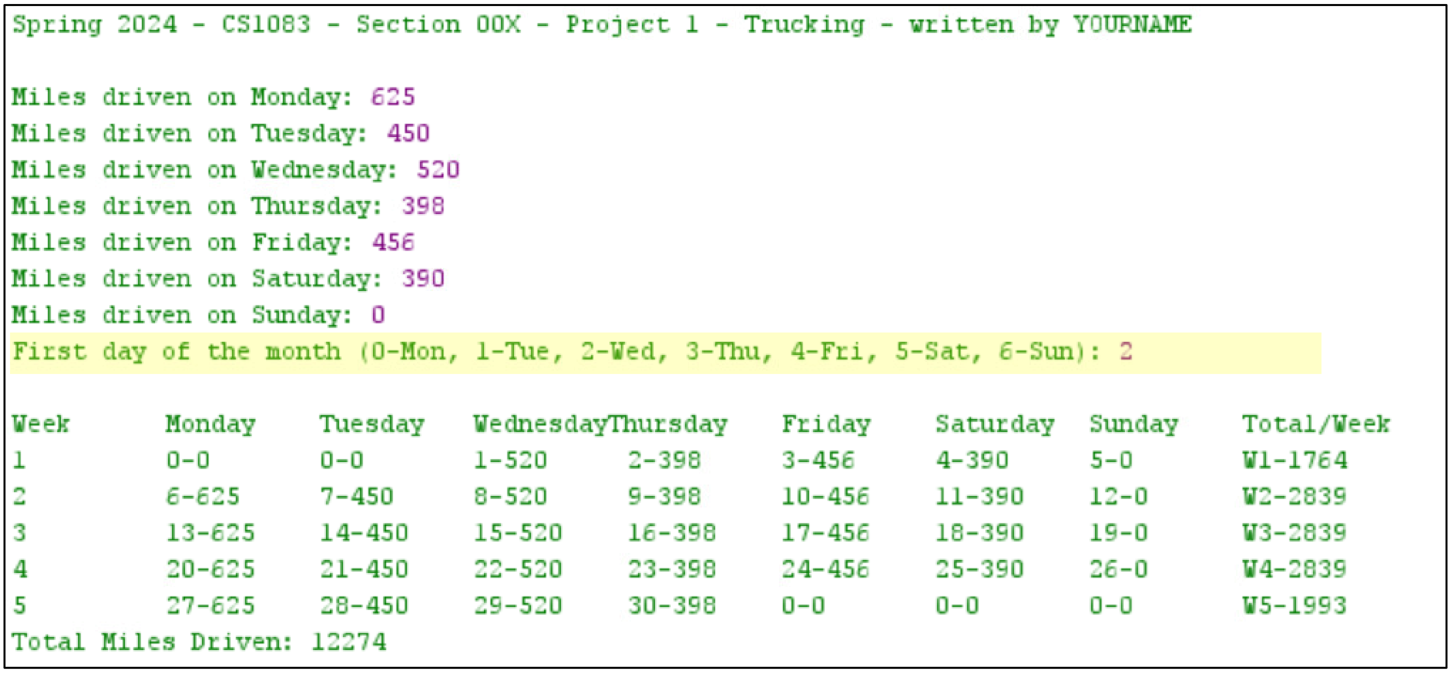
The program will then print the table shown above based on the values input by the user. Pay special attention to the following instructions:

- The table starts with the title of every column, as shown above.
- Use the tabulator to move to the next column (there could be one that would not need tabulator).
- The first column corresponds to the week.
- Columns 2 to 8 correspond to the days of the week from Monday to Sunday.
- The program needs to print a total per week as the last column.
- It starts with a Monday as day 1 of the month (for normal/no extra credit option).
- It prints the day of the month, a hyphen, and the number of minutes in every cell corresponding to the days' columns.
- After the 30th day of the month, it should print "0-0" (and not add those values).
- At the end of the table, the program will print the total for the complete month.

Extra Credit – Option 1 (EC1)

Your program must allow for the user to input which weekday is the first day of the month.

Execution example – EC1



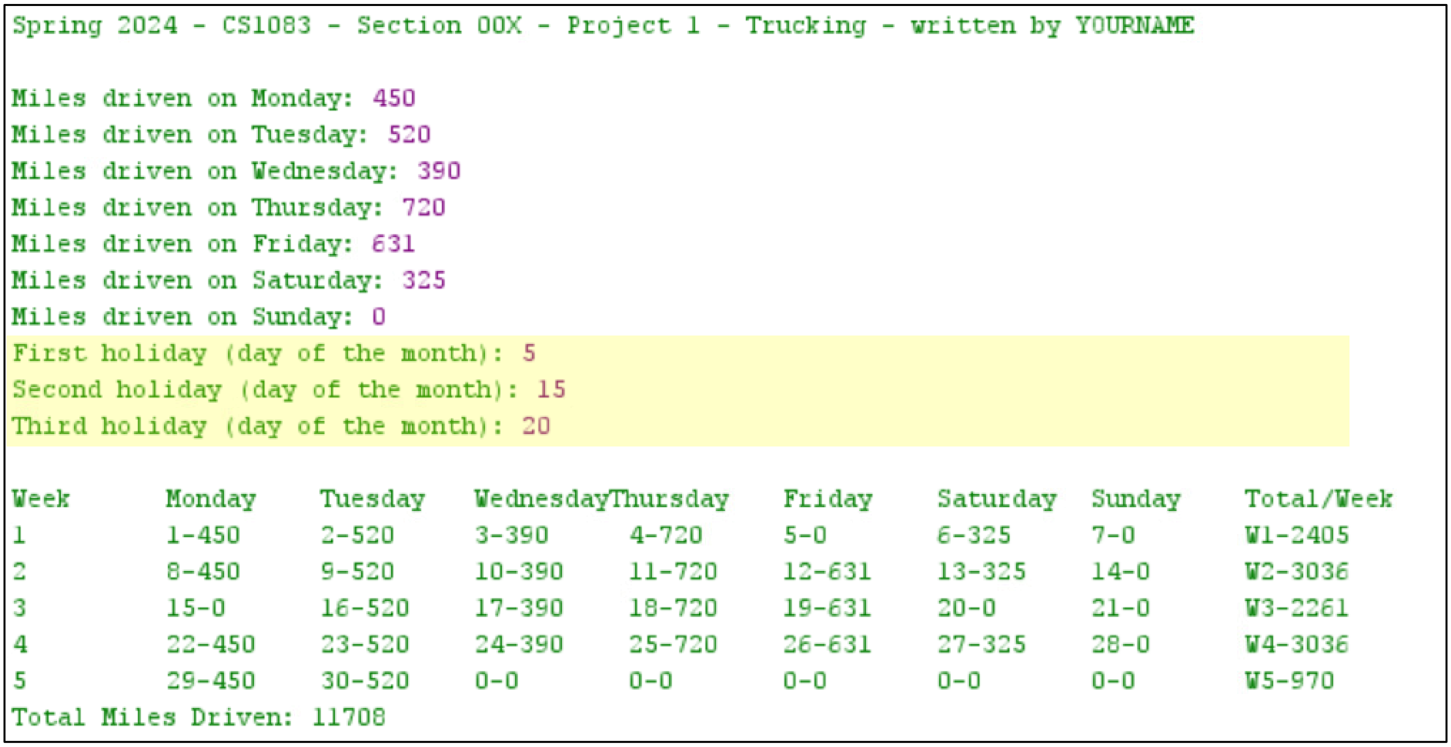
```
Spring 2024 - CS1083 - Section 00X - Project 1 - Trucking - written by YOURNAME

Miles driven on Monday: 625
Miles driven on Tuesday: 450
Miles driven on Wednesday: 520
Miles driven on Thursday: 398
Miles driven on Friday: 456
Miles driven on Saturday: 390
Miles driven on Sunday: 0
First day of the month (0-Mon, 1-Tue, 2-Wed, 3-Thu, 4-Fri, 5-Sat, 6-Sun): 2

Week    Monday  Tuesday WednesdayThursday  Friday  Saturday Sunday  Total/Week
1       0-0     0-0     1-520   2-398   3-456   4-390   5-0     W1-1764
2       6-625   7-450   8-520   9-398   10-456  11-390  12-0    W2-2839
3       13-625  14-450  15-520  16-398  17-456  18-390  19-0    W3-2839
4       20-625  21-450  22-520  23-398  24-456  25-390  26-0    W4-2839
5       27-625  28-450  29-520  30-398  0-0     0-0     0-0     W5-1993
Total Miles Driven: 12274
```

The yellow highlight in the figure above shows the message and the extra value obtained from the user. The days before the selected day in the first week should be shown as "0-0". The sum of the first week will be affected by this change and consequently, the sum of the month as well.

Extra Credit – Option 2 (EC2)

Your program must allow for the user to input three days considered holidays. Each number will correspond to the day of the month. For those holidays, it is assumed that the user does not drive any miles.

Execution example – EC2



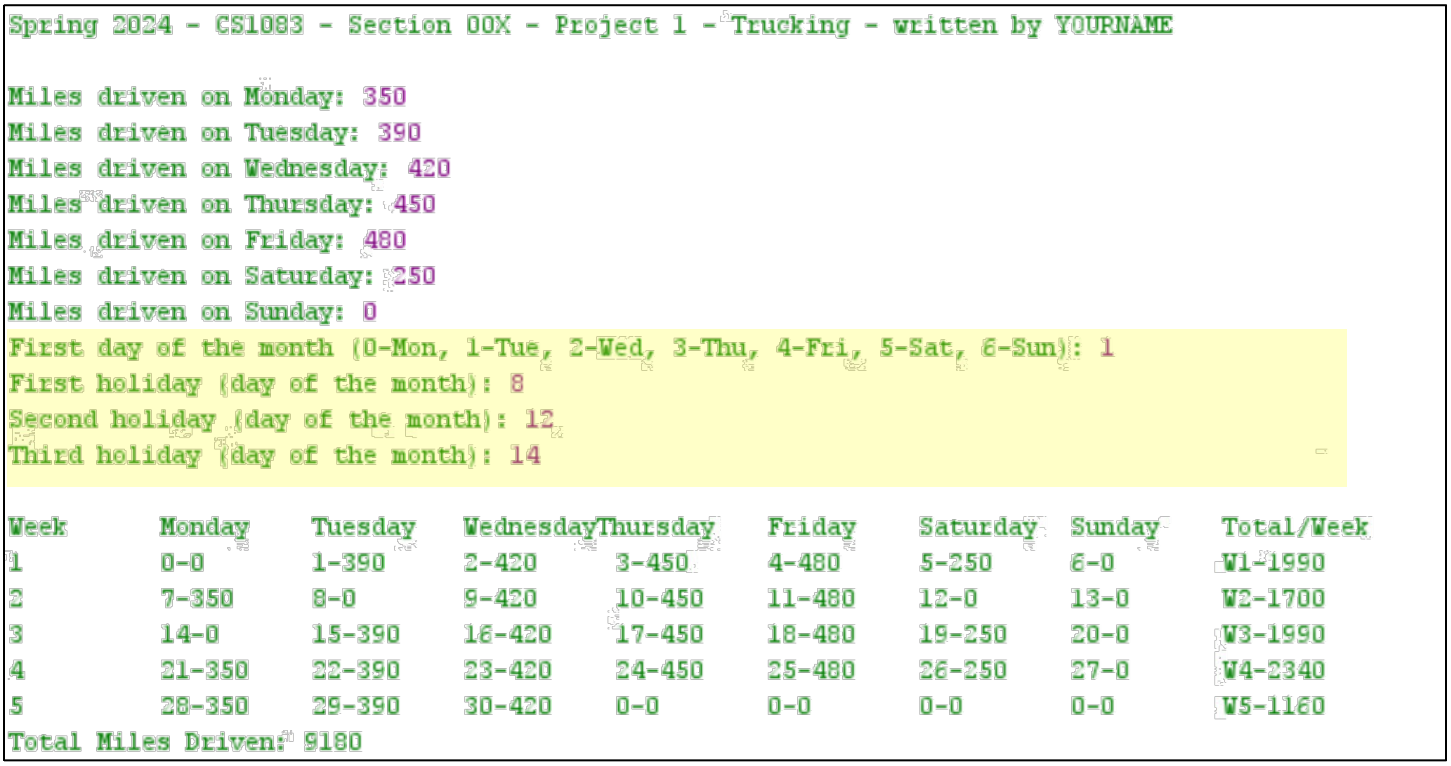
```
Spring 2024 - CS1083 - Section 00X - Project 1 - Trucking - written by YOURNAME

Miles driven on Monday: 450
Miles driven on Tuesday: 520
Miles driven on Wednesday: 390
Miles driven on Thursday: 720
Miles driven on Friday: 631
Miles driven on Saturday: 325
Miles driven on Sunday: 0
First holiday (day of the month): 5
Second holiday (day of the month): 15
Third holiday (day of the month): 20

Week    Monday  Tuesday WednesdayThursday  Friday  Saturday Sunday  Total/Week
1       1-450   2-520   3-390   4-720   5-0     6-325   7-0     W1-2405
2       8-450   9-520   10-390  11-720  12-631  13-325  14-0    W2-3036
3       15-0    16-520  17-390  18-720  19-631  20-0    21-0    W3-2261
4       22-450  23-520  24-390  25-720  26-631  27-325  28-0    W4-3036
5       29-450  30-520  0-0     0-0     0-0     0-0     0-0     W5-970
Total Miles Driven: 11708
```

Note that what is shown highlighted in yellow corresponds to the extra values read as the three holidays. Those holidays affect the sum per week and month.

Extra Credit – Option 1 and 2 combined (EC3)

Your program must allow for the user to input the first day of the month and the three holidays. The rules apply for both extra credit options mentioned above.

Execution example – EC3



```
Spring 2024 - CS1083 - Section 00X - Project 1 - Trucking - written by YOURNAME

Miles driven on Monday: 350
Miles driven on Tuesday: 390
Miles driven on Wednesday: 420
Miles driven on Thursday: 450
Miles driven on Friday: 480
Miles driven on Saturday: 250
Miles driven on Sunday: 0
First day of the month (0-Mon, 1-Tue, 2-Wed, 3-Thu, 4-Fri, 5-Sat, 6-Sun): 1
First holiday (day of the month): 8
Second holiday (day of the month): 12
Third holiday (day of the month): 14

Week      Monday    Tuesday   WednesdayThursday Friday    Saturday  Sunday    Total/Week
1         0-0       1-390     2-420     3-450     4-480     5-250     6-0       W1-1990
2         7-350     8-0       9-420     10-450    11-480    12-0      13-0      W2-1700
3         14-0      15-390    16-420    17-450    18-480    19-250    20-0      W3-1990
4         21-350    22-390    23-420    24-450    25-480    26-250    27-0      W4-2340
5         28-350    29-390    30-420    0-0       0-0       0-0       0-0       W5-1160
Total Miles Driven: 9180
```

About Submission

You must submit only one program file (`Trucking.java`) and indicate in the comments (on Canvas) which type you are submitting. The options are:

- 0 – Normal execution-only (no extra credit)
- 1 – Normal execution with extra credit option 1 (first day of the month)
- 2 – Normal execution with extra credit option 2 (three holidays of the week)
- 3 – Normal execution with both extra credit options.

For the `TruckingOutput.txt` file, you will use the input as `620 650 720 0 550 620 450`. Additionally, if you are implementing the extra credit option 1, assume that the user inputs the value `2`. Similarly, if you are implementing the extra credit option 2, assume that the user inputs the values `3 10 29`. Or the combination of the inputs for the extra credit option 3.

Tip: When you are ready to save the output, make sure to clear the console before running your program to generate this file. That way, when you save your file as a text file, it will store only the real execution output.

On Canvas – Modules – Module 0 – Getting Started, you can find the instructions on:

- How to save the output.
- How to create a zip file.

Rubric

- [32 Points] If your program has a table that correctly prints the monthly driven miles.
    - [2 Points] For prompting the user and obtaining the value for the average of miles driven per day.
    - [3 Points] For printing the table's headers.
    - [3 Points] For printing the right format of the columns.
    - [10 Points] For using a nested loop to print all values inside the table.
        - [3 Points] Using an outer loop for the weeks
        - [4 Points] Using an inner loop for the days of the week
        - [3 Points] Showing the values with the expected format
    - [5 Points] For correctly printing the sum for all weeks
    - [5 Points] For printing the values based on the users' input.
    - [4 Points] For correctly printing the monthly sum.
- [8 points]
    - [1 Point] If your program prints "`Spring 2024 - CS1083 -` [...]" and prints the table.
    - [2 Points] If your submission was a Zip file named `project1ABC123.zip` containing the files:
        - Trucking.java (as the code of your project)
        - TruckingOutput.txt (as the output with the values specified in the submission section)
    - [1 Point] If your program contains a comment that describes what the program does and includes a comment for each big chunk of code.
    - [3 Points] If your program is indented correctly.
    - [1 Point] If you indicate your type of program submitted: 0-regular/no extra credit, 1-EC1, 2-EC2, 3-EC3 in the submission comments.
- [10 Possible Extra Credit points]
    - [5 Points] If correctly implementing the change for the first day of the week.
    - [5 Points] If correctly implementing the three holidays in the month.
    - Or [10 Points] If correctly implementing the two Extra Credit options combined