Due Date

You must *submit* the source code for the solution to this lab exercise to *Moodle* by

Tuesday, August 5, 2025

in order to receive full credit for this work. You must also *demonstrate* the solution to the instructor <u>during class</u>, at the earliest opportunity.

Files provided as "starter code":

The "starter code" for this lab exercise consists of three source code files:

1. **Employee.h**
2. **Employee.cpp**

Objects of the **Employee** class represent employees of a company. This class has been carefully designed to generate *sequential* values for the **employeeNumber** member variable: the first **Employee** object created receives an **employeeNumber** value of 1, the next **Employee** object created receives an **employeeNumber** value of 2, etc. (How this works was discussed in class, as well as in Chapter 14 of the Gaddis textbook.) Your code for this lab exercise must use the **Employee** class, but you may **<u>not</u>** modify the **Employee** class for this lab exercise.

3. **ProductionWorker.h**

A **Class Specification** file (class declaration) is also provided for the **ProductionWorker** class. Notice that the **ProductionWorker** class is a <u>sub-class</u> of the **Employee** class. The **ProductionWorker** class has member variables to hold the following information:

- Shift (an integer):   a value of **1** means "day shift", and **2** means "night shift".
- Hourly pay rate (a double):

Important Requirement:

Your solution for Lab15a **must** include the three files provided with the assignment (Employee.h, Employee.cpp, and ProductionWorker.h) with **no changes**. If you modify these files, then you will not receive credit for this assignment.

Files that you must create:

1. **ProductionWorker.cpp**

This source file must contain the *actual code* for all functions in the **ProductionWorker** class.

- Include, as part of the **ProductionWorker** class, a **static** function for creating a new **ProductionWorker** object:
    static ProductionWorker *createNewProductionWorker();

The **createNewProductionworker** function must prompt the user for input of the employee name, hire date, shift, and hourly pay rate, and then <u>dynamically</u> create a

ProductionWorker object. The function returns (to the caller) a *pointer* to the new **ProductionWorker** object.

2. `Lab15a.cpp`

This source file contains the "**main**" function.   The "**main**" function must include a "command loop" similar to those that we have used in previous labs. (Feel free to *re-use* portions of your code from earlier labs.)

The command loop must support the commands described in the following "help text":

```
Supported commands:
        c                   create a new ProductionWorker object.
        h                   print help text.
        p                   print ProductionWorker information.
        q                   quit (end the program).
```

Sample Interactive Session

In the sample data that follows, what the user types is shown in **bold**. In actuality, what the user types would appear as the same text format as the rest of the output.

Sample Input/Output
<pre>Enter command (or 'h' for help): h
Supported commands:
        c   create a new ProductionWorker object.
        h   print help text.
        p   print ProductionWorker information.
        q   quit (end the program).

Enter command (or 'h' for help): c
Enter name of new employee: George Washington
Enter hire date of new employee: April 30, 1789
Enter shift for new employee (1=day, 2=night): 2
Enter hourly pay rate for new employee: 27.44
Enter command (or 'h' for help): p
Name: George Washington
Employee number: 1
Hire date: April 30, 1789
Shift: Night
Shift number: 2
Pay rate: 27.44
Enter command (or 'h' for help): c
Enter name of new employee: John Adams
Enter hire date of new employee: March 4, 1797</pre> |

Sample Input/Output

```
Enter shift for new employee (1=day, 2=night): 1
Enter hourly pay rate for new employee: 54.23
Enter command (or 'h' for help): p
Name: John Adams
Employee number: 2
Hire date: March 4, 1797
Shift: Day
Shift number: 1
Pay rate: 54.23
Enter command (or 'h' for help): c
Enter name of new employee: Thomas Jefferson
Enter hire date of new employee: March 4, 1801
Enter shift for new employee (1=day, 2=night): 2
Enter hourly pay rate for new employee: 66.54
Enter command (or 'h' for help): p
Name: Thomas Jefferson
Employee number: 3
Hire date: March 4, 1801
Shift: Night
Shift number: 2
Pay rate: 66.54
Enter command (or 'h' for help): c
Enter name of new employee: James Madison
Enter hire date of new employee: March 4, 1809
Enter shift for new employee (1=day, 2=night): 2
Enter hourly pay rate for new employee: 75.33
Enter command (or 'h' for help): p
Name: James Madison
Employee number: 4
Hire date: March 4, 1809
Shift: Night
Shift number: 2
Pay rate: 75.33
Enter command (or 'h' for help): q
```