CSCE 240 EXAM 3 DUE: 11:59 PM APR 29 2022

This is a 20 point exam.

You must submit a single zipped, **and only zipped**, archive of your Exam 3 project. Only zipped (`.zip`) archives will be accepted. Archive formats other than `.zip` will not be accepted. Multiple individual file submissions will not be accepted and will be deleted from Blackboard.

The archive must contain (at a minimum):

```
exam3/inc/char_matrix.h
exam3/src/char_matrix.cc
exam3/inc/employee.h
exam3/src/employee.cc
exam3/inc/smart_appliance.h
exam3/src/smart_appliance.cc
exam3/inc/tight_vector.h
exam3/src/tight_vector.cc
```

for full or partial credit.

Description

Each of the header files contains a description of the problem you are tasked to solve, along with point allocation. The makefile contains rules to build each of the problems' final test executable. The makefile also contains rules to run cpplint on the files for style point assessment.

This is an exam. If you ask questions which can be answered by reading the test files or the project files, I will refer you to those. Questions about strategy or syntax cannot be answered. Asking questions about homework which happen to also answer questions about the exam cannot be answered. Given that this is your final exam, late submissions are not accepted.

Points

CharMatrix: (5 Points)

1. Compilation: 0.5
   (make test-char-matrix)
2. Style: 0.5
   (make test-char-matrix-style)
3. TestFillConstructor: 1.0
   (./test-char-matrix 0)
4. TestCopyConstructor: 1.0
   (./test-char-matrix 1)
5. TestAssignOperator: 1.0
   (./test-char-matrix 2)
6. test-char-matrix-memory: 1.0
   (make test-char-matrix-memory)

Employee: (5 Points)

1. Compilation: 0.5
   (make test-employee)
2. Style: 0.5
   (make test-employee-style)
3. Demographic::first_name() : 0.25 points
   (./test-employee 0)
4. Demographic::last_name() : 0.25 points
   (./test-employee 1)
5. Demographic::date_of_birth() : 0.25 points
   (./test-employee 2)
6. Employee::employee_id() : 0.25 points
   (requires child class)
   (./test-employee 3)
7. HourlyEmpolyee::pay_rate() : 0.75 points
   (./test-employee 4)
8. HourlyEmployee::CalculatePay(double) : 0.75 points
   (./test-employee 5)
9. SalaryEmployee::pay_rate() : 0.75 points
   (./test-employee 6)
10. SalaryEmployee::CalculatePay(double) : 0.75 points
    (./test-employee 7)

Smart Appliance: (5 Points)

1. Compilation: 0.5
   (make test-smart-appliance)
2. Style: 0.5
   (make test-smart-appliance-style)
3. SmartLight::Activate: 0.5 points
   (./test-smart-light 1 or 2)
4. SmartLight::Deactivate: 0.5 points
   (./test-smart-light 3 or 4)
5. SmartLight::Set: 1.0 point
   (./test-smart-light 5–10)
6. SmartThermostat::Activate: 0.5 points
   (./test-smart-thermostat 1 or 2)
7. SmartThermostat::Deactivate: 0.5 points
   (./test-smart-thermostat 3 or 4)
8. SmartThermostat::Set: 1.0 point
   (./test-smart-thermostat 5–9)

TightVector: (5 Points)

1. Compilation: 0.5
   (make test-tight-vector)
2. Style: 0.5
   (make test-tight-vector-style)
3. TestAppendEmpty: 0.5
   (./test-tight-vector 0)
4. TestAppendNotEmpty: 1.0
   (./test-tight-vector 1)
5. TestAppendEmpty: 0.5
   (./test-tight-vector 2)
6. TestAppendNotEmpty: 1.0
   (./test-tight-vector 3)
7. test-tight-vector-memory: 1.0
   (make test-tight-vector-memory)

Target Environment

Make sure that your code runs in the target environment. As always, you may develop and test your code in your environment of choice. However, code which does not run in the test environment will not be considered. Ensure that you do not hardcode paths into your environment. This is unnecessary because the makefile appends the root exam3 directory to the compiler's include path.

Cont.

Academic Integrity

This is an exam. Requesting help from others is cheating. Working together is cheating. Discussing the problems is cheating. This is a test of your skills and so you are to solve the questions on your own, using only reference materials.

You will notice that there is more ambiguity in portions of this exam. More of the classes' declaration and definition is left to your discretion. That is intentional. For this exam, **any submissions found to be too similar** will be turned into the Office of Academic Integrity. Those submissions' grades will be held until the investigation is complete. The penalty for submitting work found to be in violation of the Academic Integrity code is a -100%.

The End.