

Create a project called lab9 (if using Visual Studio), and copy (one of) your team members' source file lab8.cpp into lab9.cpp. The UMLPerson.pdf inheritance hierarchy diagram is also provided on Blackboard for your reference.

Your team will make the following modifications to lab9.cpp:

- Add a payAdvice() function as a pure virtual function in the PayKind class. This function returns an employee's gross pay (before deductions) for a 2-week pay period. The return type of payAdvice() is double.
- Override the definition of the payAdvice() virtual function in the classes Salaried, Hourly, and PerCourse. The computation of gross pay is as follows:
  - o For a Salaried employee, divide the annual salary by 26 pay periods per year.
  - o For an Hourly employee, multiply the hourly rate by 40 hours per pay period (i.e., 20 hours per week).
  - o For a PerCourse employee, divide the fee per course by 7 pay periods per semester (for a 14-week semester); you may assume that the employee is teaching only one course per semester.
- Add code to your main function to display the pay advice for Grader g1, NTT n1, and the Adjunct instance that you defined in your implementation of Lab 8.
- After you've completed and successfully tested the three tasks above, add the following code at the end of your main function:

```
vector<NTT*> nv;
nv.push_back(&n1);
cout << 0 << ":\n" << *nv[0];
cout << "Pay Advice is " << nv[0]->payAdvice() << endl << endl;

vector<UMLPerson*> uv;
uv.push_back(&s1);
uv.push_back(&s2);
uv.push_back(&g1);
uv.push_back(&n1);
for (int i = 0; i < 4; i++) {
    cout << i << ":\n" << *uv[i] << endl;
}
cout << endl;
```

Be prepared to explain the behavior of this code.

- What do you think would be necessary to improve the output of the for loop?  
(**Hint:** Download the file Animal\_with-virtual.cpp from the Lab 9 assignment page on Blackboard, and look at how the stringify virtual function is used in implementations of the insertion operators for the Animal class hierarchy.)
- Also, explain what happens if you change NTT\* to UMLPerson\* in the declaration of the vector nv.

When finished, one member of your group should upload your completed `lab9.cpp` source file to Blackboard.